CHAPTER 1 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. The first priority of the EMT on the emergency scene is to
   A. manage a hostile crowd.
   B. secure the patient.
   C. ensure personal safety.
   D. provide a situation update to dispatch.

_______ 2. An EMT is operating as a designated agent of the
   A. EMT-Intermediate.  
   B. ED nurse.  
   C. medical director.  
   D. shift commander.

_______ 3. The _____ is legally responsible for the clinical and patient-care aspects of an EMS system.
   A. paramedic  
   B. shift commander  
   C. Advanced EMT  
   D. medical director

_______ 4. The first concern of an EMT always must be _____ safety.
   A. patient  
   B. bystander  
   C. vehicle  
   D. personal

_______ 5. A policy set by an EMS medical director that allows EMTs to administer glucose to patients in certain circumstances without speaking to the physician is an example of a(n)
   A. direct order.  
   B. on-line order.  
   C. standing order.  
   D. QI order.

_______ 6. An order from an EMS system’s on-duty physician given by radio or phone is an example of
   A. off-line medical control.  
   B. on-line medical direction.  
   C. designated direction.  
   D. standing orders.

_______ 7. The level of EMS that involves medical training for those who are usually first on the scene of an emergency is
   A. Emergency Medical Responder.  
   B. EMT.  
   C. Advanced EMT.  
   D. Paramedic.

_______ 8. Most EMT courses today are based on models developed by the
   A. AHA.  
   B. ARC.  
   C. DOT.  
   D. NST.

_______ 9. The system of internal and external reviews and audits for all aspects of an emergency medical system is known as
   A. quality improvement.  
   B. protocols.  
   C. EMDs.  
   D. standing ORs.

_______ 10. The aspect of the EMT’s job that involves protecting the patient’s rights is
    A. assessment.  
    B. transfer.  
    C. advocacy.  
    D. protocol.
Review the following real-life situation. Then answer the questions that follow.

You and an EMT partner are assigned to EMS Unit 5 one morning in September. At 1035, the emergency dispatcher directs you to an accident on Mesa Drive. A woman driving her car along that road called 911 on her cell phone to report that the car ahead of her had swerved to avoid a dog, gone off the road, plunged into a ditch, and hit a tree.

Your unit pulls up at the scene 6 minutes later. As you don your personal protective equipment, you note that a county sheriff's car is already on-scene. A deputy is kneeling beside a male in his early 20s who is lying on the ground. Even from the top of the ditch, you can see that the young man’s shirt and pants are blood soaked. The deputy is applying direct pressure to the patient’s right wrist. As you approach, the deputy tells you that after the crash, the patient, who had been wearing a seat belt, did not believe himself injured. However, before the deputy arrived, the patient attempted to get out of the car. In doing so, he sliced his wrist on jagged metal.

Your partner takes over holding direct pressure to the wound. Meanwhile, you introduce yourself to the patient as you begin your assessment of his condition. The patient seems anxious and restless; as you assess him, you talk to him, explaining what you are doing, and try to calm him.

Because of the circumstances of the accident, you are especially alert during the assessment to the possibility that the patient may have received internal and/or spinal injuries. In fact, you determine that the patient is showing signs and symptoms of internal bleeding and shock (hypoperfusion). Shock is a life-threatening condition, so you decide that he needs immediate transport to the hospital, some 20 minutes away.

You have provided the patient with high concentration oxygen. Now, as you prepare him for transport, you ask the police officer to call in a request for a rendezvous with Paramedics of the advanced life support (ALS) unit. When he has done so, he joins you and your partner in moving the patient, now immobilized to a long spine board, to the ambulance. You remain with the patient, holding direct pressure on the wrist wound, while your partner drives. You also monitor the patient’s airway, breathing, and circulation and re-assess his vital signs.

Seven minutes later, you meet the paramedics of the ALS unit at the parking lot of a farm produce stand. You provide the paramedics with a concise report of the patient’s condition and your interventions. The paramedics assume care of the patient. They contact medical direction and report on their findings and expected time of arrival at the hospital as transport continues.

At 1105, the ambulance reaches County General Hospital. The emergency room staff is briefed on the patient’s status and vital signs and on the care he has received. The hospital crew takes over, and wheels the patient off to surgery.

1. Which components of the EMS system were involved in this scenario?

2. What roles and responsibilities of an EMT were demonstrated in this scenario?
Write the word or words that best complete each sentence in the space provided.

1. The modern emergency medical services (EMS) system began in the ______________________________.

2. The National Highway Safety Act charged the United States ______________________________ ______________________________ with developing an EMS system.

3. The emergency medical treatment given by EMTs to patients before they are transported to a facility is called ______________________________ ______________________________.

4. The type of facility that provides specialized treatment for injuries that exceed normal hospital emergency department capabilities is a(n) ______________________________ ______________________________.

5. The system of answering emergency telephone calls that uses specially trained EMS personnel who obtain information about emergency situations from callers and also provide instructions for emergency care to callers is ______________________________ ______________________________.

6. The 911 telephone number used to access emergency services in many parts of the nation is often referred to as the ______________________________ ______________________________.

7. A(n) ______________________________ is a basic-level EMS provider who has passed specific additional training programs and is authorized to provide some level of advanced life support such as intravenous therapy and advanced defibrillation.

8. The system of internal and external reviews and audits of all aspects of an emergency medical system is known as ______________________________.

9. Standing orders that allow EMTs to give certain medications or perform certain procedures without speaking directly to a physician are examples of ______________________________ medical direction.

10. An EMT has responsibility for a patient until the ______________________________ to hospital personnel has been properly completed.
EMT: Listing

1. List five of the categories in which the National Highway Traffic Safety Administration Technical Assistance Program sets standards for EMS systems.

2. List three types of specialty hospitals.

3. List three responsibilities of emergency medical dispatchers.
Handout 1-4 (continued)

4. List the four general levels of EMS training and certification.

5. List at least four responsibilities of the EMT.
EMT: True or False

Indicate if the following statements are true or false by writing T or F in the space provided.

1. As an EMT, your authority to give medications and provide emergency care is an extension of the medical director’s license to practice medicine.

2. As an EMT, you will be one of the many persons and professionals that come together to form an EMS system.

3. Trauma centers are not yet considered “specialty” hospitals.

4. Certification as an EMT requires only that a person successfully complete the DOT EMT-National Standard Training Program.

5. Keeping yourself safe is your second priority after patient safety when providing medical care.

6. The care an individual patient requires may range from simple emotional support to life-saving CPR.

7. You must never abandon care of the patient at the hospital until transfer to hospital personnel has been properly completed.

8. Good personality traits are really not very important to the EMT.

9. Good quality continuing education can often take the place of an original EMT training course.

10. Quality improvement is designed and performed to ensure that the public receives the highest quality prehospital care.

11. The EMT has no direct role in the quality improvement process.

12. Striving for quality in the care you personally give to patients and as a collective part of an ambulance squad is to uphold the highest standards of the EMS system.
CHAPTER 1 ANSWER KEY

HANDOUT 1-1: Chapter 1 Quiz

HANDOUT 1-2: In the Field
1. The emergency dispatcher; an emergency medical responder (the deputy); the EMT on Unit 5; the paramedics from the ALS unit; the emergency room personnel at the hospital
2. Personal safety; safety of patient; patient assessment; patient care; lifting and moving; transport; transfer of care

HANDOUT 1-3: Chapter 1 Review
1. 1960s
2. Department of Transportation
3. prehospital care
4. trauma center
5. emergency medical dispatching
6. universal number
7. Advanced EMT
8. quality improvement
9. off-line
10. transfer of care

HANDOUT 1-4: EMT: Listing
2. Any three: trauma centers, burn centers, pediatric centers, poison centers, stroke centers.
3. To obtain appropriate information from callers; to facilitate dispatch of emergency services; to provide medical instructions for emergency care.
5. Responsibilities include preparation for response, safe response, safe transportation, patient assessment, patient care, proper transfer of the patient to hospital personnel for continuity of care.

HANDOUT 1-5: EMT: True or False
CHAPTER 2 QUIZ

Write the letter of the best answer in the space provided.

1. The stage of the dying process that can be characterized by the words “Why me?” is
   A. denial.
   B. acceptance.
   C. anger.
   D. depression.

2. A type of emergency call likely to produce extreme levels of stress is one involving
   A. a patient with a communicable disease.
   B. injury or death of a coworker.
   C. a geriatric patient.
   D. narcotics.

3. The goal of the CISD is to
   A. assign blame for the incident.
   B. assist patients in their recovery.
   C. assist emergency care workers in dealing with stress.
   D. allocate funds for ambulance services.

4. A less structured version of the CISD, which may be held from 1 to 4 hours after an incident and before the formal debriefing, is called a(n)
   A. resolution.
   B. defusing.
   C. escape mechanism.
   D. R&R process.

5. The stage of grieving in which a patient seeks to postpone death, even for a short time, is
   A. anger.
   B. bargaining.
   C. acceptance.
   D. denial.

6. Organisms that cause infection, such as viruses and bacteria, are
   A. toxins.
   B. pathogens.
   C. venoms.
   D. poisons.

7. The standard that assumes all blood and body fluids are infectious and requires emergency personnel to follow strict procedures to protect themselves from them is referred to as
   A. infective body fluid measures.
   B. isolated infection controls.
   C. preventive control substance standards.
   D. body substance isolation.

8. Gloves, masks, and gowns are examples of
   A. turnout gear.
   B. optional field equipment.
   C. personal protective equipment.
   D. “red bag” gear.

9. If a patient is suspected of having tuberculosis, an EMT should wear a _____ respirator.
   A. PPD
   B. CISD
   C. HEPA
   D. BSI
10. Lifestyle changes that can help an EMT deal with stress include all of the following except
   A. cut down on sugar, fat, and caffeine.
   B. avoid exercise in your daily routine.
   C. avoid self-medication.
   D. keep balance in your life.

11. Which of the following materials is not recommended for gloves to be used when there is the potential for contact with blood and other body fluids?
   A. latex
   B. vinyl
   C. cotton
   D. synthetics

12. Equipment used as a BSI precaution includes all of the following except
   A. a HEPA respirator.
   B. vinyl gloves.
   C. cotton scrub pants.
   D. goggles.

13. The process by which an object is subject to a chemical or physical substance that kills all microorganisms on the surface is
   A. sterilization.
   B. OR cleaning.
   C. disinfection.
   D. scouring.

14. A situation that would usually call for the use of a gown as protection would be one involving a
   A. drug-overdose patient.
   B. childbirth.
   C. suspected TB patient.
   D. patient with a fractured leg.

15. Dispose of all needles immediately after use in a(n)
   A. “green bag.”
   B. “HAZMAT box.”
   C. “OSHA jar.”
   D. “sharps container.”

16. The single most important way an EMT can prevent the spread of infection is
   A. up-to-date immunizations.
   B. hand washing.
   C. wearing a jumpsuit.
   D. using a mask.

17. In general, before entering a hazardous materials scene, EMTs should
   A. call for an ambulance.
   B. put on goggles.
   C. put on a mask.
   D. call for a specialized HAZMAT team.

18. The test that can detect exposure to tuberculosis is the _____ test.
   A. PSA
   B. Mantoux
   C. SAT
   D. Rubella

19. If you suspect the potential for violence at a scene, before entering it, you should
   A. call law enforcement.
   B. turn on all lights and sirens.
   C. put on body armor.
   D. approach on foot.

20. Vehicles, structures, and storage containers holding hazardous materials should be identified by
   A. signs or placards.
   B. strobe lights.
   C. reflectors.
   D. warning flags.
In the Field

Review the following real-life situation. Then answer the questions that follow.

You and your partner are dispatched to the scene of a motor vehicle collision. As you approach the scene, you note that a large tanker truck has overturned in the middle of the road. The truck’s driver is trapped in the cab. You are also informed by dispatch that a bystander has reported that the truck has placards displayed on its exterior.

1. What should you do at this point?

2. If you determine that the truck carries hazardous materials, what should you do next?
CHAPTER 2 Review

Write the word or words that best complete each sentence in the space provided.

1. Dying patients experience five emotional stages—denial, anger, ______________________________, ______________________________, and ______________________________.

2. A(n) ______________________________-______________________________ is a single incident in which there are multiple patients.

3. Chronic ______________________________ brought about by work-related problems in an emotionally charged environment can lead to burnout.

4. ______________________________, which include deep-breathing exercises and meditation, are valuable stress reducers.

5. Held within 24 to 72 hours of a critical incident, a(n) ______________________________ is a process in which a team of trained peer counselors and mental health professionals meet with rescuers and health care providers who have been involved in the incident.

6. The state of emotional exhaustion and irritability that can markedly decrease an EMT’s effectiveness in delivering medical care is called ______________________________.

7. According to the U.S. Public Health Service, most contaminants can be removed from the skin with ______________________________ to ______________________________ seconds of vigorous ______________________________.

8. Airborne ______________________________ are spread by tiny droplets sprayed during breathing, coughing, or sneezing.

9. The strict form of infection control for emergency personnel is known as ______________________________.

10. In addition to eye protection, gloves, and a mask, another item of personal protective equipment that should be worn when there may be significant contact with blood or other body fluids is a(n) ______________________________.

11. As an advance safety precaution, an EMT should have a ______________________________ test for TB every year.

(continued)
12. The level of cleaning for items such as backboards and cervical collars, which come in contact with the intact skin of patients, is ______________________________.

13. EMS personnel treating a patient suspected of having TB should use a(n) ______________________________ respirator.

14. Before entering scenes involving domestic disputes, gang fights, or bar fights, an EMT should first ______________________________ ______________________________ ______________________________.

15. When approaching a wrecked vehicle that may be carrying hazardous materials, use binoculars to try to find ______________________________ or ______________________________ that can identify the material as hazardous.
Handout 2-4

Student’s Name

Well-Being Basics: Listing

1. List at least five signs and/or symptoms of stress.

2. List four types of calls that have a higher-than-normal potential for causing stress in EMS personnel.

3. List and define five emotional stages a dying patient may go through.

4. List the basic types of personal protective equipment that EMTs can be expected to use on a regular basis.
WELL-BEING BASICS: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Emergencies are rarely stressful.
2. All seriously ill patients pass through a five-stage grieving process.
3. The main purpose of a CISD is to affix responsibility for the events that took place during an incident.
4. If a CISD is thorough, follow-up is not essential.
5. Keeping yourself safe is your first priority when providing medical care as an EMT.
6. Diseases are caused by pathogens, which may be spread through the air or by contact with blood and/or body fluids.
7. In the practice of prehospital emergency care, all body fluids must be considered infectious.
8. It is imperative that the EMT changes gloves between every patient contact.
9. Because EMTs wear protective gloves while with patients, hand washing is not essential immediately after each call.
10. A HEPA or N-95 respirator should be worn after contact with an HIV-positive patient.
11. In some jurisdictions, when a patient is suspected of having an infection spread by droplets, a surgical-type mask may be placed on the patient if he or she is alert and cooperative.
12. An EMT called to a scene of suspected violence should treat any life-threatening emergencies before calling law enforcement.
13. A copy of the Emergency Response Guidebook should be on board every emergency vehicle.
14. An EMT exposed to bloodborne pathogens should seek medical attention within 4 weeks after the exposure.
15. An EMT should make preservation of evidence at a crime scene the highest priority.
CHAPTER 2 ANSWER KEY

HANDOUT 2-1: Chapter 2 Quiz

HANDOUT 2-2: In the Field
1. Before approaching the truck, you should, from a safe distance, use binoculars to try to identify the placards on the truck. Check in the DOT’s Emergency Response Guidebook to see what the placards indicate.
2. If the placards indicate the truck carries hazardous materials, call for assistance from appropriate specialized teams before attempting to assist the driver. Provide basic emergency care only after the scene is secured and patient contamination is limited. Follow your local protocols in regard to protective clothing.

HANDOUT 2-3: Chapter 2 Review
1. bargaining, depression, acceptance
2. multiple-casualty incident
3. stress
4. Relaxation techniques
5. critical incident stress debriefing
6. burnout
7. 10, 15, hand washing
8. pathogens
9. body substance isolation
10. gown
11. Purified Protein Derivative (PPD)
12. disinfection
13. HEPA (or N-95)
14. call law enforcement
15. placards, signs

HANDOUT 2-4: Well-Being Basics: Listing
1. Any five: irritability with family, friends, or coworkers; inability to concentrate; difficulty in sleeping; nightmares; loss of appetite; loss of interest in sexual activity; anxiety; indecisiveness; guilt; isolation; loss of interest in work.
2. Any four: multiple-casualty incidents; calls involving infants or children; severe injuries; abuse and neglect; death of a coworker.
3. Denial (“Not me.”); anger (“Why me?”); bargaining (“OK, but first let me . . .”); depression (OK, but I haven’t . . .”); acceptance (“OK, I’m not afraid.”).
4. Protective eyewear (safety glasses, goggles, side shields); gloves; gown; mask (surgical type for blood or other body fluids, HEPA or N-95 respirator for patient with suspected TB).

HANDOUT 2-5: Well-Being Basics: True or False
CHAPTER 3 Quiz

Write the letter of the best answer in the space provided.

1. Mentally competent adults of legal age who accept care from an EMS crew are said to give _____ consent.
   A. guardian                   C. partial
   B. implied                    D. expressed

2. EMS personnel can treat unconscious patients because the law holds that rational patients would consent to treatment if they were conscious. This principle is known as _____ consent.
   A. expressed                  C. emergency
   B. implied                    D. actual

3. Minors who are married or of a certain age and who are legally able to give consent for medical care are known as
   A. emancipated.               C. released.
   B. practiced.                D. responsible.

4. When a patient refuses care, he or she must sign a(n)
   A. codicil.                   C. DNR order.
   B. insurance rider.          D. release from liability form.

5. A legal document, usually signed by the patient and his physician, which states that the patient has a terminal illness and does not wish to prolong life through resuscitative efforts, is called a(n)
   A. surrogate statement.     C. codicil.
   B. DNR order.               D. unspecified treatment order.

6. A person whom the signer of a document names to make health care decisions for her in case the signer is unable to make such decisions for herself is called a(n)
   A. proxy.                    C. designated agent.
   B. assistant.               D. heir.

7. Legislative measures intended to provide legal protection for citizens and some health care personnel who administer emergency care are known as

8. An EMT's obligation in certain situations to provide care to a patient is referred to as a(n)
   A. agency.                   C. proxy.
   B. surrogate's role.        D. duty to act.

9. If a jury finds that an EMT had a duty to a patient, that he failed to carry out that duty properly, and that his action caused harm to the patient, the EMT could be convicted of
   A. failure to act.          C. fraud.
   B. libel.                  D. negligence.

(continued)
Handout 3-1 (continued)

10. A living will is one example of a(n)
   A. Good Samaritan law.
   B. confidentiality agreement.
   C. warrant.
   D. advance directive.

11. The principle that information about a patient’s history, condition, or treatment must not be shared with unauthorized parties is called
   A. duty to withhold.
   B. breach of duty.
   C. confidentiality.
   D. disclosure.

12. If you discover that a critically injured patient is an organ donor, as an EMT, you should
   A. not provide further care.
   B. contact medical direction.
   C. notify the trauma team.
   D. notify the police.

13. Once police have made the scene safe, the priority of the EMT at a crime scene is to
   A. preserve evidence.
   B. provide patient care.
   C. contact dispatch.
   D. assist the investigation.

14. Leaving a patient after care has been initiated and before the patient has been transferred to someone with equal or greater medical training is known as
   A. assault.
   B. abandonment.
   C. false imprisonment.
   D. proximate cause.

15. The actions and care that an EMT is legally allowed to perform are referred to as
   A. duty to act.
   B. professional practice.
   C. limits of liability.
   D. scope of practice.
Review the following real-life situation. Then answer the questions that follow.

You are dispatched to 44 Crescent Drive for a “difficulty breathing” call. There is something familiar about the address, which is in a neighborhood of fashionable homes, but you can’t quite place it.

Pulling up at the residence, you quickly make sure the scene is quiet and safe. You and your partner grab the jump kit and head for the front door. Before you can ring the bell, a man swings the door open and motions you inside. Now you know why the address is familiar. The man is James Sherman, a prominent figure in city politics.

He leads you upstairs, explaining as you go that his son has long suffered from cystic fibrosis. Right now, he’s having extreme difficulty in breathing, and Mr. Sherman would like you to transport him to Samaritan Hospital.

In the bedroom to which he leads you, you find the son, Jared, lying in bed. He appears to be in his early 20s and is obviously struggling to breathe. Yet as you approach the bed, he manages to gasp out, “Go ’way . . . no doctors . . . want to die.”

His father turns to you and says, “Don’t pay him any mind. Just get him on oxygen and to the hospital.”

1. What should you do in this situation?

2. Later that day, you return to base. As you’re getting out of your vehicle, a woman walks up. She identifies herself as a reporter for the local paper and says, “I hear there was a tough call at Jim Sherman’s house with his son, Jared. You know, you can help protect yourself if you get the straight facts into the paper. I won’t have to mention your name, and I won’t reveal who my sources are.” What should you do in this situation?
Write the word or words that best complete each sentence in the space provided.

1. In the case of a(n) ______________________________ patient, consent to treat may be assumed.

2. When dealing with children and mentally incompetent adults, the ______________________________ or ______________________________ have the legal authority to give consent.

3. ______________________________ minors are those who are married or of a certain age to provide consent.

4. Failure to provide the standard of care is one of the elements that must be proved in a case involving a charge of ______________________________ against an EMT.

5. If all efforts fail and the patient does not accept your care or transportation, you must have the patient sign a(n) ______________________________ ______________________________ form.

6. To refuse care, a patient must be ______________________________ and understand the risks of rejecting treatment.

7. A legal ______________________________ ______________________________ is an advance directive that prevents unwanted resuscitation.

8. An EMT who is on an ambulance and is dispatched to a call clearly has a(n) ______________________________ ______________________________ ______________________________.

9. In many states, an off-duty EMT has no legal obligation to provide emergency ______________________________.

10. If the EMT is off duty and begins care, then leaves the patient before other trained personnel arrive, he may be considered to have ______________________________ the patient.

11. ______________________________ laws have been developed in most states to provide immunity to individuals trying to help others in emergencies.

12. The only time that confidential information about a patient may be disclosed is when the patient has signed a(n) ______________________________ ______________________________.

13. A(n) ______________________________ ______________________________ is a patient who has completed a legal document that allows for that patient’s organs and tissues to be used by others in the event of death.

(continued)
14. A(n) ______________________________ ______________________________ is a place where a crime has been committed or any place that evidence relating to a crime may be found.

15. Obvious signs of death, with which resuscitative efforts do not have to be made, include decomposition of the body, dependent lividity, ______________________________, and ______________________________.
1. List three types of consent.

2. List five actions you should take if a patient refuses treatment.

3. List the four specific elements of a malpractice case against an EMT.

4. List three types of incidents that most states require health care professionals to report to authorities.

5. List six presumptive signs of death that should be identified when dealing with a patient who has a Do Not Resuscitate order.
MEDICAL, LEGAL, AND ETHICAL ISSUES: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Consent, or permission from the patient, is required for any treatment or action by the EMT.
2. An unconscious patient must regain consciousness before consent can be granted and treatment can begin.
3. Expressed consent must be obtained from patients who are able to give it.
4. It is not legally necessary to explain all procedures and risks of treatment to the rational, conscious patient.
5. Emergency care for a patient identified as an organ donor should not differ from the care provided to any other patient.
6. Children and mentally incompetent adults are legally allowed to provide consent for their treatment.
7. Patients who are mentally competent have the right to refuse medical care.
8. A release form is designed to protect health care providers from liability arising from the patient’s informed refusal of treatment and transport.
9. In all cases of refusal, the EMT should advise the patient to feel free to seek help if certain symptoms develop.
10. A DNR order is an actual legal document.
11. In most cases, the oral requests of a family member are a sufficient reason to withhold care from a patient.
12. An EMT’s duty to act continues throughout the call or until care is transferred to someone with equal or greater expertise.
13. Good Samaritan laws do not prevent someone from initiating a lawsuit, nor will they protect the rescuer from being found liable for acts of gross negligence and other violations of the law.
14. Basically, an EMT who places the patient’s welfare above all else when providing medical care will rarely commit an unethical act on the job.
15. An EMT is legally responsible for any of the patient’s property he picks up at the emergency scene.
CHAPTER 3 ANSWER KEY

HANDOUT 3-1: Chapter 3 Quiz


HANDOUT 3-2: In the Field

1. Jared is an adult and if he is competent, he should make his own health care decisions unless he named his father as his health care proxy. Attempt to determine if Jared is competent. Contact medical direction for guidance. Discuss the consequences of refusing treatment with Jared. Be sure that he signs a refusal of care if treatment is refused.
2. Patient confidentiality is the controlling factor. Say “No comment” and walk away.

HANDOUT 3-3: Chapter 3 Review

1. unconscious  3. emancipated  5. refusal of treatment  7. DNR order
2. parents, guardians  4. negligence  6. competent
3. care  8. duty to act  10. abandoned
4. Good Samaritan  12. written release
5. organ donor  13. medical, legal, and ethical issues
6. crime scene  14. decapitation, rigor mortis

HANDOUT 3-4: Medical, Legal, and Ethical Issues: Listing

1. Expressed; implied; consent to treat minors or incompetents.
2. Try again to persuade the patient to accept treatment or transport; make sure the patient is competent to make a rational, informed decision; consult medical direction; have the patient sign a refusal of treatment form; encourage the patient to seek help if the problem persists or gets worse.
3. Findings must be made that (1) the EMT had a duty to act; (2) the EMT breached that duty; (3) the patient suffered a compensable injury; (4) injuries were the result of the EMT’s negligence.
4. Any three: abuse (usually child, but sometimes spousal or elderly); injuries that have resulted from a crime; drug-related injuries; cases of exposure to certain infectious diseases; dog bites; cases of transportation against a patient’s will.
5. Absence of pulse, breathing, and breath sounds; complete unresponsiveness to any stimuli; no eye movement or pupil response; absence of blood pressure; no reflexes; dependent lividity.

HANDOUT 3-5: Medical, Legal, and Ethical Issues: True or False

4. F  8. T  12. T
CHAPTER 4 QUIZ

Write the letter of the best answer in the space provided.

__________ 1. Documentation of findings helps ensure
   A. that you will not be sued.
   B. continuity of care.
   C. accurate vital signs.
   D. payment for the call.

__________ 2. The documentation produced by an EMT is known informally as a
   A. PCR.
   B. QI.
   C. QA.
   D. TQM.

__________ 3. A prehospital care report can become all of the following except
   A. evidence in a legal case.
   B. part of the hospital’s permanent records.
   C. data in a research project.
   D. private property controlled by the patient.

__________ 4. Administrative information on a PCR is often referred to as
   A. PRT.
   B. run data.
   C. R&D.
   D. boilerplate.

__________ 5. The standardized information that should be collected on all PCRs is called the
   A. data element.
   B. minimum data set.
   C. check box.
   D. narrative.

__________ 6. The federal agency that has developed a list of minimum elements to be included in all
   prehospital care reports is the
   A. DOT.
   B. FDA.
   C. FCC.
   D. EPA.

__________ 7. An EMT would record the time in which an emergency unit left on a call in the _____
   section.
   A. patient data
   B. narrative
   C. CAD
   D. administrative information

__________ 8. Unlike a radio report, a prehospital care report will include the patient’s
   A. name and address.
   B. age and sex.
   C. chief complaint.
   D. vital signs.

__________ 9. All of the following are included in the patient narrative section of a prehospital care
   report except
   A. charges to the patient.
   B. chief complaint.
   C. pertinent negatives.
   D. SAMPLE history.

__________ 10. In writing narratives, EMTs usually place quotation marks around
    A. objective observations.
    B. opposing observations.
    C. baseline vital signs.
    D. chief complaints.

__________ 11. All of the following can be found in a well-written narrative except
    A. pertinent negatives.
    B. radio codes.
    C. scene information.
    D. standardized abbreviations.
12. The EMT may provide confidential information to all of the following _except_  
   A. the patient’s family.  
   B. the emergency department nurse.  
   C. a court under a subpoena.  
   D. the police in a criminal investigation.

13. If a competent patient refuses care or transport, an EMT should
   A. immediately leave the scene.  
   B. argue with the patient.  
   C. document the refusal.  
   D. request police backup.

14. Incorrect information in a prehospital care report should be
   A. erased.  
   B. crossed out completely.  
   C. crossed out with a single line.  
   D. left unchanged.

15. During a multiple-casualty incident (MCI), patient information is usually passed along by
   A. triage tags.  
   B. face-to-face reports.  
   C. electronic clipboards.  
   D. cellular phones.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

The emergency medical dispatcher sends you to the scene of a motor vehicle collision 3 miles west of the convenience store on Fonda Road. The emergency involves a single car that has struck a telephone pole.

When you arrive at the scene, you do a quick scene size-up. The vehicle has only minor damage, and no lines are down. EMRs from the fire department have secured the scene and have initiated CPR on a male patient. You notice no obvious signs of trauma on the patient, except a 1-inch laceration to the forehead.

One of the EMRs reports: “The patient’s license indicates that he is in his mid-60s. When we arrived, he was already in cardiac and respiratory arrest. We extricated him from the vehicle and began CPR, while providing manual cervical-spine stabilization.”

You write down the EMR’s comments in quotes and tell him to continue with CPR. Meanwhile, you insert an oral airway and apply the automated external defibrillator (AED). Readings on the AED advise you to stand clear as it begins to charge. The AED shocks the patient a total of three times in this sequence.

Your EMT partner restarts CPR and continues it for 1 minute. Readings on the AED indicate that the patient has a shockable rhythm. Your partner stands back, and the AED shocks three more times.

The patient now has a weak pulse, but he is still not breathing. You place him on a long spine board and begin transport to the hospital. En route, the patient becomes pulseless. You use the AED again, regaining the pulse on the seventh shock.

You recheck the patient’s pulse and find it to be strong—62 beats per minute. Other vital signs show a blood pressure of 112/52 and six spontaneous breaths per minute. You assist his ventilations.

You continue checking vital signs. Upon arrival at the hospital, the patient has a pulse rate of 68, blood pressure of 124/72, and respirations of 16. He has spontaneous eye opening but is not following commands.

Because of the patient’s condition, you have been unable to obtain a medical history. You also have no knowledge of prescribed medications or allergies. You did, however, discover some pertinent personal information from the patient’s license. Data included: patient name—James Gilligan; date of birth—June 7, 1942; address—73 First Street, Waterford, NY.

You have also recorded these times for your unit, ID# 123 of the emergency team. From the AED:

- Call received 0934
- En route 0936
- At scene 0941
- From scene 0955
- At hospital 1013
- In service 1039
- In quarters 1049
- Power on 0943.22
- Shock 1 0943.55
- Shock 2 0944.12
- Shock 3 0944.52
- Shock 4 0946.02
- Shock 5 0946.51
- Shock 6 0947.31
- Shock 7 1007.29

1. Using the information in this scenario, fill out as many parts of the following prehospital care report as possible. You might substitute the prehospital care report used by an EMS agency in your area.
Handout 4-2 (continued)

Prehospital Care Report

<table>
<thead>
<tr>
<th>Date of Call</th>
<th>Run No.</th>
<th>4-5057962</th>
<th>Agency Code</th>
<th>Ven No.</th>
</tr>
</thead>
</table>

### Chief Complaint

**Presenting Problem**
- Allergic Reaction
- Unconscious/Unresp.
- Shock
- Major Trauma
- OB/GYN

**Past Medical History**
- Hypertension
- Diabetes
- COPD
- Other (List)
- Pain

**Current Medications**
- Seizures
- Diabetes
- Hypertension
- Stroke
- Allergic Reaction
- Diabetic Related (Potential)
- Cardiac Related (Potential)
- OB/GYN

**Objective Physical Assessment**

**Subjective Assessment**

<table>
<thead>
<tr>
<th>Time (Min)</th>
<th>Resp.</th>
<th>Pulse</th>
<th>B.P.</th>
<th>GCS</th>
<th>Pupils</th>
<th>L</th>
<th>Skin</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TREATMENT**
- Moved to ambulance on stretcher/backboard
- Moved to ambulance on chair
- Walked to ambulance
- Airway Cleared
- Oral Analyse
- Endo/Tracheal Tube (E/T)
- Oxygen Administered
- Spinal Immobilization
- No Ventilation Method
- C.P.R. Started @ Time
- ENG Monitored
- Defibrillation/Cardioversion

**Disposition**
- IN CHARGE NAME
- DRIVER'S NAME
- NAME
- NAME

(continued)
NON-HOSPITAL DISPOSITION CODES:

NURSING HOME .................. 001
OTHER MEDICAL FACILITY ........ 002
RESIDENCE ...................... 003
TREATED BY THIS UNIT, TRANSPORTED
BY ANOTHER UNIT ............ 004
REFUSED MEDICAL AID OR
TRANSPORT ................. 005
CALL CANCELLED ............... 006
STANDBY ONLY (NO PATIENT) .... 007
NO PATIENT FOUND ............ 008
OTHER ......................... 010

Hospital Receiving Agent
(IF REQUIRED)
COMPLETE ON WHITE (AGENCY) COPY ONLY

REFUSAL OF TREATMENT/TRANSPORTATION
NEGATIVA A RECIBIR TRATAMIENTO/SER TRASLADADO
RELEASE
EXONERACION DE RESPONSABILIDADES
COMPLETE ON WHITE (AGENCY) COPY ONLY
LLENE UNICAMENTE LA COPIA BLANCA (DE LA AGENCIA)

I hereby refuse (treatment/transport to a hospital) and I acknowledge that such treatment/transportation was advised by the ambulance crew or physician. I hereby release such persons from liability for respecting and following my express wishes.

Mediante la presente declaro que me niego a aceptar el tratamiento/traslado a un hospital y reconozco asimismo que el médico o el personal de la ambulancia recomendaron ese tratamiento/traslado. Consiguientemente, eximo a dichas personas de toda responsabilidad por haber respetado y cumplido mis deseos expuestos.

Signed: ________________________________
Witness: ________________________________

INSURANCE CARRIER
ID# BLUE COMMERCIAL 1
MEDICARE 2
MEDICAID 3
CROSS 4
INSURANCE 5
SELF PAY

WAS THIS A WORKERS’ COMPENSATION INJURY: ☐ YES ☐ NO INSURANCE CODE

PATIENT’S EMPLOYER ___________________________________________________
PHONE (_______)

EMPLOYER’S ADDRESS ____________________________________________________

RESPONSIBLE PARTY ____________________________________________________
PHONE (_______)

ADDRESS __________________________________________________ (ZIP _________)
RELATION ____________________________

Glasgow Coma Scale

Eye Opening Spontaneous 4
To Voice 3
To Pain 2
None 1

Verbal Response Oriented 5
Confused 4
Inappropriate Words 3
Incomprehensible Sounds 2
None 1

Motor Response Obey Commands 6
Locomotor Pain 3
Withdraw (pain) 4
Flexion (pain) 3
Extension (pain) 2
None 1

Total GCS Score: 3–15

ICD DIAGNOSTIC CODE

THE RULE OF NINES
Estimation of Burned Body Surface (PERCENT)

ICD DIAGNOSTIC CODE

Handout 4-2 (continued)
### Handout 4-2 (continued)

**Prehospital Care Report**

<table>
<thead>
<tr>
<th>TIME</th>
<th>RESP. Rate:</th>
<th>PULSE</th>
<th>B.P. Route</th>
<th>EKG RHYTHMS</th>
<th>MEDICATIONS</th>
<th>DOSE</th>
<th>ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional History & Physical Exam Findings**

- Name
- Agency

**Vital Signs, EKG, Rhythms, Medications and Treatment**

<table>
<thead>
<tr>
<th>SERIAL</th>
<th>BREATHE SOUNDS</th>
<th>L</th>
<th>NECK VEINS</th>
<th>EDEMA</th>
<th>ABDOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wheezes</td>
<td></td>
<td>Rhonchi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

- Name
- Agency

**Abrasion**

- Name
- Agency

**Medication**

- Name
- Agency

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Prehospital Emergency Care, 9th Ed.
CHAPTER 4 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. ______________________________ is an important part of the patient care process and serves a variety of functions, including administrative, educational, and research uses.

2. A recent development in prehospital care reports is the ______________________________ ______________________________, a device that converts handwriting into computerized text.

3. A PCR is a(n) ______________________________ ______________________________ that can sometimes find its way into either criminal or civil court cases.

4. To ensure that runs meet current medical and organizational standards, most EMS agencies have a(n) ______________________________ improvement system in place.

5. The U.S. Department of Transportation calls the information it wants on all PCRs the ______________________________ ______________________________ ______________________________.

6. The ______________________________ ______________________________ includes unit numbers, date, times, call number, and crew member names.

7. The ______________________________ data includes the patient’s name and address, sex, age, and any care rendered before the EMTs arrived.

8. ______________________________ statements can be measured or verified; ______________________________ statements reflect an individual’s point of view.

9. Because the precise times of events during a call can be both medically and legally important, all EMS systems should use ______________________________ and ______________________________ clocks.

10. When bystander observations and the patient’s chief complaint are recorded, they should be placed in ______________________________ ______________________________.

11. Documenting ______________________________ ______________________________ lets other medical professionals know that an EMT examined certain areas without making any significant findings.

12. At least ______________________________ complete sets of vital signs should be taken and recorded.

13. If a patient declines emergency treatment or transport, he should be asked to sign a(n) ______________________________ ______________________________ ______________________________ form.

(continued)
14. The PCR is considered ______________________________ and must be handled with care and discretion.

15. In a multiple-casualty incident (MCI), patient information is often passed through the system in the form of ______________________________ ______________________________.
Handout 4-4

Student’s Name

DOCUMENTATION: LISTING

1. List four basic uses of the prehospital care report (PCR).

2. List the five sections in a typical PCR.

3. List three legal issues that pertain to PCRs and other documents that an EMT may complete.

4. List three things to do to correct an error made while filling out a PCR.
Below is a list of symbols and codes that you might encounter when reading a prehospital care report (PCR).

AAO  Awake, alert, and oriented
ACO  Alert, conscious, and oriented
A&O × 3  Alert and oriented to person, place, and time
AAA  Abdominal aortic aneurysm
ABC  Airway, breathing, and circulation
ACLS  Advanced cardiac life support
ALS  Advanced life support
ASA  Acetylsalicylic acid (aspirin)
ABD  Abdomen (abdominal)
AMT  Amount
Approx.  Approximately
AMS  Altered mental status
AMA  Against medical advice
AFIB  Atrial fibrillation
BP  Blood pressure
BVM  Bag-valve mask
BS  Breath sounds
BILAT  Bilateral
BSC&=  Breath sounds clear and equal
C-Spine  Cervical spine
CA  Cancer
CVA  Stroke
CHF  Congestive heart failure

(continued)
**Handout 4-5** (continued)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSF</td>
<td>Cerebrospinal fluid</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>CNS</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>CPR</td>
<td>Cardiopulmonary resuscitation</td>
</tr>
<tr>
<td>C-Section</td>
<td>Cesarean section</td>
</tr>
<tr>
<td>CC</td>
<td>Chief complaint</td>
</tr>
<tr>
<td>cc</td>
<td>Cubic centimeter</td>
</tr>
<tr>
<td>C/O</td>
<td>Complaining of</td>
</tr>
<tr>
<td>CAO × 4</td>
<td>Conscious, alert, and oriented × 4</td>
</tr>
<tr>
<td>DOA</td>
<td>Dead on arrival</td>
</tr>
<tr>
<td>DT</td>
<td>Delirium tremens</td>
</tr>
<tr>
<td>DX</td>
<td>Diagnosis</td>
</tr>
<tr>
<td>DKA</td>
<td>Diabetic ketoacidosis</td>
</tr>
<tr>
<td>DNR</td>
<td>Do not resuscitate</td>
</tr>
<tr>
<td>ETOH</td>
<td>Ethanol (or drinking alcohol)</td>
</tr>
<tr>
<td>ET</td>
<td>Endotracheal tube</td>
</tr>
<tr>
<td>EGTA</td>
<td>Esophageal gastric tube airway</td>
</tr>
<tr>
<td>EKG</td>
<td>Electrocardiogram</td>
</tr>
<tr>
<td>EDP</td>
<td>Emotionally disturbed person</td>
</tr>
<tr>
<td>FX</td>
<td>Fracture</td>
</tr>
<tr>
<td>FB</td>
<td>Foreign body</td>
</tr>
<tr>
<td>GSW</td>
<td>Gunshot wound</td>
</tr>
<tr>
<td>GYN</td>
<td>Gynecology</td>
</tr>
<tr>
<td>HTN</td>
<td>Hypertension (high blood pressure)</td>
</tr>
<tr>
<td>HX</td>
<td>History</td>
</tr>
<tr>
<td>HEENT</td>
<td>Head, eyes, ears, nose, and throat</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU</td>
<td>Intensive care unit</td>
</tr>
<tr>
<td>LOC</td>
<td>Level of consciousness</td>
</tr>
<tr>
<td>LUQ</td>
<td>Left upper quadrant</td>
</tr>
<tr>
<td>LLQ</td>
<td>Left lower quadrant</td>
</tr>
<tr>
<td>L&amp;D</td>
<td>Labor and delivery</td>
</tr>
<tr>
<td>LAT</td>
<td>Lateral</td>
</tr>
<tr>
<td>LSC=BILAT</td>
<td>Lung sounds clear and equal on both sides</td>
</tr>
<tr>
<td>MAST</td>
<td>Military anti-shock trousers</td>
</tr>
<tr>
<td>MI</td>
<td>Myocardial infarction (heart attack)</td>
</tr>
<tr>
<td>MED</td>
<td>Medicine (medication)</td>
</tr>
<tr>
<td>NC</td>
<td>Nasal cannula</td>
</tr>
<tr>
<td>NSR</td>
<td>Normal sinus rhythm</td>
</tr>
<tr>
<td>NRM</td>
<td>Nonrebreather mask</td>
</tr>
<tr>
<td>NKM</td>
<td>No known medications</td>
</tr>
<tr>
<td>NKA</td>
<td>No known allergies</td>
</tr>
<tr>
<td>N/V</td>
<td>Nausea and vomiting</td>
</tr>
<tr>
<td>N/V/D</td>
<td>Nausea, vomiting, and diarrhea</td>
</tr>
<tr>
<td>NKDA</td>
<td>No known drug allergies</td>
</tr>
<tr>
<td>PMHX</td>
<td>Past medical history</td>
</tr>
<tr>
<td>PT</td>
<td>Patient</td>
</tr>
<tr>
<td>PE</td>
<td>Pulmonary edema</td>
</tr>
<tr>
<td>PVC</td>
<td>Premature ventricular contraction</td>
</tr>
<tr>
<td>PEARL</td>
<td>Pupils equal and reactive to light</td>
</tr>
<tr>
<td>PALP</td>
<td>Palpation</td>
</tr>
<tr>
<td>RX</td>
<td>Medicine</td>
</tr>
<tr>
<td>RLQ</td>
<td>Right lower quadrant</td>
</tr>
<tr>
<td>RUQ</td>
<td>Right upper quadrant</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXN</td>
<td>Reaction</td>
</tr>
<tr>
<td>SOB</td>
<td>Shortness of breath</td>
</tr>
<tr>
<td>SX</td>
<td>Symptom</td>
</tr>
<tr>
<td>SZ</td>
<td>Seizure</td>
</tr>
<tr>
<td>T</td>
<td>Temperature</td>
</tr>
<tr>
<td>TIA</td>
<td>Transient ischemic attack (mini-stroke)</td>
</tr>
<tr>
<td>TX</td>
<td>Treatment</td>
</tr>
<tr>
<td>VS</td>
<td>Vital signs</td>
</tr>
<tr>
<td>YO</td>
<td>Years old</td>
</tr>
</tbody>
</table>
CHAPTER 4 ANSWER KEY

HANDOUT 4-1: Chapter 4 Quiz


HANDOUT 4-2: In the Field

1. Work with students as they fill out the prehospital care report. You might invite several EMTs to work with students, thus sharing their knowledge of documentation.

HANDOUT 4-3: Chapter 4 Review

1. Documentation
2. electronic clipboard
3. legal document
4. quality
5. minimum data set
6. administrative information
7. patient
8. Objective, subjective
9. accurate, synchronous
10. quotation marks
11. pertinent negatives
12. two
13. refusal-of-care
14. confidential
15. triage tags

HANDOUT 4-4: Documentation: Listing

1. Becomes part of the patient’s permanent hospital record (medical), can serve as a legal document in a civil or criminal case (legal), can be used for administrative purposes such as billing (administrative), supplies data for education research (educational/research).
3. Confidentiality, patient refusals, falsification.
4. Draw a single horizontal line through the error, initial it, and write in the correct information.
CHAPTER 5 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. The initial communication with EMTs about an emergency call is the
   A. hospital radio report.    C. dispatch report.
   B. verbal report.          D. consult with medical direction.

_______ 2. The two-way radio located at a hospital or dispatch center is a
   A. mobile radio.          C. digital radio.
   B. repeater.              D. base station.

_______ 3. All of the following patient data should be included in a radio medical report except
   A. name and address.    C. mental status.
   B. age and sex.        D. chief complaint.

_______ 4. The federal agency that assigns and licenses radio frequencies used by EMS units is the
   A. FDA.               C. FCC.
   B. HUD.              D. DOT.

_______ 5. If an order from medical direction appears to be inappropriate, the EMT should
   A. ignore it.          B. follow it exactly.
   C. alter the part that appears inappropriate.    D. question it.

_______ 6. The principles of radio communication encourage transmissions that make use of
   A. codes or slang.       C. plain English.
   B. courtesies such as “thank you.”           D. phrases such as “be advised.”

_______ 7. To keep emergency frequencies open, an EMT should pause for several seconds if a
   transmission takes longer than
   A. 1 minute.         C. 2 minutes.
   B. 30 seconds.       D. 15 seconds.

_______ 8. To help calm a patient, an EMT should
   A. speak in medical terms.   C. use a patient’s first name.
   B. explain all procedures.   D. downplay expected pain.

_______ 9. In assessing a child, an EMT should
   A. keep the truth from the child.   C. ask the parents to leave.
   B. crouch at the child’s level.    D. stand above the child.

_______ 10. If an on-line physician orders medication, an EMT should
    A. administer it immediately.   C. accept the order without question.
    B. repeat back the order word for word.   D. respond “order received.”
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

The emergency medical dispatcher sends you and your EMT partner to 37 Anne Drive, where a 49-year-old male is complaining of a crushing pain in his chest.

Upon arrival at the house, you and your partner do a quick scene size-up. The man’s daughter introduces herself and leads you into the garage. Here you see her father sitting on the floor with his fist clutched to his chest.

Taking BSI precautions, you and your partner put on gloves. After introducing yourself, you crouch down to eye level with the man and ask him his name and age.

“I’m Anthony Cohen,” he replies. “I’m 49, but feel like 100. Am I having a heart attack?”

You tell Mr. Cohen that you cannot make a diagnosis but will relay a description of his condition to medical personnel at the hospital. You listen carefully as Mr. Cohen describes his chief complaint, writing down notes as he speaks.

You now begin the initial assessment. You observe that Mr. Cohen is awake and alert and that his airway is open. However, he appears to be splinting his chest wall. His breathing is rapid and shallow. Your partner immediately administers oxygen while you continue the assessment.

As you start to collect vital signs, your partner obtains a history of the present illness as well as a SAMPLE history. She tells Mr. Cohen the purpose of her questions. She also says, “While we talk, my partner will be checking your vital signs—things like your pulse rate.”

You record the following vital signs: blood pressure at 160/100, regular and bounding pulse, a pulse rate of 120 beats per minute, breathing at 28 breaths per minute, skin pale and moist, pulse ox of 98 percent.

With Mr. Cohen reporting no prior history of heart problems, you and your partner elect to package him for immediate transport. You request a paramedic intercept en route to the hospital.

1. What aspects of good interpersonal communication are demonstrated in this scenario?

2. What information would you include in a 30-second report to the receiving facility?
Write the word or words that best complete each sentence in the space provided.

1. A(n) ______________________________ ______________________________ is a fixed site that serves as a dispatch and coordination area.

2. A(n) ______________________________ breaks down sound into digital codes while a(n) ______________________________ responds only to those codes.

3. A handheld ______________________________ ______________________________ allows EMTs to be in touch with the members of the EMS while they are away from the ambulance.

4. In the event of power failure or malfunction, EMS systems should have ______________________________ ______________________________ available.

5. The ______________________________ ______________________________ ______________________________ is the agency of the federal government that assigns and licenses radio communications.

6. After receiving an order from medical direction to administer medication, the EMT should ______________________________ ______________________________ ______________________________ word for word.

7. The EMT must communicate with partners and patients plus EMS ______________________________, ______________________________, and medical personnel at the receiving facility.

8. At the conclusion of a call, the EMTs should notify ______________________________ of their return to the station.

9. When caring for a patient with a hearing loss, be sure that your ______________________________ are visible or see if relatives can ______________________________ using American Sign Language.

10. The EMT should never use the patient’s ______________________________ in radio transmissions.
COMMUNICATION: MATCHING

Write the letter of the term in the space provided next to the appropriate description.

1. A handheld, two-way radio
2. Federal agency that assigns and licenses radio frequencies
3. A two-way radio mounted on a vehicle
4. A unit of measurement for radio output
5. A type of portable phone
6. A two-way radio at a fixed site, such as a hospital
7. A member of the EMS system who receives the initial call for help
8. Patient information sent while en route to the hospital
9. A device that picks up radio signals from lower-power units
10. Patient information given at the hospital

A. base station
B. cellular phone
C. mobile radio
D. portable radio
E. radio report
F. repeater
G. oral report
H. watt
I. FCC
J. EMD
Indicate if the following statements are true or false by writing T or F in the space provided.

1. A base station is affixed to an EMS vehicle.
2. Wireless communications include radios and cellular telephones.
3. The Department of Transportation (DOT) licenses radio frequencies used by EMS agencies.
4. The patient’s name is included in the radio report.
5. The opening statement of every radio report transmits the unit identification.
6. Requests for further orders usually come at the end of the radio report.
7. An EMT should never question the medications prescribed by an on-line physician.
8. Patients from some cultures may consider it impolite to make direct eye contact.
9. Standing over a patient enhances the EMT’s ability to gather patient information.
10. Use of a patient’s first name will usually put him or her at ease.
ORGANIZING A RADIO REPORT

Place the following parts of a radio report in correct order of delivery. Write 1 by the first event to be given in the report, 2 by the second event, and so on.

_______ A. “The patient has a laceration to the scalp.”
_______ B. “Our ETA at your location is 5 minutes.”
_______ C. “Our trauma patient is a 28-year-old male.”
_______ D. “Respirations are 14, pulse is 100, and BP is 180/90.”
_______ E. “Medical Center, this is Rescue One.”
_______ F. “We have administered oxygen and applied a dressing.”
_______ G. “The patient responds to verbal stimuli.”
_______ H. “He denies any past medical history.”
_______ I. “The patient is complaining of a headache.”
_______ J. “The patient is more responsive after oxygen.”
_______ K. “The crash was a car versus a pole; estimated speed 45 miles per hour.”
CHAPTER 5 ANSWER KEY

HANDOUT 5-1: Chapter 5 Quiz
3. A 6. C

HANDOUT 5-2: In the Field
1. The EMT introduces himself and crouches at the patient’s level to make eye contact. The EMTs do not guess at a diagnosis, but they do make every effort to provide as much information about procedures as possible.
2. Sample report: This is Community Ambulance to Medic One. We have a 49-year-old male who is complaining of crushing chest pain. He was working in the garage when the pain started. He denies any medical history. At present, the patient is conscious and alert, with shallow respirations at 28, a radial pulse at 120, blood pressure at 160/100, and skin pale and moist. His pupils are dilated, but reactive. Pulse ox of 98 percent. We have administered oxygen, and his chest discomfort has eased. Our ETA is approximately 7 minutes.

HANDOUT 5-3: Chapter 5 Review
1. base station
2. encoder, decoder
3. portable radio (cellular telephone)
4. backup radios (emergency generator)
5. Federal Communications Commission (FCC)
6. repeat the order
7. dispatch, medical direction
8. dispatch
9. lips, sign (translate)
10. name

HANDOUT 5-4: Communication: Matching
3. C 6. A

HANDOUT 5-5: Communication: True or False
3. F 6. T

HANDOUT 5-6: Organizing a Radio Report
A. 8  D. 7  G. 6  J. 10
B. 11  E. 1  H. 5  K. 4
C. 2  F. 9  I. 3
CHAPTER 6 Quiz

Write the letter of the best answer in the space provided.

_____ 1. When you are lifting a heavy object, avoid using the muscles of your
   A. back.      C. shoulders.
   B. arms.      D. legs.

_____ 2. One technique that can greatly reduce the risk of back injuries when lifting and moving patients is
   A. not allowing the weight to get close to your body.
   B. keeping the lifted weight in close to your body.
   C. keeping your feet together.
   D. locking out your knees.

_____ 3. When reaching for a patient or a piece of equipment, an EMT should reach in front of his body no more than _____ inches.
   A. 8 to 12
   B. 20 to 24
   C. 15 to 20
   D. 30 to 36

_____ 4. The lifting technique that should be used by an EMT with one weak leg or one weak ankle is the
   A. power lift.
   B. back lift.
   C. power grip.
   D. squat lift.

_____ 5. When performing a log roll, an EMT should
   A. bend over the patient.
   B. lean from the hips.
   C. twist and pull simultaneously.
   D. lean from the waist.

_____ 6. The preferred device for carrying a conscious medical patient down a flight of stairs is the
   A. stair chair.
   B. Reeves device.
   C. ambulance stretcher.
   D. backboard.

_____ 7. Which one of the conditions below is not one that permits the use of an emergency move?
   A. The scene is hazardous.
   B. Care of life-threatening injuries requires repositioning.
   C. The patient’s position is hampering a police investigation.
   D. You must reach other patients.

_____ 8. When your assessment of a patient trapped in wreckage reveals that the patient is suffering from an immediate threat to life, you would order a(n) _____ move.
   A. emergency
   B. urgent
   C. immediate
   D. rapid

_____ 9. The technique used when quickly removing a patient from a vehicle is called
   A. log rolling.
   B. the long axis drag.
   C. rapid extrication.
   D. the Stokes move.

_____ 10. Unresponsive patients with no suspected spinal injuries should be placed in the
    A. position of comfort.
    B. Fowler position.
    C. left lateral recumbent position.
    D. Trendelenburg position.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

Bob said, “Clay overreacted,” and Andy replied, “Yeah, he endangered the patient. Suppose the guy had a broken neck or something! He’s just lucky the guy was all right.” Overhearing this conversation, you are naturally curious and ask, “What happened?”

The two other EMTs tell you that there was a motor vehicle collision, a high-speed crash, where the cars were found T-boned and the passengers seriously injured. When Clay’s ambulance arrived, it was assigned by EMS command to the patients in car B.

After approaching the cars, Clay did a quick scene size-up, including assessing for scene safety. The position in which the cars came to rest after impact made access on the driver’s side impossible, so Clay looked into the passenger-side window of car B. He could see that the driver, who appeared unresponsive, had a large cut over his left eyebrow that was bleeding profusely. An initial assessment of the passenger revealed no obvious injuries.

It was at this point that Clay called EMS command and asked for more manpower as well as the heavy rescue team. He then immediately extricated the passenger in order to gain access to the driver. Despite the fact that Clay now had access to the driver and could start patient care, he was unable to extricate the driver without the assistance of heavy rescue. Eventually, the heavy rescue team disentangled the driver from the dash. He was then transported to the trauma center.

1. What did Clay decide to do that Andy and Bob had such a problem with? Did he do the right thing?

2. Which patient moving technique should have been used?

3. If the driver had not appeared to be seriously injured, what should have happened differently?
CHAPTER 6 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The proper use of your body to facilitate lifting and moving a patient is called ______________________________.

2. A major cause of lower back injuries is lifting and ______________________________ simultaneously.

3. When lifting a patient carrying device, it is best to use a(n) ______________________________ number of people.

4. Never reach more than ______________________________ inches away from your body for equipment.

5. To get the best hold possible on a piece of equipment, use the ______________________________ ______________________________.

6. When faced with a choice of pushing or pulling an object, whenever possible, try to ______________________________

7. Always keep the weight of an object to be lifted or moved as ______________________________ to the body as possible.

8. To move a heavy object, use the ______________________________, ______________________________, and ______________________________ muscles plus contracted abdominal muscles.

9. When moving patients up or down stairs, always try to use a(n) ______________________________ ______________________________.

10. To help prevent injury when lifting or moving patients or objects, maintain a normal ______________________________ curve of the ______________________________ ______________________________.

11. A(n) ______________________________ move is used when no immediate threat to life exists and the patient can be moved when ready for transport.

12. The greatest danger to the patient in any emergency move is the possibility of aggravating a(n) ______________________________ ______________________________.

13. The ______________________________ ______________________________ is the safest and most comfortable means of transferring a patient.

14. The ______________________________ ______________________________ is a way of transferring a supine patient from a bed to a wheeled stretcher or from any patient carrying device to another.

(continued)
Handout 6-3 (continued)

15. ______________________________ is a term that means readying the patient for transport.

16. A patient with chest pain or difficulty breathing should be placed in a(n)

______________________________ ______________________________ ______________________________

17. During a(n) ______________________________ ______________________________, the patient is

stabilized manually before being removed from a vehicle onto a long spine board.

18. A patient with suspected spinal injury should be immobilized on a(n)

______________________________ ______________________________

19. To slide a patient from an ambulance stretcher to a hospital bed, the EMT would use the

______________________________ ______________________________ method.

20. A pregnant patient in the third trimester should be transported on her

______________________________ ______________________________
LIFTING AND MOVING: LISTING

1. List four basic principles of body mechanics.

2. List three basic techniques used in lifting and moving patients and equipment.

3. List at least three ways of ensuring good teamwork and performance when teams of rescuers are carrying out lifts and moves.
### Moving Patients: Matching

#### Part I. Write the letter of the patient carrying device in the space provided next to the situation it is appropriate for.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A conscious patient is found seated in the front seat of a car after a collision.</td>
<td>A. Long backboard</td>
</tr>
<tr>
<td>2. An elderly woman has fallen between the toilet and the bathtub.</td>
<td>B. Scoop stretcher</td>
</tr>
<tr>
<td>3. A hunter has twisted her knee in the woods.</td>
<td>C. Basket stretcher</td>
</tr>
<tr>
<td>4. A child has fallen out of a tree fort.</td>
<td>D. Stair chair</td>
</tr>
<tr>
<td>5. A middle-age male has chest pain in his two-story brownstone house.</td>
<td>E. Short backboard</td>
</tr>
</tbody>
</table>

#### Part II. Write the letter of the type of move in the space provided beside the patient move it describes.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Blanket drag</td>
<td>A. Emergency move</td>
</tr>
<tr>
<td>2. Draw sheet method</td>
<td>B. Urgent move</td>
</tr>
<tr>
<td>3. Rapid extrication</td>
<td>C. Nonurgent move</td>
</tr>
<tr>
<td>4. Armpit-forearm drag</td>
<td></td>
</tr>
<tr>
<td>5. Direct carry</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 6 ANSWER KEY

HANDOUT 6-1: Chapter 6 Quiz
4. D

HANDOUT 6-2: In the Field
1. Clay decided to perform an urgent move of the stable patient based on urgent need to gain access to the unstable patient. Emergency medical practice allows this deviation from the rule that potentially injured trauma patients need spinal immobilization before movement if such delays in packaging the patient would compromise other patients.
2. Clay would have used the rapid extrication technique, explained in detail in Chapter 32, “Spinal Column and Spinal Cord Trauma.” This technique is used to move patients when an initial assessment has determined an urgent move is needed to save that patient’s life or the life of another to whom access is blocked by the first patient.
3. Based on the mechanism of injury, both patients should have received spinal immobilization via short board or vest-like extrication device, then been transferred to a long backboard.

HANDOUT 6-3: Chapter 6 Review
1. body mechanics
2. twisting
3. even
4. 20
5. power grip
6. push
7. close
8. leg, hip, gluteal (buttocks)
9. stair chair
10. inward, lower back
11. nonurgent
12. spinal injury
13. wheeled stretcher
14. direct carry
15. Packaging
16. position of comfort
17. rapid extrication
18. long backboard
19. draw sheet
20. left side

HANDOUT 6-4: Lifting and Moving: Listing
1. Keep the weight of the object as close to the body as possible; to move a heavy object, use the leg, hip, and gluteal (buttocks) muscles plus contracted abdominal muscles; visualize the shoulders as stacked on top of the hips and the hips on top of the feet and move them as a unit; reduce the height or distance through which the object must be moved.
2. Power lift; squat lift; power grip. Students may also cite one-handed carrying techniques and stair-chair technique.
3. Any three of the following: All members should be properly trained in proper techniques; partners should be closely matched in size and strength; team members should use commands that are easy to understand; they should communicate often; even numbers of rescuers should be used when lifting and moving.

HANDOUT 6-5: Moving Patients: Matching

<table>
<thead>
<tr>
<th>Part I</th>
<th>Part II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. E</td>
<td>1. A</td>
</tr>
<tr>
<td>2. B</td>
<td>2. C</td>
</tr>
<tr>
<td>4. A</td>
<td>4. A</td>
</tr>
<tr>
<td>5. D</td>
<td>5. C</td>
</tr>
</tbody>
</table>
Write the letter of the best answer in the space provided.

1. The functions of the body are called its
   A. physiology.                        
   B. kinesiology.                     
   C. pathology.                       
   D. microbiology.                    

2. The structure of the body is referred to as its
   A. analogy.                         
   B. anatomy.                        
   C. kinesiology.                    
   D. pathology.                      

3. The normal anatomical position is best described as a person
   A. standing, facing forward, palms forward. 
   B. lying on his back, palms facing down.  
   C. standing, facing sideways, palms facing thighs. 
   D. lying on his stomach, palms up.       

4. An imaginary line down the center of the body that passes between the eyes and extends down through the navel is the
   A. plane.                            
   B. outline.                         
   C. midline.                         
   D. quadrant.                        

5. The term that refers to a position closer to the midline is
   A. medial.                          
   B. lateral.                         
   C. posterior.                       
   D. anterior.                        

6. An opposite of anterior is
   A. posterior.                       
   B. superior.                       
   C. exterior.                       
   D. proximal.                       

7. The lateral recumbent position is also known as the _____ position.
   A. Fowler                          
   B. supine                          
   C. recovery                        
   D. Trendelenburg                   

8. The Fowler position is usually achieved by elevating the patient’s upper body to a _____ angle.
   A. 60° to 90°                       
   B. 45° to 60°                       
   C. 50° to 70°                       
   D. 55° to 90°                       

9. The spinal region that is most prone to injury is the
   A. thoracic.                        
   B. cervical.                       
   C. sacral.                         
   D. coccyxal.                       

10. The clavicle is commonly referred to as the
    A. collarbone.                     
    B. thigh.                         
    C. hamstring.                     
    D. shin.                          

11. The scapula and acromion are parts of the
    A. pelvis.                         
    B. shoulder.                      
    C. ankle.                         
    D. wrist.
Handout 7-1 (continued)

12. Inferiorly, the knee connects with the
   A. radius and fibula.   C. tibia and fibula.
   B. femur and tibia.    D. ulna and tibia.

13. The body contains how many different types of muscle?
   A. two            C. four
   B. three          D. five

14. The structure that carries air downward from the larynx to the lungs is the
   A. bronchus.       C. epiglottis.
   B. pharynx.       D. trachea.

15. The chamber that pumps oxygen-rich blood out of the heart for distribution to the rest
    of the body is the
   A. right atrium.   C. left atrium.
   B. right ventricle.    D. left ventricle.

16. The major artery leading from the heart is the
   A. aorta.          C. carotid.
   B. pulmonary.     D. femoral.

17. The pulse that is located in the foot is the
   A. carotid.             C. brachial.
   B. femoral.          D. dorsalis pedis.

18. The blood vessels where gases, nutrients, and waste products are exchanged between the
    body’s cells and the bloodstream are the
   A. arteries.        C. capillaries.
   B. venules.        D. arterioles.

19. The elements of the blood that are part of the body’s immune system and help to defend
    against infection are
   A. plasma.          C. white blood cells.
   B. red blood cells.   D. platelets.

20. The pressure created in the arteries when blood is forced out of the heart is referred to as
    A. radial.         C. femoral.
    B. systolic.      D. diastolic.

21. The adequate supply of oxygen and nutrients to the organs and tissues of the body, with
    the removal of waste products, is called
   A. automaticity.  C. perfusion.
   B. conduction.    D. autonomicity.

22. The central nervous system is made up of the brain and the
   A. sensory nerves. C. motor nerves.
   B. spinal cord.   D. endocrines.

23. The skin layer rich with blood vessels, nerves, and specialized structures such as sweat
    glands and sebaceous glands is the
   A. epidermis.     C. subcutaneous layer.
   B. dermis.         D. arrector pili.
24. The endocrine system produces chemicals called
   A. hormones.  
   B. carotenes.  
   C. dioxins.  
   D. biles.

25. Body functions such as digestion, heart rate, and the activities of involuntary muscles are controlled by the _____ nervous system.
   A. central  
   B. peripheral  
   C. autonomic  
   D. automatic
Review the following real-life situation. Then answer the questions that follow.

You and your crew are dispatched for a call about a fall at a home. As the ambulance pulls up to a single-family house, you survey the scene. A truck for AAA Roofers is parked in the driveway. There is scaffolding at the east end of the house. At its base, two men are kneeling over a third that is lying supine on the ground. The scene appears to be safe, so you grab your jump kit and approach. As you do, one of the men runs over to you and tells you that the crew had been removing old shingles from the roof when David lost his footing and fell about 18 feet to the ground.

Your patient is not conscious when you begin your initial assessment. After determining that he is breathing adequately, you note a large laceration on the left side of the patient’s lower jaw. You also note that an area on the outside of the patient’s left arm, just above the elbow, is swollen and deformed. There is a large laceration on the front of the patient’s upper left thigh just above the kneecap, which is bleeding profusely.

1. Which of the body’s major systems do you suspect may have been injured as a result of this accident?

2. Describe the location of the injury on the patient’s head.

3. Describe the location of the injury to the patient’s arm.

4. Describe the location of the injury to the patient’s lower extremity.
Write the word or words that best complete each sentence in the space provided.

1. Use of the ______________________________ ______________________________ position ensures that health care providers will employ the same point of reference when terms of direction and location are used.
2. A(n) ______________________________ ______________________________ is the kind of flat surface that would be formed if you sliced straight through an imaginary human body.
3. The ______________________________ line is one that is drawn vertically from the middle of the armpit to the ankle.
4. The elbow is ______________________________ to the shoulder because the elbow is farther away from the torso than the shoulder.
5. Anatomically speaking, the nose is ______________________________ to the mouth.
6. When a patient is lying on his back with legs elevated higher than the head and body on an inclined plane, he is in the ______________________________ position.
7. Bones are connected to bones by ______________________________, while muscles are connected to bones by ______________________________.
8. The top, back, and sides of the skull plus the forehead make up the ______________________________.
9. The spinal column is made up of blocks of bone called ______________________________.
10. The ______________________________ is composed of the ribs, the sternum, and a portion of the spine.
11. The ______________________________ ______________________________ consists of the acetabulum and the ball at the head of the femur.
12. The elbow is an example of a(n) ______________________________ joint.
13. The property that allows the heart to generate and conduct electrical impulses on its own is ______________________________.
14. During respiration, gas exchange with the bloodstream takes place in the small sacs called ______________________________.
15. The section of the respiratory cycle in which the intercostal muscles and diaphragm relax is known as ______________________________.
16. The respiratory anatomy of infants and children differs from that of adults in that the ________________ is narrower, softer, and more flexible.

17. Because the chest walls of infants and children are softer, they rely more on the ________________ for breathing.

18. The upper chambers of the heart are the ____________________, while the lower chambers are the ____________________.

19. The ____________________ ____________________ carry oxygenated blood from the lungs to the heart.

20. The elements of the blood that are essential to the formation of blood clots are ____________________.

21. When the left ventricle of the heart is relaxing and refilling, the pressure remaining in the arteries is the ________________ blood pressure.

22. ____________________ and ____________________ are two names for the condition that results when adequate supplies of oxygen are not delivered to and waste products are not removed from all the body’s tissues.

23. The peripheral nervous system is made up of nerves located outside of the ________________ and the ________________ ____________________.

24. The layers of the skin are the ____________________, the ____________________, and the ____________________ ____________________.

25. The ____________________ ____________________ produces chemicals called hormones that help to regulate many body activities and functions.
ANATOMY AND PHYSIOLOGY: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

______  1. Anatomy refers to the body’s structures and functions.

______  2. The directions “left” and “right” always refer to the EMT’s left and right.

______  3. The imaginary midline divides the body into upper and lower halves.

______  4. The term “lateral” refers to a position farther away from the midline.

______  5. Anatomically speaking, the elbow is distal to the hand.

______  6. There is one midclavicular line centered between the two clavicles.

______  7. In the Fowler position, a patient is lying with the upper body elevated.

______  8. The first 12 vertebrae form the sacral spine.

______  9. The ulna is the inner and larger bone of the lower leg.

______ 10. The heart muscle receives its blood supply through the coronary artery system.

______ 11. The cricoid cartilage forms the lower portion of the trachea.

______ 12. The left ventricle pumps blood to the aorta.

______ 13. The cardiac conduction system delivers waste gases to the lungs where they can be expelled from the body.

______ 14. The femoral artery is the main source of blood supply to the upper arm.

______ 15. The primary function of the red blood cells is to carry oxygen to the body cells and carbon dioxide away from the cells.

______ 16. In a blood pressure reading of 120/80, the 120 refers to the diastolic pressure while the 80 refers to the systolic pressure.

______ 17. A pulse can be felt at the point where a vein passes over a bone near the skin surface.

______ 18. The skin plays an important part in regulating the body’s temperature.

______ 19. The epidermis contains the hair follicles and sweat glands.

______ 20. The thyroid gland makes insulin for the metabolism of calcium.
The Circulatory System

Demonstrate your knowledge of the body’s circulatory system by correctly labeling its major arteries and veins on the diagram below.

Major Arteries
1. _______________________
2. _______________________
3. _______________________
4. _______________________
5. _______________________
6. _______________________
7. _______________________
8. _______________________

Major Veins
1. _______________________
2. _______________________
3. _______________________
CHAPTER 7 ANSWER KEY

HANDOUT 7-1: Chapter 7 Quiz

7. C

HANDOUT 7-2: In the Field
1. There is a good possibility of injuries to the patient’s skin, nervous, cardiovascular, respiratory, and musculoskeletal systems.
2. The injury is on the left mandible.
3. The wound is on the lateral surface of the patient’s left arm, superior to the elbow. It could also be noted as an injury to the distal humeral area.
4. The upper thigh wound is on the anterior surface of the left lower extremity superior to the patella.

HANDOUT 7-3: Chapter 7 Review
1. normal anatomical
2. anatomical plane
3. midaxillary
4. distal
5. superior
6. Trendelenburg
7. ligaments, tendons
8. cranium
9. vertebrae
10. thorax
11. hip joint
12. hinge
13. automaticity
14. alveoli
15. exhalation
16. trachea
17. diaphragm
18. atria, ventricles
19. pulmonary veins
20. platelets
21. diastolic
22. Hypoperfusion, shock
23. brain, spinal cord
24. epidermis, dermis, subcutaneous layers
25. endocrine system

HANDOUT 7-4: Anatomy and Physiology:

True or False


HANDOUT 7-5: The Circulatory System

Major Arteries
1. carotid
2. pulmonary
3. aorta
4. brachial
5. radial
6. femoral
7. posterior tibial
8. dorsal pedis

Major Veins
1. pulmonary
2. superior vena cava
3. inferior vena cava
CHAPTER 8 QUIZ

Write the letter of the best answer in the space provided.

1. The term aerobic means
   A. with oxygen.            C. with glucose.
   B. without oxygen.        D. without glucose.

2. Increased metabolism causes a(n)
   A. increased respiratory rate.       C. decreased pulse rate.
   B. decreased respiratory rate.       D. decreased blood pressure.

3. In anaerobic metabolism, there are ____ moles of ATP.
   A. 1  
   B. 3  
   C. 4  
   D. 2

4. Sodium is primarily located
   A. inside the cell.  
   B. outside the cell.  
   C. equally inside the cell and outside the cell.  
   D. only in red blood cells.

5. Ambient air at sea level contains ____ percent of oxygen.
   A. 21  
   B. 100  
   C. 50  
   D. 79

6. The nasopharynx opens into the
   A. esophagus.  
   B. larynx.  
   C. pharynx.  
   D. epiglottis.

7. Boyle law states that an increase in pressure will
   A. increase the volume of gas.  
   B. decrease the volume of gas.  
   C. increase the blood pressure.  
   D. decrease the blood pressure.

8. Sympathetic stimulation of the vessels causes
   A. vasodilation.  
   B. no change within the vessels.  
   C. decreased blood pressure.  
   D. vasoconstriction.

9. On inhalation, the pressure within the chest is ____ compared to the atmospheric pressure.
   A. negative  
   B. positive  
   C. equal  
   D. initially positive then becomes negative

10. The volume of air breathed in with each individual breath is
    A. minute volume.  
    B. tidal volume.  
    C. mass volume.  
    D. minute ventilation.

11. The amount of air moved in and out of the alveoli in 1 minute is
    A. minute ventilation.  
    B. respiratory ventilation.  
    C. alveolar ventilation.  
    D. dead air space.
12. Chemoreceptors monitor all of the following except
   A. carbon dioxide levels.
   C. oxygen levels.
   B. pH levels.
   D. potassium levels.

13. All of the following are lung receptors except
   A. cardiac receptors.
   C. stretch receptors.
   B. irritant receptors.
   D. j-receptors.

14. The volume of blood ejected by the left ventricle with each contraction is
   A. blood volume.
   C. cardiac output.
   B. stroke volume.
   D. blood pressure.

15. How many ion sites does a hemoglobin have?
   A. 1
   B. 4
   C. 3
   D. 8

16. Carbon dioxide is transported in the blood in how many different ways?
   A. 2
   B. 1
   C. 3
   D. 4

17. Pulse pressure is the difference between
   A. systolic and diastolic blood pressure.
   B. peripheral and central pulses.
   C. systolic blood pressure and pulse.
   D. the pressure in the arteries with each contraction of the left ventricle.

18. Water comprises what percentage of plasma?
   A. 91 percent
   B. 70 percent
   C. 50 percent
   D. none of the above

19. A normal cardiac output per minute for an adult at rest is
   A. 10 liters.
   B. 20 liters.
   C. 5 liters.
   D. 7 liters.

20. The primary pacemaker of the heart is the
   A. sinoatrial node.
   B. atrioventricular node.
   C. left atrium.
   D. none of the above.
CHAPTER 8 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Blood pressure is monitored and regulated by both ______________________________ and ______________________________.

2. An increase in cardiac output will ______________________________ blood pressure.

3. Pulse pressure is the difference between the ______________________________ and ______________________________ blood pressure reading.

4. Afterload is the resistance in the ______________________________ that must be overcome by the contraction of the left ventricle to eject the blood.

5. The ______________________________ ______________________________ is defined as the number of times the heart contracts in a minute.

6. ______________________________ ______________________________ is the force inside the vessel or capillary bed generated by the concentration of the heart and blood pressure.

7. The average adult has ______________________________ milliliters of blood for every kilogram of mass.

8. After inhalation the alveoli have taken in ______________________________- ______________________________ air that contains very little carbon dioxide.

9. Once an oxygen molecule binds with hemoglobin, it is referred to as ______________________________.

10. If the pressure in the alveolus exceeds the blood pressure in the capillary bed, blood flow through the capillary ______________________________.
Write the letter of the term in the space provided next to the appropriate description.

1. Energy source required for cells to carry out their functions
2. Without oxygen
3. Primary intracellular ion
4. Fraction of delivered oxygen
5. Structure that contains the vocal cords
6. A passive process requiring no energy
7. Anatomical area of the lungs where no air exchange occurs
8. The volume of blood ejected by the left ventricle with each contraction
9. The resistance to blood flow through a vessel
10. The flow of blood through the smallest blood vessels

A. larynx  
B. anaerobic  
C. ATP  
D. potassium  
E. systemic vascular resistance  
F. FDO₂  
G. microcirculation  
H. exhalation  
I. stroke volume  
J. dead space
Indicate if the following statements are true or false by writing T or F in the space provided.

1. Ambient air contains 79 percent nitrogen.  
2. FiO₂ pertains to breathing patients only.  
3. The epiglottis protects the oropharynx.  
4. Minute ventilation is the same as minute volume.  
5. Hypercarbia is the buildup of carbon dioxide in the blood.  
6. 23 percent of carbon dioxide attaches to the hemoglobin.  
7. 85 percent of blood is plasma.  
8. The majority of the blood is housed in the venous system.  
9. Oncotic pressure is responsible for keeping fluid outside the vessels.  
10. The sinoatrial node is the primary pacemaker of the heart.
CHAPTER 8 ANSWER KEY

HANDOUT 8-1: Chapter 8 Quiz

HANDOUT 8-2: Chapter 8 Review
1. baroreceptor, chemoreceptor
2. increase
3. systolic, diastolic
4. aorta
5. heart rate
6. Hydrostatic pressure
7. 70
8. oxygen-rich
9. oxyhemoglobin
10. stops

HANDOUT 8-3: Pathophysiology: Matching
3. D  7. J
4. F  8. I

HANDOUT 8-4: Pathophysiology: True or False
2. T  6. T  10. T
3. F  7. F
4. T  8. T
CHAPTER 9 QUIZ

Write the letter of the best answer in the space provided.

1. Infancy refers to a child who is
   A. newborn to 1 year of age.
   B. 1 year of age to 2 years of age.
   C. newborn to 1 month of age.
   D. newborn to 6 months of age.

2. At 1 year of age the normal respiratory rate is
   A. 20 to 30 breaths per minute.
   B. 20 to 40 breaths per minute.
   C. 12 to 20 breaths per minute.
   D. 30 to 40 breaths per minute.

3. At 2 months of age the child will do all the following except
   A. track objects with his eyes.
   B. recognize familiar faces.
   C. grasp and shake hand toys.
   D. display primary emotions and facial expressions.

4. The normal heart rate range for a child 3 to 5 years of age is
   A. 100 to 120.
   B. 80 to 120.
   C. 60 to 90.
   D. 130 to 150.

5. The normal systolic blood pressure for a child between 6 and 12 years of age is
   A. 80 to 120.
   B. 120 to 130.
   C. 70 to 100.
   D. 70 to 110.

6. At what age are males mostly done growing?
   A. 15
   B. 16
   C. 18
   D. 21

7. Early adulthood is defined as what age range?
   A. 16 to 21
   B. 17 to 21
   C. 21 to 30
   D. 20 to 40

8. The leading cause of death for patients in early adulthood is
   A. heart problems.
   B. strokes.
   C. sexually transmitted diseases.
   D. accidents.

9. In what developmental phase of life do cardiac problems become a concern?
   A. early adulthood
   B. middle adulthood
   C. late adulthood
   D. none of the above

10. At what age is a person said to be in late adulthood?
    A. 50
    B. 70
    C. 61
    D. 65
Review the following real-life situations. Then answer the questions that follow.

(A) You are treating an 8-year-old male patient who is complaining of trouble breathing. The patient’s mother tells you the patient has a history of asthma and has taken his medicine without relief. While you are assessing your patient, you note he has inspiratory and expiratory wheezing to both lungs. You place the patient on oxygen and continue with the rest of your assessment.

1. How does your patient view EMTs and what are his expectations?

2. What are the normal vital signs of a patient this age?

(B) You are called to the scene of a bicycle accident. Upon your arrival you find a 22-year-old male lying on the ground complaining of head pain. Bystanders tell you the patient was riding his bicycle without a helmet when he tried to jump over a curb. During your assessment you find the patient has a large laceration to the back of his head. You and your partner bandage the wound, fully immobilize the patient to a long backboard, and transport the patient to the hospital without any incident.

1. Why are patients in this age group more likely to be injured or killed in an accident?

2. What are the normal vital signs for patients in this age group?
Handout 9-2 (continued)

(C) While taking care of an 85-year-old male patient who is complaining of chest pain, you notice the patient is reluctant to tell you that he has been noncompliant with his medications for the last month.

1. What changes occur in the body that would cause patients of this age to be noncompliant with their medications?
CHAPTER 9 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. While assessing the skull of an infant, the posterior ______________________________ will fuse at ______________________________ of age.

2. An infant’s head accounts for ______________________________ percent of his total body weight.

3. Until 4 weeks of life, infants primarily breathe through their ______________________________.

4. The term “toddler” refers to a child who is between ______________________________ and ______________________________ months of age.

5. Toddlers and school-age children begin to develop ______________________________ immunity.

6. By preschool age the child’s ______________________________ has reached 90 percent of its adult weight.

7. School-age children are those who are between ______________________________ and ______________________________ years of age.

8. Girls usually begin ______________________________ around age 10.

9. Most adolescents would prefer if their parents were ______________________________ during the patient interview.

10. Depression and suicide are ______________________________ common among adolescents than any other age group.

11. Patients in early adulthood will experience the highest levels of ______________________________ stress.

12. During middle adulthood cardiac output ______________________________.

13. Normally, women in their late 40s and 50s will go through ______________________________.

14. In late adulthood, the ______________________________ ______________________________ within the cardiovascular system thicken.
LIFE SPAN DEVELOPMENT: LISTING

1. List at least four of the activities that a 2-month-old infant should be able to do.

2. List three anatomical parts of the respiratory system that will change during late adulthood.
Handout 9-5

LIFE SPAN DEVELOPMENT: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Rapid respirations in an infant can lead to heat loss. __________
2. Passive immunity is retained through the first 6 months of life. __________
3. Infants have instantaneous and involuntary movements. __________
4. Infants are capable of localizing pain. __________
5. Preschoolers are between 4 and 7 years of age. __________
6. By age 3 children are able to walk alone. __________
7. By age 5 a child knows his address. __________
8. The normal heart rate for an adolescent is between 55 to 95 beats per minute. __________
9. Antisocial behavior peaks around fifth or sixth grade. __________
10. Childbirth is most common during middle adulthood. __________
11. Adults in middle adulthood are more susceptible to diabetes. __________
12. The maximum life span for a human being is 120 years. __________
CHAPTER 9 ANSWER KEY

HANDOUT 9-1: Chapter 9 Quiz

1. A  
2. A  
3. C  
4. B  
5. A  
6. C  
7. D  
8. D  
9. B  
10. C

HANDOUT 9-2: In the Field

A-1. School-age children view EMTs, police officers, and firefighters as people who can help them in a crisis. They may also have unrealistic expectations of what EMTs, police officers, and firefighters can do for them.

A-2. The normal vital signs for patients in this age group are pulse 70 to 110 beats per minute, respiratory rate 20 to 30 breaths per minute, systolic blood pressure 80/120, and normal temperature of 98.6°F.

B-1. Patients between the ages of 19 to 26 are usually at optimal physical levels, causing them to take increased risks. This makes patients in this age group more susceptible to injury and death by accident.

B-2. The normal vital signs for patients in this age group are pulse 70 beats per minute, respiratory rate 16 to 20 breaths per minute, blood pressure 120/80 mmHg, and normal temperature of 98.6°F.

C-1. Due to a shrinking of the brain and loss of neurons, patients in this age group will often become forgetful and at times forget to take their medications.

HANDOUT 9-3: Chapter 9 Review

1. fontanelle, 3 months  
2. 25  
3. nose  
4. 12, 36  
5. active  
6. brain  
7. 6, 12  
8. puberty  
9. not present  
10. more  
11. job  
12. decreases  
13. menopause  
14. blood vessels

HANDOUT 9-4: Life Span Development: Listing

1. Any four of these: track objects with their eyes, focus on objects 8 to 12 inches away, recognize familiar faces, display primary emotions and facial expressions, hear and recognize some familiar sounds and voices, move in response to stimuli.

2. Any three of the following: mouth, nose, lungs, chest wall, bone structure, diaphragm.

HANDOUT 9-5: Life Span Development: True or False

1. T  
2. T  
3. T  
4. F  
5. F  
6. T  
7. T  
8. F  
9. F  
10. F  
11. T  
12. T
CHAPTER 10 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. The first step of emergency care in the patient with inadequate breathing is
   A. checking for the patient’s pulse.
   B. manually stabilizing the cervical spine.
   C. opening and maintaining the patient’s airway.
   D. looking for and controlling severe bleeding.

_______ 2. Inadequate breathing or inadequate blood circulation can cause
   A. kyphosis.          C. lordosis.
   B. hyperglycemia.      D. hypoxia.

_______ 3. Signs of inadequate breathing include all of the following except
   A. retractions above the clavicles, between ribs, and below the rib cage.
   B. cyanosis of the lips, ear lobes, or nail beds.
   C. bradypnea.
   D. pink skin and respiratory rate between 10 and 24 per minute.

_______ 4. Stimulation of the back of a patient’s throat when suctioning may cause
   A. convulsions.          C. unequal pupils.
   B. a slowed heart rate.  D. cyanosis.

_______ 5. A 24-year-old female patient has fallen from the roof of her house and is unconscious.
   The best method of opening her airway is the _____ maneuver.
   A. head-tilt, chin-lift
   B. jaw-thrust
   C. head-tilt, neck-lift
   D. tongue-jaw lift

_______ 6. Methods of artificial ventilation, in order of preference, are
   1. one-person bag-valve mask.
   2. mouth-to-mask.
   3. flow-restricted, oxygen-powered ventilation device.
   4. two-person bag-valve mask.
   A. 2, 4, 3, and 1
   B. 2, 4, 1, and 3
   C. 1, 4, 3, and 2
   D. 4, 3, 1, and 2

_______ 7. Signs of inadequate artificial ventilation of an adult patient include
   A. a heart rate that returns to normal.
   B. failure of the patient’s skin color to improve.
   C. the patient’s chest rising and falling with each ventilation.
   D. a ventilation rate of 10–12 per minute.

_______ 8. When high-flow, high-concentration oxygen is attached to a bag-valve mask, the concentra-
   tion of oxygen delivered to the patient is approximately
   A. 16 percent.          C. 100 percent.
   B. 24 percent.          D. 90 percent.

(continued)
9. All of the following are important features of bag-valve-mask systems except a
   A. non-jam valve system.
   B. 15/22 mm respiratory fitting.
   C. nonrebreathing valve.
   D. pop-off valve.

10. The most difficult part of delivering BVM artificial ventilations for a single rescuer is
    A. obtaining an adequate mask seal.
    B. squeezing the bag completely.
    C. maintaining an open airway.
    D. preventing the patient from vomiting.

11. Oropharyngeal airways can be used on unconscious patients, except those who
    A. are in cardiac arrest.
    B. have a gag reflex.
    C. are younger than 8 years.
    D. have a contagious respiratory disease.

12. Because the oropharyngeal airway is likely to stimulate the patient’s gag reflex, the rescuer should
    A. use only nasal airways.
    B. use the next smaller size.
    C. be prepared to suction.
    D. not use one.

13. The nasopharyngeal airway is often utilized because it
    A. comes in more sizes than the oropharyngeal airway.
    B. often does not stimulate the patient’s gag reflex.
    C. can be used even if clear (CSF) fluid is seen in the nose or ears.
    D. is made of rigid, clear plastic, which is less likely to cause bleeding.

14. Which of the following is true regarding suctioning a patient’s airway?
    A. Never suction the airway for longer than 15 seconds.
    B. Suction only as you insert the catheter into the mouth.
    C. BSI precautions are not important if there is no visible blood.
    D. You may hyperventilate a patient before and after suctioning.

15. One advantage of a “tonsil tip” catheter over a “French” catheter is that it
    A. is flexible and can be inserted deeper into the pharynx.
    B. is more effective for particulate matter.
    C. can suction the nose.
    D. can be inserted well beyond the base of the tongue.

16. Before suctioning, a patient who is artificially ventilated should be
    A. placed in a position of comfort.
    B. hypoventilated.
    C. hyperventilated.
    D. fully immobilized.

17. A nasal cannula should be used to deliver oxygen to a patient who
    A. has a chronic lung disease.
    B. requires a high flow and high concentration of oxygen.
    C. will not tolerate a nonrebreather mask.
    D. uses a cannula with a home oxygen system.
18. Administer oxygen to any patient who needs supplemental oxygen unless
A. the patient is an infant.
B. the patient has COPD.
C. medical direction instructs otherwise.
D. the patient has TB.

19. Oxygen cylinder sizes vary, but all are considered “full” when pressure is equal to ______ psi.
A. 1,000
B. 1,500
C. 2,000
D. 2,500

20. An insufficiency in the supply of oxygen to the body’s tissues is called
A. hypoxia.
B. hyperventilation.
C. respiratory compromise.
D. bronchoconstriction.

21. The use of which of the following methods is contraindicated with children?
A. mouth-to-mask
B. flow-restricted, oxygen-powered ventilation device
C. two-person bag-valve mask
D. one-person bag-valve mask

22. To ease insertion, nasopharyngeal airways must be lubricated with
A. lubricant with petroleum jelly.
B. any petroleum-based lubricant, such as WD-40.
C. any silicone-based lubricant.
D. any water-soluble lubricant.

23. When a patient who has a full set of dentures needs ventilations
A. leave the dentures in place if they are secure and then ventilate.
B. remove the dentures in all circumstances before ventilating.
C. an endotracheal intubation must be performed.
D. an ATV should be used.

24. A suction device, whether portable or mounted, must generate a vacuum of _____ mmHg.
A. 100
B. 200
C. 300
D. 400

25. When a nasal cannula is used, the flow rate should be no more than ____ liters per minute.
A. 1 to 6
B. 6 to 10
C. 10 to 12
D. 12 to 14
Review the following real-life situation. Then answer the questions that follow.

You and your EMT partner, Cindy, are assigned to a suburban station on a cold February morning. At 0613, you are dispatched to an apartment building for a breathing problem. You arrive at the building about 7 minutes later and are met by the patient’s wife, who is quite anxious. You put on your personal protective equipment, get the ambulance cot and your equipment, and follow the woman to the sixth floor of the building. On the way up in the elevator, the patient’s wife tells you her husband, Mike, is having a very hard time breathing, and he looks a little blue.

You arrive at the apartment and find your patient, a 23-year-old male, seated in a chair, leaning forward on his legs. His skin is pale, his lips are cyanotic, and you hear wheezing as he breathes. You introduce yourself and Cindy to the patient as you begin assessing his condition. It is obvious he is quite anxious, so you attempt to calm him as you explain what you are doing. Mike cannot speak in full sentences but tells you that he has had asthma for about 15 years. He usually uses an inhaler but ran out of the medicine about 5 days ago. His breathing got worse 2 days ago, when the elevator was not working and he had to climb up the five flights to his apartment. You obtain a pulse ox reading and place the patient on oxygen, using a nonrebreather mask at 15 liters per minute. Cindy begins taking Mike’s vital signs. His blood pressure is 96/74; his pulse is 110; and his respirations are 28 per minute. You decide that Mike needs immediate transport to the hospital, about 25 minutes away. As you get Mike placed on your cot, sitting up for comfort, you use your portable radio to request an ALS rendezvous.

1. As you begin patient contact, describe your initial impression, and explain why you feel this way.

2. Is this patient considered a high priority for immediate transport? Explain your rationale.

3. What signs and symptoms indicated to you that the patient was having severe respiratory difficulty?

4. Why was an ALS rendezvous requested for this patient?
CHAPTER 10 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The most basic components of emergency medical care are to establish and maintain a(n) ______________________________, ensure effective ventilation, and provide oxygen to the patient.

2. The EMT’s chief responsibilities are finding and correcting immediately all ______________________________ - ______________________________ problems.

3. Respiratory ______________________________ occurs when respiratory rate and/or tidal volume is insufficient.

4. When breathing stops completely, the patient is in ______________________________ ______________________________

5. Minimal or uneven chest movements, diminished breath sounds, and noisy breathing are signs of ______________________________ ______________________________.

6. A blue or gray color to the patient’s skin or nail beds is called ______________________________, which is a sign of breathing difficulty.

7. The procedure commonly used for opening the airway of a patient when no trauma is suspected is the ______________________________ - ______________________________, ______________________________ - ______________________________ maneuver.

8. The two passageways found at the lower end of the pharynx are the ______________________________ and ______________________________.

9. The trachea is protected by a small flap of tissue called the ______________________________.

10. When one rescuer is using a bag-valve-mask device, the most difficult part of delivering artificial ventilations is maintaining an ______________________________ ______________________________.

11. When delivering artificial ventilations to a nonbreathing patient, give one ventilation every ______________________________ seconds to an adult and one every ______________________________ seconds to a child.

12. ______________________________ is the process by which the blood and cells become saturated with oxygen.

13. The most common cause of an obstructed airway in the unresponsive patient is the ______________________________.

(continued)
14. Use an oropharyngeal airway for all unresponsive patients who do not exhibit a(n) ________________________________ ______________________________.

15. A properly sized oropharyngeal airway should extend the distance from the level of the patient’s ________________________________ ______________________________ to the angle of the patient’s ________________________________.

16. Lubricate the outside of a nasopharyngeal airway with a sterile ______________________________-soluble lubricant.

17. ________________________________ is an excessive rapid breathing rate and may indicate inadequate oxygenation and breathing.

18. It is possible to add moisture to oxygen by adding a(n) ________________________________ to the regulator.

19. A nonrebreather mask is the EMT’s best way to deliver high flows and high concentrations of oxygen to a breathing patient because it can provide concentrations of oxygen ranging from ________________________________ to ________________________________ percent.

20. A surgical opening into the neck and trachea, also known as a tracheostomy, is a(n) ________________________________.
AIRWAY: LISTING

1. List four factors of breathing that must be assessed when determining whether a patient’s breathing is adequate.

2. List and describe four sounds that may indicate airway obstruction.

3. List eight signs of inadequate breathing.

4. List, in order of preference, four methods of providing positive pressure ventilations to patients.
Indicate if the following statements are true or false by writing T or F in the space provided.

1. The trachea is the passageway through which food travels into the stomach.
2. The nose, mouth, pharynx, and trachea are all parts of the respiratory system.
3. During mouth-to-mask ventilations of infant and child patients, each breath should be delivered over 2 to 2.5 seconds.
4. A pinkish skin coloration is one sign of adequate breathing.
5. Excessive use of neck and intercostal muscles is a sign of inadequate breathing in an adult.
6. Cyanosis is the term used to describe a bluish skin color.
7. A nonrebreather mask is the preferred method for delivering supplemental oxygen to patients in the prehospital setting.
8. Head, neck, or spinal injury should be suspected in any unconscious trauma patient.
9. The head-tilt, chin-lift maneuver should be used to open the airway of a patient with a suspected neck injury.
10. When using the head-tilt, chin-lift maneuver to open a patient’s airway, place your fingertips on the bony part of the chin, not the soft tissues under the lower jaw.
11. When opening an unconscious patient’s airway, you may need to insert your thumb into the patient’s mouth.
12. When using the jaw-thrust maneuver to open a patient’s airway, stabilize the patient’s head with your knees.
13. Use of a pocket mask with supplemental oxygen to ventilate a patient can deliver a higher tidal volume of air than use of a bag-valve-mask device.
15. BVMs should have a standard 15/22 mm connection to properly fit face masks and endotracheal tubes.
16. If a nasopharyngeal airway is too long, it can enter the esophagus and cause massive gastric distension.
17. With a BVM device, a mask seal can more easily be maintained when ventilations are performed by two rescuers.
18. Nonbreathing adult patients should be ventilated at a rate of 10–12 times per minute.
19. If the chest does not rise and fall during BVM ventilation, you should reposition the head to ensure an open airway.

20. Using a nasal cannula with supplemental oxygen will deliver nearly 100 percent oxygen concentration to your patient.

21. A pediatric-sized BVM mask can be used to establish a seal around a stoma.

22. Flow-restricted, oxygen-powered ventilation devices may have an audible alarm when the relief valve is activated.

23. If a patient rejects an oropharyngeal airway at your first attempt, reopen the airway and insert it more aggressively.

24. To ease insertion of a nasopharyngeal airway, it should be lubricated with petroleum jelly.

25. The EMT should never suction a patient for more than 5 seconds at a time.
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The active process of breathing air into the lungs</td>
<td>ATV</td>
</tr>
<tr>
<td>2</td>
<td>A small flap of tissue that closes over the trachea during swallowing</td>
<td>epiglottis</td>
</tr>
<tr>
<td>3</td>
<td>The portion of the pharynx that extends from the nostrils to the soft palate</td>
<td>nasopharynx</td>
</tr>
<tr>
<td>4</td>
<td>On both sides</td>
<td>bilaterally</td>
</tr>
<tr>
<td>5</td>
<td>Inflation of the stomach</td>
<td>diaphragm</td>
</tr>
<tr>
<td>6</td>
<td>A bluish color of the skin and mucous membranes that indicates poor oxygenation of tissue</td>
<td>cyanosis</td>
</tr>
<tr>
<td>7</td>
<td>Innermost covering of the lungs</td>
<td>exhalation</td>
</tr>
<tr>
<td>8</td>
<td>A reduction of oxygen delivery to the tissues</td>
<td>gastric distension</td>
</tr>
<tr>
<td>9</td>
<td>A breathing rate that is faster than the normal rate</td>
<td>hypoxia</td>
</tr>
<tr>
<td>10</td>
<td>A breathing rate that is slower than the normal rate</td>
<td>inhalation</td>
</tr>
<tr>
<td>11</td>
<td>A positive-pressure ventilation device that delivers ventilations automatically</td>
<td>intercostal</td>
</tr>
<tr>
<td>12</td>
<td>A harsh, high-pitched sound heard on inspiration; indicates swelling of the larynx</td>
<td>tachypnea</td>
</tr>
<tr>
<td>13</td>
<td>The passive process of breathing air out of the lungs</td>
<td>stridor</td>
</tr>
<tr>
<td>14</td>
<td>The major muscle of respiration, which separates the chest cavity from the abdominal cavity</td>
<td>visceral pleura</td>
</tr>
<tr>
<td>15</td>
<td>Describing the muscles between the ribs</td>
<td></td>
</tr>
</tbody>
</table>

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CHAPTER 10 ANSWER KEY

HANDOUT 10-1: Chapter 10 Quiz

7. B

HANDOUT 10-2: In the Field

1. Your general impression would be of a 23-year-old male, seated in a tripod position, pale skin, and audibly wheezing. He is having a difficult time breathing and is a priority patient.
2. Any patient with breathing difficulty is considered a high priority.
3. The patient was seated in a tripod position, leaning forward. His skin color was pale, he is cyanotic, and you can hear wheezing. These are all signs of inadequate breathing.
4. An ALS rendezvous was requested due to the real possibility that his condition could worsen, requiring a higher level of treatment. The paramedics could establish an IV line for medications, if needed, intubate if necessary, and administer medication in the form of a breathing treatment while en route.

HANDOUT 10-3: Chapter 10 Review

1. airway
2. life-threatening
3. failure
4. respiratory arrest
5. inadequate breathing
6. cyanosis
7. head-tilt, chin-lift
8. trachea, esophagus
9. epiglottis
10. adequate seal
11. 4 to 5, 3
12. Oxygenation
13. tongue
14. gag reflex
15. front teeth, jaw
16. water
17. Tachypnea
18. humidifier
19. 80, 100
20. stoma

HANDOUT 10-4: Airway: Listing

1. Rate, rhythm, quality, and depth of breathing.
2. Snoring—sonorous sounds; crowing—air rushing through a spasming larynx makes a crow-like sound; gurgling—a sound like gargling; stridor—harsh, high-pitched sound heard during inspirations.
3. Any eight of the following: chest expansion is absent, minimal, or unequal; use of accessory muscles; no air can be felt or heard at the nose or mouth, or the amount of air exchanged is evaluated to be below normal; respiratory rate is too fast or too slow; rhythm of breathing is irregular; patient’s skin is cool and clammy; patient exhibits nasal flaring; patient is unable to speak or cannot speak full sentences; cyanosis visible in skin, lips, tongue, ear lobes, or nail beds; breathing is very shallow, very deep, or appears labored; breath sounds are diminished or absent; noises such as wheezing, crowing, stridor, snoring, gurgling, or gasping are heard; retractions above the clavicles and between and below the ribs, especially in children.
4. Mouth-to-mask; two-person bag-valve mask; flow-restricted, oxygen-powered ventilation device; one-person bag-valve mask.

HANDOUT 10-5: Airway: True or False

7. T

HANDOUT 10-6: Airway: Matching

Write the letter of the best answer in the space provided.

1. Which of the following is not a vital sign?
   - A. pulse
   - B. mental status
   - C. respiration
   - D. blood pressure

2. An EMT’s first set of patient measurements is called the ____ vital signs.
   - A. initial
   - B. baseline
   - C. palpated
   - D. preliminary

3. The vital sign that is more reliable in infants and children than in adults is called
   - A. skin color.
   - B. capillary refill.
   - C. pupillary reaction.
   - D. blood pressure.

4. The term used to describe a weak, rapid pulse is
   - A. mottled.
   - B. reedy.
   - C. thready.
   - D. bounding.

5. In cases of shock or early stages of blood loss, an EMT would expect the pulse to be
   - A. rapid, regular, and full.
   - B. rapid, regular, and thready.
   - C. slow.
   - D. absent.

6. The first pulse taken by an EMT on patients 1 year and older is the ____ pulse.
   - A. carotid
   - B. radial
   - C. femoral
   - D. dorsalis pedis

7. A heart rate greater than 100 beats per minute in an adult patient is called
   - A. tachycardia.
   - B. bradycardia.
   - C. pulse pressure.
   - D. rapid pulse point.

8. The act of breathing out is called
   - A. inhalation.
   - B. exhalation.
   - C. respiration.
   - D. inspiration.

9. All of the following are signs of labored breathing except
   - A. nasal flaring.
   - B. retractions.
   - C. grunting.
   - D. jaundice.

10. The skin color that indicates anemia or emotional distress is
    - A. pale.
    - B. blue-gray.
    - C. flushed.
    - D. jaundiced.

11. The skin color that indicates inadequate breathing or heart attack is
    - A. flushed.
    - B. blue-gray.
    - C. jaundiced.
    - D. yellow.

12. The skin condition that may indicate a spinal injury is
    - A. hot.
    - B. cool and dry.
    - C. damp.
    - D. abnormally dry.

(continued)
Handout 11-1 (continued)

13. When checking pupils, an EMT should look for all of the following except
   A. size.
   B. equality.
   C. reactivity.
   D. color.

14. In cases of stroke or head injury, the pupils are likely to be
   A. dilated.
   B. constricted.
   C. unequal.
   D. equal.

15. A normal systolic blood pressure for a 40-year-old female would be
   A. 90.
   B. 100.
   C. 130.
   D. 150.

16. When deflating the cuff of a sphygmomanometer, the systolic blood pressure is the
   A. first beats.
   B. last sound.
   C. dullest sound.
   D. loudest beats.

17. What is the difference between the systolic and diastolic blood pressure readings called?
   A. tachycardia
   B. bradycardia
   C. pressure point
   D. pulse pressure

18. For unstable patients, an EMT should take vital signs every _____ minutes.
   A. 20
   B. 15
   C. 10
   D. 5

19. In distinguishing signs from symptoms, an example of a symptom would be
   A. chest pain.
   B. slow pulse.
   C. retractions.
   D. cyanosis.

20. The “L” in SAMPLE stands for
   A. length of illness.
   B. last doctor’s visit.
   C. length of chief complaint.
   D. last oral intake.
Review the following real-life situation. Then answer the questions that follow.

You’re looking out the window of the fire station watching the snow fall. The blare of the speaker breaks the peace: “Engine 3 respond to an elderly woman complaining of shortness of breath, 18 Warren Street. Time out 0600.”

“Just around the corner,” you say to your partner. As expected, you arrive on the scene in just a few minutes. You survey a quiet neighborhood, known for housing many retirees. Nothing in the immediate environment of the house indicates possible danger. The crew dons gloves as it walks up to the door. After you knock at the door, a woman’s voice invites you to enter.

Upon entering, you find an elderly woman sitting upright on an overstuffed chair in the living room. She is awake and responsive to your questions. Her chief complaint is that she “can’t breathe.” Your general impression is that she is in some degree of breathing distress. The woman has an open airway, but her breathing is labored and noisy. One crew member starts to administer high-flow, high-concentration oxygen by nonrebreather mask.

While oxygen is administered, you continue with patient assessment. The woman’s pulse is rapid, faster than 100 beats per minute. You advise the lieutenant that the patient is “high priority.” The lieutenant, in turn, advises the incoming ambulance of the patient’s condition and priority. The ambulance reports that weather conditions will delay their arrival by several minutes.

One crew member proceeds to obtain vital signs as you begin the patient interview. You ask the patient to describe her symptoms. You ask, “Have you had any coughing or bloody sputum?” She responds to your questions with choppy answers, a sign of difficulty breathing. You ask if the patient has any allergies. You also find out if she is taking any medications. Finally, you inquire whether she has had similar episodes like this one.

The crew member taking the vital signs interrupts briefly to relate his findings. He reports that the patient’s heart rate is 110 beats per minute, strong and slightly irregular. He also indicates a blood pressure of 160/110 and a respiratory rate of 28, with labored breathing and a pulse ox of 82 percent on high-flow, high-concentration O₂.

The woman offers, “Had a nagging cough for several days. Last night I had so much trouble breathing that I got up to sit in the easy chair. I’ve been sleeping on and off all night.” She denies any allergies but did suffer a heart attack several years ago and a subsequent “heart failure.” She is on Digoxin, Lasix, and potassium supplements.

You ask the patient when she last had anything to eat or drink. Her answer completes your history. As you write down the information, the ambulance pulls up.

1. What are the patient’s baseline vital signs?

2. How long should the crew member spend in taking the patient’s pulse? Why?
Handout 11-2 (continued)

3. Which parts of the passage describe the patient’s symptoms?

4. What priority would you assign this patient?
Write the word or words that best complete each sentence in the space provided.

1. The outward signs of what is going on inside a patient’s body are the ______________________________.

2. The first set of vital signs an EMT obtains is called ______________________________ vital signs.

3. The rhythmic beat generated by the contraction of the left ventricle is called the ______________________________.

4. In patients younger than 1 year, an EMT should first attempt to assess a(n) ______________________________ pulse.

5. In an adolescent, a normal resting pulse rate would be ______________________________ to ______________________________ beats per minute.

6. If the pulse rate, rhythm, or character is not normal, an EMT should continue taking the count for ______________________________ seconds.

7. For determination of vital signs, an EMT is concerned with two respiratory factors: ______________________________ and ______________________________.

8. An adult patient is breathing outside of normal rates when respirations are above ______________________________ breaths per minute or below ______________________________ breaths per minute.

9. Snoring, wheezing, gurgling, and crowing are examples of ______________________________ breathing.

10. The harsh, high-pitched sound that indicates labored breathing is ______________________________.

11. In addition to checking nail beds, oral mucosa, and conjunctiva, assess the skin color of infants, children, and dark-skinned patients on the ______________________________ and ______________________________.

12. Pupils that are ______________________________ are too large.

13. The proper term for a blood pressure cuff is ______________________________.

14. The force of blood against the walls of the blood vessels is known as the ______________________________ ______________________________.

15. The bladder of a blood pressure cuff should be centered over the ______________________________ artery.
16. Taking blood pressure by use of the fingertips is known as ______________________________.

17. A patient’s ______________________________ are conditions that an EMT cannot observe but can only learn about when the patient describes them.

18. One way to get an accurate patient ______________________________ is to use the acronym SAMPLE.

19. The “A” in SAMPLE stands for ______________________________.

20. When gathering information from your patient, try as much as possible to ask ______________________________ - ______________________________ questions.
Write the letter of the term in the space provided next to the appropriate description.

______ 1. Pressure created when the heart contracts
______ 2. Pulse felt in the major artery in the neck
______ 3. Harsh, high-pitched sound of labored breathing
______ 4. Force of blood against the walls of blood vessels
______ 5. Objective physical evidence of a patient’s condition
______ 6. Pulse felt in the major artery of the upper arm
______ 7. To get smaller, as in the pupils of the eyes
______ 8. Feeling, as for the return of a pulse when taking blood pressure
______ 9. Act of breathing in and out
______ 10. Patient conditions that cannot be observed
______ 11. Measurements, or outward indications of what is going on inside the body
______ 12. Black center of the eye
______ 13. Listening, as in use of a stethoscope for characteristic sounds
______ 14. To get larger, as in the pupils of the eyes
______ 15. Pulse felt at the wrist

A. auscultation  B. blood pressure  C. brachial  D. carotid  E. constrict  F. dilate  G. palpation  H. pupil  I. radial  J. respiration  K. signs  L. stridor  M. symptoms  N. systolic  O. vital signs
CHAPTER 11 ANSWER KEY

HANDOUT 11-1: Chapter 11 Quiz


HANDOUT 11-2: In the Field

1. First complete set of vital signs: heart rate 110 beats per minute, blood pressure 160/110, respiration rate of 28 and labored.
2. Because the pulse is irregular, the crew member should take it for 60 seconds.
3. Symptoms include conditions described by the patient, such as her nagging cough for several days, the lack of sleep the prior night, the fact that she needs to sit upright.
4. The patient is high priority because she has breathing difficulty. She also has a sustained rapid pulse. Tell students that the decision for high-priority transport is made early by EMTs, especially in the absence of advanced life support.

HANDOUT 11-3: Chapter 11 Review

1. vital signs  
2. baseline  
3. pulse  
4. brachial  
5. 60, 105  
6. 60  
7. rate, quality  
8. 20, 12  
9. noisy  
10. stridor  
11. palms, soles  
12. dilated  
13. sphygmomanometer  
14. blood pressure  
15. brachial  
16. palpation  
17. symptoms  
18. history  
19. allergies  
20. open-ended

HANDOUT 11-4: Baseline Vital Signs, Monitoring Devices, and History Taking: Matching

Write the letter of the best answer in the space provided.

1. Which of the following is not a part of the scene size-up?
   A. determining the mechanism of injury
   B. determining the number of patients
   C. establishing an airway
   D. taking body substance isolation precautions

2. Body substance isolation (BSI) precautions may include
   A. gloves, eyewear, and mask.
   B. turnout gear.
   C. a PFD.
   D. a rescue helmet.

3. The scene size-up should take place
   A. only at the beginning of a call.
   B. at the beginning and throughout the entire call.
   C. at the beginning and at the end of the call.
   D. after life-threatening conditions have been corrected.

4. EMTs should not enter a known crime scene
   A. at any time.
   B. unless a patient has a life-threatening condition.
   C. until it has been secured by police.
   D. without approval of medical direction.

5. The EMT should suspect the presence of toxic substances
   A. in a confined space.
   B. at a home where multiple family members have the same complaint.
   C. at a fire.
   D. in all of the situations above.

6. When responding to a known crime scene, you should initially
   A. stabilize the patient.
   B. turn on all lights and sirens.
   C. contact medical control.
   D. turn off the siren and emergency lights several blocks before arrival.

7. In assessing potential injuries from a fall during scene size-up, determine
   A. if the patient requires any emergency care.
   B. the surface that the patient landed on.
   C. the patient’s pertinent past history.
   D. signs and symptoms.

8. When controlling the scene, the EMT should
   A. eliminate light sources.
   B. leave all furniture in place.
   C. be compassionate in providing care.
   D. always treat the patient where found.
9. During scene size-up at a multiple-vehicle crash, it is important to determine the number of patients because
   A. on-scene resources may be inadequate for them all.
   B. run reports are required for each patient.
   C. ALS must be called if there are more than two patients.
   D. the media must be given accurate information.

10. Which of the following may be useful in determining the nature of illness/mechanism of injury?
   A. the patient
   B. bystanders
   C. family members
   D. all of the above
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

Your unit is dispatched to a motor vehicle collision on a well-traveled road. You are the EMT in charge. The dispatch time is 0130 hours. It is raining with a wind out of the north at 5 miles per hour, and a temperature of 32°F (0°C). The caller has stated that there is only a single car involved.

1. What scene size-up considerations should you have in mind as you approach the scene?

You are the first emergency unit to reach the scene. You observe that a mid-size passenger car has struck a power pole head on. You see a victim in the car moving around. Power lines are down, and there is a strong smell of gasoline in the air.

2. What actions should you take, based on scene size-up?

3. List any additional resources that you would call for this scene.
CHAPTER 12 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Determining scene safety means looking for possible threats to the safety of ______________________________, ______________________________, and ______________________________.

2. Before approaching patients at a crash scene, EMTs must assess the ______________________________, ______________________________.

3. The forces that may have caused injury to a patient are called the ______________________________, ______________________________, ______________________________.

4. A key element of ______________________________, ______________________________, ______________________________ precautions is always to wear the appropriate personal protective gear on-scene.

5. The ______________________________, ______________________________, ______________________________ is an anticipation that certain types of mechanisms will produce specific types of injuries.

6. Suspect hazardous materials or an oxygen-depleted environment in calls involving ______________________________, ______________________________, or ______________________________.

7. With a medical patient, finding out what is or may be wrong with the patient is called identifying the ______________________________, ______________________________.

8. Important sources of information for determining what is wrong with a medical patient include the patient, ______________________________, ______________________________, and ______________________________ at the scene.

9. At crime scenes in which guns might be involved, EMTs should position the emergency vehicle outside the ______________________________ ______________________________.

10. If your scene size-up indicates that you do not have sufficient resources to handle the call, you should request ______________________________ ______________________________.
1. List the three basic goals of the scene size-up.

2. List three categories of people with which the EMT must be concerned in ensuring scene safety.

3. List four significant external signs of vehicle impact to look for and document during the scene size-up.

4. List three potential sources of information about the nature of a patient’s illness.

5. List seven ways you can reduce a patient’s anxiety at the emergency scene.
CHAPTER 12 ANSWER KEY

HANDOUT 12-1: Chapter 12 Quiz
3. B  6. D

HANDOUT 12-2: In the Field
1. Because it is late, dark, and stormy, you should be especially alert for the possibility of victims or bystanders in the roadway as you approach. Watch for unusual traffic patterns. See if you can spot arcing from downed power lines or a glow that might indicate fire. Consider the possibility of a crime scene.

2. You should look for clues to escaped hazardous materials, keep looking for collision victims or bystanders, and look for smoke. Because the power lines are down and there is a smell of spilled fuel, you would park your unit away from the wreck, upwind if possible. Be sure the unit is at least one full span of wires from power poles to which broken wires are attached. Mark the danger zone not with flares, but with reflective triangles. Because the weather is wet and the temperature is so cold, you should be alert to the possibility of icing and consider expanding the danger zone. Do not enter the scene until it is safe to do so.

3. Request fire department and power company backup. Be sure to call for a law enforcement unit to handle traffic control and consider having the road salted or sanded.

HANDOUT 12-3: Chapter 12 Review
1. crew, patient, bystanders
2. total scene
3. mechanism of injury
4. body substance isolation
5. index of suspicion
6. spills, leaks, confined spaces
7. nature of illness
8. relatives, bystanders, evidence
9. killing zone
10. additional resources

HANDOUT 12-4: Scene Size-up: Listing
1. Identify hazards and ensure scene safety; identify the nature of the problem—mechanism of injury and/or nature of illness; determine whether factors such as the number of patients or unusual scene characteristics require additional resources.
2. Self and other team members, patients, bystanders.
3. Deformity to the vehicle greater than 20 inches, intrusion into the passenger compartment, displacement of a vehicle axle, rollover.
4. The patient, family members or bystanders, physical evidence at the scene.
5. Bring order to the environment, introduce yourself, gain patient consent, position yourself properly, use communication skills, be courteous, use touch when appropriate.
CHAPTER 13 Quiz

Write the letter of the best answer in the space provided.

_____ 1. Establishing the number of patients is an important part of the
   A. primary assessment.  C. detailed assessment.
   B. scene size-up.          D. general impression.

_____ 2. The main purpose of the primary assessment is to
   A. obtain the chief complaint.
   B. establish scene safety.
   C. discover and treat any life-threatening conditions.
   D. obtain a full set of vital signs and a sample history.

_____ 3. The patient’s age, sex, and chief complaint are part of the
   A. general impression.  C. dispatch information.
   B. patient profile.        D. scene size-up.

_____ 4. On the AVPU scale, a patient who responds or attempts to respond only when spoken to
   is rated
   A. A.  C. V.
   B. P.          D. U.

_____ 5. The sound that indicates the tongue and epiglottis are partially blocking the airway is
   A. stridor.  C. gurgling.
   B. crowing.          D. snoring.

_____ 6. If assessment reveals pale, cool, clammy skin in conjunction with a significant mechanism
   of injury, an altered mental status, or severe bleeding, assume the patient is
   A. having a heart attack.  C. not a priority.
   B. having a stroke.        D. in shock.

_____ 7. A trauma patient with a significant mechanism of injury should receive a
   A. focused trauma assessment.  C. focused medical assessment.
   B. detailed physical exam.     D. rapid trauma assessment.

_____ 8. Which of the following is not normally considered a significant mechanism of injury in
   adult patients?
   A. fall of 10 feet  C. blast injury from an explosion
   B. seat belt injury     D. rollover of a vehicle

_____ 9. In the rapid trauma assessment, the “B” of DCAP-BTLS stands for
   A. breaks.  C. burns.
   B. bruises.          D. bleeding.

_____ 10. During the rapid trauma assessment, check all extremities for
    A. PMS.  C. IRT.
    B. QRS.       D. JVD.

(continued)
11. The rapid trauma assessment should take about _____ minute(s).
   A. ½
   B. 2–2½
   C. 5
   D. 5–7

12. The respiratory rate, the systolic blood pressure, and the GCS are the major components of the
   A. revised trauma score.
   B. patient narrative.
   C. radio report.
   D. dispatch information.

13. When assessing a responsive medical patient’s chief complaint, the “T” of OPQRST stands for
   A. tenderness.
   B. tension.
   C. termination.
   D. time.

14. An assessment finding jugular vein distension may indicate
   A. hypotension.
   B. hypoglycemia.
   C. heart failure.
   D. kidney failure.

15. A detailed secondary exam should be performed
   A. before vital signs.
   B. before the SAMPLE history.
   C. only after all life-threatening injuries and conditions have been managed.
   D. only after approval from medical direction has been received.

16. All of the following are forms of blunt trauma except
   A. motor vehicle crashes.
   B. shootings.
   C. falls.
   D. fights.

17. Which of the following is a form of peripheral painful stimulus?
   A. supraorbital pressure
   B. sternal rub
   C. arm pit pinch
   D. nail bed pressure

18. When assessing the patient’s skin, you note the color of the skin to be yellow. This is known as
   A. cyanosis.
   B. flushed.
   C. urticaria.
   D. jaundiced.

19. Rales are described as
   A. high-pitched whistling sounds heard on inhalation.
   B. crackling sounds heard on inspiration.
   C. coarse sounds heard on inspiration and exhalation.
   D. crackling sounds heard on exhalation.

20. For noncritical patients vital signs should be reassessed every
   A. 5 minutes.
   B. 10 minutes.
   C. 15 minutes.
   D. 20 minutes.
IN THE FIELD

Review the following real-life situations. Then answer the questions that follow.

The patient appears sick from the moment you and your partner arrive at his apartment. He just has that “sick look.” He is awake and responsive, but he is breathing kind of hard, and his skin is pale and pasty looking. After letting you in, he goes back and sits in his living room chair. You and your partner introduce yourselves and tell him you are EMTs with the fire department as you start him on oxygen. He tells you how his chest pain had started about an hour earlier. He was working on his income taxes when the pain started, and since he lived alone he didn’t know who else to call. He describes the pain as kind of crushing, kind of like when he had his heart attack. Those comments prompt you to call for a paramedic unit.

The patient tells you that the pain is pretty bad, around an 8 on a scale of 0 to 10, with 0 as no pain and 10 as the worst pain imaginable. The oxygen appears to make him feel better, and he confirms that as well. It had been 5 minutes since you and your partner had arrived, and nearly 20 minutes since the pain started. While waiting for the paramedics, you continue with your SAMPLE history while your partner starts recording a baseline set of vital signs.

1. Based on the patient’s presentation, what other questions could you have asked about the present chief complaint?

2. What would you proceed to do next if the ambulance was not yet on-scene?

3. If this patient had been unconscious when you arrived, where might you have possibly found more information?
You and your partner are dispatched at 01:30 and arrive on the scene of a motor vehicle rollover a few minutes later. The firefighters have put up scene lights. To the right of the road, you spot a set of tire tracks. An automobile rests on all four wheels in a ditch. State police are managing traffic.

After the fire department stabilizes the vehicle and you have taken BSI precautions, you approach. Inside the vehicle, you notice a young woman who appears to be sleeping, judging by her snoring. She seems oblivious to all the commotion. You immediately stabilize her head and then try to awaken her. The patient awakens quickly, but she seems confused and her speech is slightly slurred. Her airway is patent, and her breathing is relaxed and displays no apparent difficulty. Her radial pulse is strong and regular at roughly 100 beats per minute. As you work, you notice a strong smell of beer in the car and on the patient.

Your partner points out the damage on both sides of the car and on the roof. You decide to continue manual stabilization of her cervical spine and extricate her from the vehicle onto a long backboard. You also request a paramedic intercept through the EMS coordinator.

At this point, you begin to perform a rapid secondary assessment. The assessment reveals no significant injuries to the patient. The vital signs are also within normal limits. In light of her mental status, you choose to move the patient rapidly out of the ditch via a Stokes basket, up a ladder, and into the waiting ambulance.

4. What scene hazards were present? How were they managed?

5. What is the mechanism of injury? Would you consider it significant?

6. Were the assessments correctly performed? Explain.

7. Would a detailed exam be appropriate for this patient? If so, when would it be performed?
Write the word or words that best complete each sentence in the space provided.

1. ______________________________ ______________________________ is
   the first component of patient assessment.

2. During the primary assessment, any life-threatening condition that is identified must be
   ______________________________ ______________________________.

3. A patient’s age, sex, appearance, and chief complaint are all elements of the
   ______________________________ ______________________________.

4. The patient’s answer to the question “Why did you call EMS?” is called the
   ______________________________ ______________________________.

5. To determine a patient’s level of responsiveness, use the ______________________________
   ______________________________.

6. Once the patient’s level of consciousness has been determined during the primary assessment, move
   on to assess the ______________________________.

7. Assessment of circulation includes checking capillary refill, pulse, skin color, temperature, and
   condition, as well as checking for possible major ______________________________.

8. The last step in the initial assessment is ______________________________
   ______________________________.

9. To assess a patient’s level of orientation, ask specific questions about
   ______________________________, ______________________________, and
   ______________________________.

10. If assessment reveals tracheal tugging, you should suspect ______________________________
    ______________________________.

11. When assessing the responsive medical patient’s condition, use the ______________________________
    and ______________________________ questions.

12. Reassess vital signs during transport every ______________________________ minutes for critical
    patients and every ______________________________ minutes for noncritical patients.

(continued)
13. The detailed secondary exam is ______________________________ and ______________________________ specific.

14. The secondary exam for the trauma patient should be conducted systematically, starting at the ______________________________

15. When conducting a secondary exam, ______________________________ the injuries as found.

16. Any findings during your secondary exam should be ______________________________ and reported to the staff of the receiving facility.

17. To conduct a secondary exam, use the techniques of ______________________________, ______________________________, and ______________________________.

18. The purposes of the secondary assessment are to determine any ______________________________ in the patient’s condition and to ______________________________ the ______________________________ of emergency care.

19. For both the EMT and the hospital staff, it is not only the patient’s condition, but also the ______________________________ in the patient’s condition that are important.

20. EMTs should constantly reassess ______________________________ patients.
**Patient Assessment: True or False**

_Indicate if the following statements are true or false by writing T or F in the space provided._

1. Sometimes you may skip the secondary assessment because you are too busy taking care of life-threatening problems.  
2. In assessing the trauma patient with a significant mechanism of injury, you should obtain a history before completing your exam.  
3. The recording of vital signs should be deferred to the end of the call so that you can focus better on the patient’s needs.  
4. Every responsive medical patient receives a rapid secondary assessment.  
5. The initial assessment is performed only once during patient contact.  
6. The memory aid, DCAP-BTLS, is used to obtain a patient’s past medical history.  
7. Documenting changes in a patient’s condition over time, such as slowing respirations or a rising pulse rate, which may show improvement or deterioration, is known as trending.  
8. Once a patient’s ABCs have been assessed during initial assessment, the EMT can determine the patient’s priority for treatment and transport.  
9. Immediately treat life-threatening problems with circulation, breathing, and airway in that order before continuing with the initial assessment.  
10. The patient’s race is a key factor in forming a general impression.  
11. If you suspect spinal injury, ask the patient to nod her head slightly and report if she feels any pain when doing so.  
12. During the primary assessment, the AVPU scale is used to help determine a patient’s mental status.  
13. If a responsive patient cannot speak or cry, assume that his airway is not open.  
14. At room temperature, a capillary refill time of up to 4 seconds in an infant indicates normal perfusion.  
15. A responsive patient who is not obeying commands should be considered a priority for rapid transport.
Patient Assessment: Ordering

Put in order the following steps of the secondary assessment for a trauma patient with a significant mechanism of injury. Place 1 before the first step taken, 2 before the second step, and so on.

1. Assess baseline vital signs
2. Transport the patient
3. Consider a request for ALS support
4. Perform a secondary physical exam
5. Continue spinal stabilization
PATIENT ASSESSMENT: MATCHING

Below are parts of one patient’s SAMPLE history. In the space provided, write the elements of the OPQRST and SAMPLE memory aids that each part of the history represents. When you are done, read the history out loud, like a radio report, in the order suggested by the memory aids. Does the report make sense presented this way?

OPQRST

A. Onset
B. Provocation
C. Quality
D. Radiation
E. Severity
F. Time

SAMPLE

G. Signs, symptoms
H. Allergies
I. Medications
J. Pertinent past history
K. Last oral intake
L. Events leading up to illness

1. The pain is a 6 on a scale of 0–10.
2. I was working on my car in the garage.
3. I’m sick to my stomach, too.
4. I’m not allergic to anything.
5. Do you think this has something to do with my high blood pressure?
6. I ate lunch at noon.
Handout 13-6 (continued)

7. The pain started about an hour ago.
8. I take one baby aspirin a day.
9. The pain is sharp.
10. I think I might have lifted something too heavy.
11. I've felt fine today until this.
12. The pain goes into my left armpit.
CHAPTER 13 ANSWER KEY

HANDOUT 13-1: Chapter 13 Quiz


HANDOUT 13-2: In the Field

1. Was the patient on any medications? Did he take nitroglycerin before EMS arrived? A better understanding of the patient’s state when the pain started might have helped.
2. Perform a modified secondary assessment.
3. One possibility is a medical identification device, such as a bracelet or wallet card. They also could have seen if there were any numbers listed near the phone that might help (e.g., a doctor’s number or that of another family member). Also look for medication bottles to identify potential medical conditions.
4. Darkness—The fire department lighted the scene. Traffic in road—State police were managing traffic. Uneven slope—The fire department stabilized the vehicle and provided rescue assistance. Possible leaking car fluids—The fire department was available. Body fluids—EMTs have taken body substance isolation precautions.
5. The mechanism of injury is a vehicle rollover, possibly at high speed. This would be significant.
6. After the primary assessment, the EMT correctly decided that this patient was a high-priority patient. The EMT continued manual cervical spine stabilization, requested an ALS intercept, and began a rapid secondary assessment while waiting for the crew to package the patient.
7. Given the mechanism of injury, a rapid trauma assessment would be in order. The rollover could have caused life-threatening injuries. Also patients with altered mental status must be considered critical.

HANDOUT 13-3: Chapter 13 Review

1. Scene size-up
2. treated immediately
3. general impression
4. chief complaint
5. AVPU scale
6. airway
7. bleeding
8. establishing patient priorities
9. time, place, person
10. airway obstruction
11. SAMPLE, OPQRST
12. 5, 15
13. patient, injury
14. head
15. manage
16. documented
17. inspection, palpation, auscultation
18. changes, assess, effectiveness
19. trends
20. all

HANDOUT 13-4: Patient Assessment: True or False

4. F   8. T   12. T

HANDOUT 13-5: Patient Assessment: Ordering

3, 5, 2, 4, 1

HANDOUT 13-6: Patient Assessment: Matching

CHAPTER 14 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. An EMT is permitted, with medical direction, to administer, or assist the patient in administering, all of the following medications except
   A. nitroglycerin.
   B. oxygen.
   C. penicillin.
   D. oral glucose.

_______ 2. A drug or other substance that is used as a remedy for illness is called a(n)
   A. elixir.
   B. treatment.
   C. medication.
   D. prescription.

_______ 3. A chemical substance that is used to treat or prevent a disease or condition is called a
   B. prescription.
   C. drug.
   D. preparation.

_______ 4. The study of drugs is referred to as
   A. pharmacology.
   B. pharmacokinetics.
   C. pharmacodynamics.
   D. pharmacytology.

_______ 5. Epinephrine is an example of a drug’s _____ name.
   A. chemical
   B. trade
   C. generic
   D. brand

_______ 6. The most common uses of a drug in treating a specific condition are known as
   A. indications.
   B. side effects.
   C. protocols.
   D. contraindications.

_______ 7. A thick slurry of activated charcoal is an example of a
   A. gel.
   B. suspension.
   C. compressed powder.
   D. sublingual spray.

_______ 8. Drugs meeting the requirements of the U.S. Pharmacopoeia or National Formulary are given a(n) _____ name.
   A. generic
   B. trade
   C. official
   D. chemical

_______ 9. Medications administered sublingually are
   A. swallowed.
   B. inhaled.
   C. dissolved under the tongue.
   D. injected under the skin.

_______ 10. Drug actions that are not desired and that occur in addition to the desired therapeutic effects are referred to as
    A. reactions.
    B. contraindications.
    C. indications.
    D. side effects.
Review the following real-life situation. Then answer the questions that follow.

You receive a call from a 6-year-old girl who states that her “grandma can hardly breathe.” When you arrive at the scene, you find a 68-year-old female with labored breathing. She can barely talk as she gasps for air. But after several attempts, the woman indicates that she has just finished mowing the lawn. She thinks the exertion has triggered her respiratory condition.

1. What type of medication do you suspect the patient might take?

You place the patient in a comfortable sitting position and administer high-flow, high-concentration oxygen. You ask your partner to take vital signs while you obtain a medical history. The patient indicates that her physician has prescribed an inhaler for her respiratory condition, but that she has not used it today. The woman tells her granddaughter to bring the medication to you.

2. What are some brand names of the prescribed inhalers that you might expect to see?

3. After examining the patient’s medication, you call medical direction for permission to assist the patient in self-administration. In assisting the patient with her medication, what are the key steps that must be followed?

4. What route of administration will be used with this medication?
Write the word or words that best complete each sentence in the space provided.

1. The study of drugs is called ______________________________.

2. Medications have specific ______________________________ effects on the cells, organs, or body systems.

3. ______________________________ ______________________________ is a suspension used to treat a poisoning or an overdose emergency.

4. ______________________________ medications may be administered to patients who are able to swallow.

5. The ______________________________ of a drug are the therapeutic effects that a drug will have.

6. The ______________________________ of a drug is simply how much of the drug should be given to the patient.

7. ______________________________ is a medication that may be administered by the EMT through the intramuscular injection route.

8. The term ______________________________ refers to how a medication is actually given to or taken by a patient.

9. The ______________________________ ______________________________ - ______________________________ may be prescribed for patients with a history of severe allergic reactions.

10. Each drug also has ______________________________, or situations in which the drug should not be administered because of the potential harm that could be caused to the patient.
PHARMACOLOGY BASICS: LISTING

1. List the seven medications that an EMT may administer or help a patient to self-administer.

2. List the four types of names by which every drug is known.

3. List the four routes by which the EMT may administer or help a patient to self-administer medications.
4. List eight medication forms.

5. List two common sources from which to gather information about specific medications.
CHAPTER 14 ANSWER KEY

HANDOUT 14-1: Chapter 14 Quiz

3. C  6. A

HANDOUT 14-2: In the Field

1. A prescribed inhaler
2. Brand names might include: Alupent®, Ventolin®, Proventil®, Bronkosol®, Serevent®
3. Verify the patient’s prescription; check the expiration date; check for discoloration or impurities; verify form, route, and dose; and document the administration drug, dose, route, and time.
4. Inhalation

HANDOUT 14-3: Chapter 14 Review

1. pharmacology
2. physiological
3. Activated charcoal
4. Oral
5. actions
6. dose
7. Epinephrine
8. route
9. epinephrine auto-injector
10. contraindications

HANDOUT 14-4: Pharmacology Basics: Listing

1. Activated charcoal, oral glucose, oxygen, aspirin, metered-dose inhaler, nitroglycerin, epinephrine
2. Generic, chemical, trade (brand), and official
3. Oral, sublingual, inhalation, injection
4. Compressed powder or tablet, liquid for injection, gel, suspension, fine powder for inhalation, gas, spray, and liquid/vaporized fixed-dose nebulizer
5. Any two: American Hospital Formulary Service; AMA Drug Evaluation; Physicians’ Desk Reference (PDR); package inserts; poison control centers; EMS pocket drug reference guide.
CHAPTER 15 QUIZ

Write the letter of the best answer in the space provided.

1. Shock is simply defined as inadequate
   A. oxygen perfusion.          C. tissue perfusion.
   B. heart rate.                D. blood pressure.

2. All of the following are basic etiologies of shock except
   A. inadequate volume.         C. inadequate vessel tone.
   B. inadequate pump function.  D. inadequate respiratory rate.

3. There are _____ major categories of shock.
   A. one                        C. three
   B. two                       D. four

4. Hypovolemic shock is due to
   A. fluid loss.                C. infection.
   B. cardiac muscle failure.   D. spinal injuries.

5. The medication of choice in the treatment of anaphylactic shock is
   A. epinephrine.               C. benadryl.
   B. albuterol.                 D. atropine.

6. All of the following are effects of sympathetic nervous system stimulation except
   A. increased heart rate.      C. basic shock.
   B. increased respiratory rate.D. irreversible shock.
   C. vasoconstriction.
   D. release of epinephrine and norepinephrine.

7. All of the following are stages of shock except
   A. decompensatory shock.     C. basic shock.

8. Which of the following is a sign of shock?
   A. bradycardia                C. hypertension
   B. bradypnea                 D. tachycardia

9. Sudden death is defined as a patient who dies within _____ hour(s) of the onset of symptoms.
   A. ½                         C. 2
   B. 1                         D. 3

10. The circulatory phase of cardiac arrest lasts
    A. 10 minutes.               C. 8 minutes.
    B. 2 minutes.               D. 4 minutes.
Write the word or words that best complete each sentence in the space provided.

1. Shock is a critical condition that results in inadequate ____________________________ perfusion.
2. Distributive shock is associated with a decrease in ____________________________ volume.
3. Anaphylactic shock is a type of ____________________________ shock.
4. Neurogenic shock is commonly referred to as ____________________________ shock.
5. In compensated shock the body is able to maintain a near normal ____________________________ and ____________ and perfusion of the vital organs.
6. ____________________________ shock is when, despite treatment, the body cannot recover.
7. The three phases that the body goes through following cardiac arrest are the electrical phase, circulatory phase, and ____________________________ ________________.
8. The chain of survival has ____________________________ links.
9. The most frequent initial rhythm in cardiac arrest is ____________________________
10. The lower energy level delivered by the biphasic defibrillator is thought to cause less ____________________________ ________________ damage.
Indicate if the following statements are true or false by writing T or F in the space provided.

1. Asystole is the absence of electrical activity and pumping action in the heart.  T
2. AED can be used at any age.  F
3. Downtime is the time from when the patient goes into cardiac arrest until CPR is started.  T
4. The metabolic phase starts 10 minutes after cardiac arrest.  T
5. Cardiac output times stroke volume equals blood pressure.  T
6. Norepinephrine stimulates beta cells.  F
7. Cardiogenic shock is caused by massive bleeding from the heart.  F
8. Septic shock is a form of distributive shock.  T
9. There are three etiologies of shock.  T
10. Decreased blood volume increases afterload.  T
HANDOUT 15-1: Chapter 15 Quiz

2. D  5. A  8. D  10. A

HANDOUT 15-2: Chapter 15 Review

1. tissue
2. intravascular
3. distributive
4. vasogenic
5. blood pressure
6. Irreversible

7. metabolic phase
8. four
9. ventricular fibrillation
10. heart cell

HANDOUT 15-3: Pharmacology: True or False

2. F  5. T  8. T  10. F
3. T  6. F
CHAPTER 16 QUIZ

Write the letter of the best answer in the space provided.

——— 1. The condition causing breathing difficulty in which the bronchioles of the lower airway are significantly narrowed from constriction of the muscle layer is known as
   A. hypoxia.
   B. apnea.
   C. bronchoconstriction.
   D. bronchodilation.

——— 2. The normal range of breaths per minute for most adults is
   A. 25–50.
   B. 20–40.
   C. 15–30.
   D. 12–20.

——— 3. All of the following are signs of inadequate breathing except
   A. present and equal breath sounds.
   B. restlessness.
   C. cyanotic skin color.
   D. retractions.

——— 4. A condition in which the cells in the body are not getting an adequate supply of oxygen is known as
   A. hypoxia.
   B. hypovolemia.
   C. hypervolemia.
   D. hypoergia.

——— 5. A musical whistling sound that is heard in all lung fields upon auscultation of the chest is
   A. rales.
   B. crackles.
   C. wheezing.
   D. rhonchi.

——— 6. In an infant or a child, bradycardia is a sign of
   A. circulatory collapse.
   B. cardiac arrest.
   C. respiratory failure.
   D. fatigue.

——— 7. If a patient is experiencing breathing difficulty but is breathing adequately, he or she should be placed in a
   A. sniffing position.
   B. Trendelenburg position.
   C. prone position.
   D. position of comfort.

——— 8. Which of the following is an example of a commonly encountered obstructive lung disease?
   A. emphysema
   B. pulmonary edema
   C. pneumonia
   D. pneumothorax

——— 9. A medication commonly prescribed for the patient with a history of breathing problems is a(n)
   A. beta blocker.
   B. antiarrhythmic.
   C. bronchodilator.
   D. antihistamine.

——— 10. A condition indicating extreme inspiratory effort in infants and small children in which the chest is drawn inward while the abdomen moves outward is called
   A. nasal flaring.
   B. see-saw breathing.
   C. retractions.
   D. grunting.
Handout 16-1 (continued)

11. All of the following are early signs of breathing difficulty in infants and children except
   A. retractions.
   B. nasal flaring.
   C. bradycardia.
   D. anxiety.

12. All of the following are examples of medications delivered via prescribed metered-dose inhalers except
   A. albuterol.
   B. epinephrine.
   C. isoetharine.
   D. metaproterenol.

13. All of the following are medications commonly used for respiratory problems except
   A. Tornalate®.
   B. Serevent®.
   C. Alupent®.
   D. Prozac®.

14. A possible side effect from a prescribed inhaler is
   A. tachycardia.
   B. hypotension.
   C. cyanosis.
   D. altered mental status.

15. The total number of MDI doses that an EMT can deliver to a patient with breathing difficulty is
   A. one.
   B. two.
   C. three.
   D. determined by medical direction.
Review the following real-life situation. Then answer the questions that follow.

Your unit has just received a call from the emergency medical dispatcher. A 68-year-old woman at 181 Shadow Lane reports difficulty breathing. You and your partner head to the scene, arriving 12 minutes after the call.

Upon entry into the house, you find the patient sitting in a chair, leaning forward with her hands on her knees. She appears anxious and has difficulty speaking in full sentences without gasping for breath. She tells you, “I can’t seem to get enough air.” As she struggles to catch her breath, the patient adds, “My chest is so tight.”

You position yourself at eye level with the patient and try to calm her fears. You introduce yourself and explain that you will need to ask several questions before beginning treatment. From your questions, you learn that the patient has a history of emphysema and that she takes Lasix®, theophylline, and Ventolin®. However, she has not taken these medications for several days in an effort to prolong the prescriptions. “Refills are so expensive,” she explains.

Upon physical examination, you find the patient alert, but restless. Her pulse rate is 120 beats per minute; her blood pressure is 110/68 mmHg; her respiratory rate is 20 per minute; pulse ox is 88 percent. Breaths are labored and noisy. Her skin is warm and pale.

1. Is the patient’s breathing adequate or inadequate?

2. When you elicited a focused history of the condition, what questions should you have asked the patient?

3. What steps would you take to treat this patient?
4. How would you administer oxygen to the patient?

5. In what position should this patient be transported to the hospital?
Write the word or words that best complete each sentence in the space provided.

1. Respiratory emergencies may range from shortness of breath, or ________________, to complete respiratory arrest, or ________________.

2. The medication known as a(n) ________________ is designed to directly relax and open the bronchioles, resulting in an increase in the effectiveness of breathing.

3. During the ________________ ________________, the EMT should seek clues to determine whether the patient’s breathing difficulty is due to trauma or to a medical condition.

4. Inadequate oxygenation of the brain causes a(n) ________________ ________________, which, in turn, can cause the patient to be disoriented or to talk incomprehensibly or mumble.

5. ________________ is an ominous and late sign of respiratory distress observable on the patient’s skin.

6. Most bronchodilators begin to work almost immediately, and their effects may last up to ________________ hours or more.

7. Whenever you have administered a bronchodilator to a patient, you must perform a(n) ________________ ________________.

8. The term ________________ refers to a condition in which the cells of the body are not getting an adequate supply of oxygen.

9. A patient with breathing difficulty who is sitting upright and leaning slightly forward and supporting herself with her arms by holding onto the seat is in the ________________ position.

10. Emphysema, chronic bronchitis, and asthma are examples of ________________ ________________.

11. A device attached to an MDI that holds medication until it is inhaled is a(n) ________________.

12. Metered-dose inhalers can only be administered by the EMT with the approval of ________________ through on-line or off-line orders.
13. A pulse oximeter reading of less than _______________ in a patient with any breathing difficulty is a sign of hypoxia.

14. If upon assessment you find your patient’s breathing rate or tidal volume inadequate, begin _______________ _______________ _______________.

15. The patient with breathing difficulty is a(n) _______________ patient, so consider advanced life support backup.
Write in the missing information on the medication flash card below, and save the completed card for future reference.

**Prescribed Inhaler**

Medication Names:
1. Generic: __________________________________________
2. Trade: __________________________________________

Indications:
1. __________________________________________________
2. __________________________________________________
3. __________________________________________________

Contraindications:
1. __________________________________________________
2. __________________________________________________
3. __________________________________________________
4. __________________________________________________

Medication Form: ______________________________________

Dosage: _______________________________________________

Action: _______________________________________________

Side Effects:
1. __________________________________________________
2. __________________________________________________
3. __________________________________________________
4. __________________________________________________
5. __________________________________________________
CHAPTER 16 ANSWER KEY

HANDOUT 16-1: Chapter 16 Quiz

HANDOUT 16-2: In the Field
1. Adequate, but with the potential to progress to inadequate.
2. OPQRST: What were you doing when the breathing difficulty started? Did anything seem to trigger the breathing difficulty? Was the onset gradual or sudden? Was the onset accompanied by chest pain or any other symptoms? Was there a sudden onset of pain? Does lying flat make the breathing difficulty worse? Does sitting up make the breathing difficulty less severe? Is there pain that occurs or increases with breathing? Do you have more trouble breathing in or out? Is the pain sharp (knifelike) or dull? If there is pain associated with breathing difficulty, does it radiate to the back, up the neck, down the arms, or to any other part of the body? How bad is this breathing difficulty on a scale of 1 to 10, with 10 being the worst breathing difficulty you have ever experienced? When did the breathing difficulty start? How long have you had it? If this is a recurring problem, how long does the breathing difficulty usually last? If the breathing difficulty started other than today, could you recall the exact day and time when this started?
3. Perform an initial assessment, administer high-flow, high-concentration oxygen, perform a focused history and physical exam, contact medical direction for permission to assist the patient with her prescribed inhaler, and begin transport to the hospital.
4. Use a nonrebreather mask to administer oxygen at 15 liters per minute.
5. In a position of comfort, most typically Fowler or semi-Fowler.

HANDOUT 16-3: Chapter 16 Review
1. dyspnea, apnea
2. bronchodilator
3. scene size-up
4. altered mental status
5. Cyanosis
6. 8
7. ongoing assessment
8. hypoxia
9. tripod
10. obstructive lung diseases
11. spacer
12. medical direction
13. 95 percent
14. positive pressure ventilation
15. priority

HANDOUT 16-4: Prescribed Inhaler
Medication Names:
1. Generic: albuterol, isoetharine, metaproterenol, bitolterol mesylate, salmeterol xinafoate
2. Trade: Proventil®, Ventolin®, Bronkosol®, Bronkometer®, Alupent®, Metaprel®, Tornalate®, Serevent®

Indications:
1. Patient exhibits signs and symptoms of breathing difficulty.
2. Patient has physician-prescribed metered-dose inhaler.
3. Medical direction gives specific authorization, whether on-line or off-line, to administer the medication.

Contraindications:
1. Patient is not responsive enough to use the device.
2. MDI is not prescribed for the patient.
3. Medical direction has not authorized its use.
4. Patient has already taken the maximum allowed dosage prior to EMT’s arrival.

Medication Form:
Aerosolized in a metered-dose inhaler.

Dosage:
The total number of times the medication can be administered is determined by medical direction.

Action:
Beta agonist that relaxes the bronchiole smooth muscle and dilates the lower airways. This reduces the airway resistance.

Side Effects:
1. Tachycardia
2. Tremors, shakiness
3. Nervousness
4. Dry mouth
5. Nausea, vomiting
CHAPTER 17 Quiz

Write the letter of the best answer in the space provided.

1. The valve located between the right atrium and the right ventricle that prevents blood from returning to the right atrium is the _____ valve.
   A. mitral
   B. aortic
   C. tricuspid
   D. bicuspid

2. The right atrium receives deoxygenated blood from the inferior and superior _____, the largest veins in the body.
   A. aorta
   B. vena cava
   C. pulmonary arteries
   D. pulmonary veins

3. The electrical impulse that causes the heart to contract is generated in the right atrium at the
   A. bundle of His.
   B. Purkinje fibers.
   C. sinoatrial node.
   D. atrioventricular node.

4. The arteries that branch off the base of the aorta and supply the heart with oxygen-rich blood are called _____ arteries.
   A. pulmonary
   B. posterior tibial
   C. carotid
   D. coronary

5. Blood components respond to injury by forming a clot, or _____, in order to stop bleeding.
   A. plasma
   B. thrombus
   C. platelet
   D. plaque

6. The delivery of oxygen and nutrients from the blood, through the thin capillary walls into the cells, and the removal of carbon dioxide and other waste products, is known as
   A. hypoperfusion.
   B. shock.
   C. metabolism.
   D. perfusion.

7. In cases involving a patient complaining of chest pain and/or difficulty breathing, the EMT should suspect
   A. cardiac problems.
   B. trauma.
   C. tracheal deviation.
   D. hypovolemia.

8. While patients with known cardiac problems may take a variety of medications, the most commonly prescribed medication is
   A. nitroglycerin.
   B. Lasix.
   C. epinephrine.
   D. Digoxin.

9. If a patient experiences no relief after one dose of nitroglycerin, another dose may be administered after 3 to 5 minutes if authorized by medical direction, to a maximum of _____ doses.
   A. three
   B. five
   C. two
   D. six

(continued)
10. Because nitroglycerin lowers blood pressure, it must not be given to a patient whose systolic blood pressure is lower than _____ mmHg.
   A. 130  
   B. 120  
   C. 100  
   D. 90

11. One contraindication to the administration of nitroglycerin is the patient’s
   A. recent ingestion of Viagra®.  
   B. use of aspirin.  
   C. excessive respiratory efforts.  
   D. extremity injury.

12. The condition known as _____ occurs when a portion of the heart muscle dies because of the lack of an adequate supply of oxygenated blood.
   A. angina pectoris  
   B. hypertension  
   C. acute myocardial infarction  
   D. pulmonary edema

13. The tiny blood vessels that connect arterioles to venules are
   A. valves.  
   B. arteries.  
   C. capillaries.  
   D. veins.

14. The measured force exerted during the contraction of the heart is the _____ blood pressure.
   A. systolic  
   B. systemic  
   C. diastolic  
   D. myocardial

15. A common side effect of the administration of nitroglycerin is
   A. headache.  
   B. hypovolemia.  
   C. altered mental status.  
   D. diaphoresis.

16. During cardiac arrest, instead of smooth contractions, the heart shows a different type of electrical activity, most commonly the uncoordinated twitchings known as
   A. asystole.  
   B. ventricular tachycardia.  
   C. ventricular fibrillation.  
   D. atrial fibrillation.

17. Cardiac arrest in children is most often the result of
   A. hypoxia.  
   B. bradycardia.  
   C. trauma.  
   D. ventricular fibrillation.

18. In cases of _____, the heart has a rhythm, but is so weakened that it fails to pump, or it does not respond to the electrical activity, or there is so much blood loss that there is nothing to pump.
   A. asystole  
   B. ventricular fibrillation  
   C. pulseless electrical activity  
   D. ventricular tachycardia

19. The absence of electrical activity and pumping action in the heart is called
   A. pulseless electrical activity.  
   B. ventricular fibrillation.  
   C. asystole.  
   D. ventricular tachycardia

20. When both atria contract, it is a process known as atrial
   A. systole.  
   B. work.  
   C. diastole.  
   D. arrest.

21. Electrical impulses travel from the sinoatrial node to the atroventricular node by way of the
   A. Purkinje fibers.  
   B. intranodal tract.  
   C. bundle of His.  
   D. the right and left bundle branches.
Handout 17-1 (continued)

22. The P wave is the _____ waveform of the ECG.
   A. first               C. third
   B. second              D. fourth

23. In acute coronary syndrome, the word “acute” refers to
   A. severity.          C. sudden onset.
   B. affecting the arteries.  D. duration.

24. Which of the following is a sign or symptom of angina pectoris?
   A. anxiety            C. diaphoresis
   B. dyspnea            D. all of the above

25. All of the following are true about aortic dissection except
   A. initially pain is less severe, then it progresses.
   B. pain is commonly described as sharp or tearing.
   C. syncope may be the only sign in some patients.
   D. it is a tear in the inner lining of the aorta.
Review the following real-life situation. Then answer the questions that follow.

You and your EMT partner respond to a call at the Wilson Corporation. The dispatcher reports a conscious male about 50 years of age complaining of chest pain. When you arrive at the scene, the patient’s secretary leads you into an office. There you see a man sitting on the sofa next to his desk. He is alert with labored respirations. He is pale and diaphoretic. Your pulse check reveals a weak and rapid radial pulse, and you note his skin to be cool and moist to the touch. He is complaining of a squeezing tightness in the center of his chest.

1. What should be your first action in providing emergency medical care?

2. During the focused history and physical exam, you determine that the patient has a history of heart disease and has physician-prescribed nitroglycerin. What actions must you take prior to assisting the patient with his prescribed medication?

3. What reassessment steps should follow the administration of nitroglycerin?
Write the word or words that best complete each sentence in the space provided.

1. An unresponsive patient with no respiration and no pulse is in ________________
   ________________.
2. The ________________ are the top two chambers on each side of the heart.
3. The blood in the left atrium is ejected through the ________________ valve and into
   the left ventricle upon contraction of the heart.
4. The most common symptom of cardiac compromise is ________________
   ________________.
5. As an EMT, you should not take the time to ________________ the type or
   cause of a cardiac emergency.
6. ________________ can be administered as either a sublingual tablet or a sublingual
   spray.
7. The three drugs that an EMT may administer to a cardiac patient, with the approval of medical
   direction, are ________________, ________________, and ________________
8. The aim of administering nitroglycerin is to ________________ the blood vessels in the
   heart.
9. If the responsive patient with chest pain is breathing adequately, administer oxygen at
   ________________ liters per minute via a(n) ________________ mask.
10. In general, the EMT’s emergency treatment of patients with heart failure or an acute myocardial
    infarction will not ________________.
11. Several components of blood are involved in clot formation. They are:
    ________________, ________________, and
    ________________
12. The ________________ pressure represents the pressure exerted against the arterial
    walls during relaxation of the left ventricle.
Handout 17-3 (continued)

13. If a patient experiences no relief after one dose of nitroglycerin, another dose may be administered after ________________ to ________________ minutes if authorized by medical direction, to a maximum of ________________ doses.

14. The heart contains specialized contractile tissue as well as conductive tissue, known as the ________________ ________________, which allows it to generate electrical impulses.

15. The circulatory, or cardiovascular, system has three major components: the ________________, the ________________, and the ________________.

16. ________________ ________________ occurs when the heart, for any of a variety of reasons, is not pumping effectively or at all, and no pulses can be felt.

17. ________________ ________________ occurs when a weakened section of the aortic wall dilates or balloons outward.

18. The electrical impulse generated by the sinoatrial node travels through the right and left atria by the way of ________________ ________________.

19. Each mechanical contraction of the heart has two distinct components of electrical activity: ________________ and ________________.

20. The QRS complex represents depolarization of the ________________.

21. The delivery of oxygen and nutrients to the cells and the removal of carbon dioxide and wastes is known as ________________.

22. Atherosclerosis is an ________________ disease that starts with the intimal lining of the blood vessel.

23. The typical response of the heart to ischemia is ________________
CARDIOVASCULAR EMERGENCIES: LISTING

1. List seven signs and symptoms often associated with cardiac compromise.

2. List six emergency care steps for patients experiencing cardiac compromise.

3. List the three conditions that must be met before assisting a patient with the administration of nitroglycerin.

4. List the five contraindications to the administration of nitroglycerin.

5. List three trade names of nitroglycerin.
CARDIOVASCULAR EMERGENCIES: MATCHING

Write the letter of the term in the space next to the appropriate description.

______  1. Major artery of the upper arm

______  2. Major artery of the thigh

______  3. Major artery in the neck

______  4. The force exerted during circulation of the blood against the arterial walls

______  5. Smallest artery, leading to a capillary

______  6. Smallest vein, leading from a capillary

______  7. Breastbone, located in the center of the chest

______  8. The two major veins that carry oxygen-depleted blood back to the heart

______  9. Depressed delivery of oxygen and nutrients to the cells resulting from inadequate circulation of blood through the capillaries

______  10. A fatty deposit within an artery

______  11. Force exerted against the arterial walls during relaxation of the left ventricle of the heart

______  12. The specialized contractile and conductive tissue of the heart that generates electrical impulses and causes the heart to beat

______  13. Major artery that starts at the left ventricle and carries oxygen-rich blood to the body

______  14. Network of arteries supplying the heart with blood

______  15. Medication often prescribed for patients with a history of heart problems for the relief of chest pain

______  16. One of the two lower chambers of the heart

______  17. Type of blood vessel that carries blood away from the heart

______  18. Component of the blood essential to the formation of blood clots

______  19. One of the two upper chambers of the heart

______  20. Tiny blood vessel connecting arterioles to venules, site of gas and nutrient exchange

A. aorta  B. arteriole  C. artery  D. atrium  E. blood pressure
F. brachial artery  G. capillary  H. cardiac conduction system  I. carotid artery
J. coronary arteries  K. diastolic pressure  L. femoral artery  M. hypoperfusion
N. nitroglycerin  O. plaque  P. platelets  Q. sternum  R. venae cavae
S. ventricle  T. venule
Nitroglycerin

Write in the missing information on the medication flash card below, and save the completed card for future reference.

Nitroglycerin

Medication Names:
1. Generic: _______________________________________________________________________________________
2. Trade: _________________________________________________________________________________________

Indications:
1. _________________________________________________________________________________________________
2. _________________________________________________________________________________________________
3. _________________________________________________________________________________________________

Contraindications:
1. _________________________________________________________________________________________________
2. _________________________________________________________________________________________________
3. _________________________________________________________________________________________________
4. _________________________________________________________________________________________________
5. _________________________________________________________________________________________________

Medication Form: __________________________________________________________________________________

Dosage: ____________________________________________________________________________________________

Actions:
1. _________________________________________________________________________________________________
2. _________________________________________________________________________________________________
3. _________________________________________________________________________________________________

Side Effects:
1. _________________________________________________________________________________________________
2. _________________________________________________________________________________________________
3. _________________________________________________________________________________________________
ASPIRIN

Write in the missing information on the medication flash card below, and save the completed card for future reference.

Aspirin

Medication Names:
1. Generic: ________________________________
2. Trade: ________________________________

Indications:
1. _______________________________________
2. _______________________________________

Contraindication: ___________________________

Medication Form: __________________________

Dosage: _________________________________

Action: _________________________________

Side Effects:
1. _______________________________________
2. _______________________________________
3. _______________________________________

### HANDOUT 17-1: Chapter 17 Quiz

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### HANDOUT 17-2: In the Field

1. Administer oxygen at 15 liters per minute via a nonrebreather mask.
2. (a) Assess the patient’s blood pressure. Systolic blood pressure must be greater than 90 mmHg. (b) Obtain order from medical direction either on-line or off-line. (c) Check the medication to ensure that it is prescribed to the patient, that it is the proper medication, and that it has not expired.
3. (a) Reassess blood pressure within 2 minutes. (b) Question patient about the effect of the medication on relief of pain. (c) Record your actions, patient’s response, and reassessment findings.

### HANDOUT 17-3: Chapter 17 Review

1. cardiac arrest
2. atria
3. mitral (bicuspid)
4. chest pain
5. diagnose
6. Nitroglycerin
7. oxygen, nitroglycerin, aspirin
8. dilate
9. 15, nonrebreather
10. differ
11. platelets, thrombin, fibrin
12. diastolic
13. 3, 5, 3
14. cardiac conduction system
15. heart, blood vessels, blood
16. Cardiac arrest
17. Aortic aneurysm
18. Bachmann’s bundle
19. depolarization, repolarization
20. ventricles
21. perfusion
22. inflammatory
23. chest discomfort

### HANDOUT 17-4: Cardiovascular Emergencies: Listing

1. Any seven: pain or discomfort in any of the following areas: chest, neck, jaw, arm, or back; epigastric pain; sudden onset of sweating; cool, pale skin; difficulty breathing; lightheadedness or dizziness; anxiety or irritability; feelings of impending doom; abnormal or irregular pulse rate; abnormal blood pressure; nausea and/or vomiting.
2. (1) Administer oxygen at 15 liters per minute via a nonrebreather mask. (2) Decrease the anxiety of the patient by providing calm reassurance and placing him in a position of comfort. (3) Assist the patient who has physician-prescribed nitroglycerin. (4) Administer aspirin, if medical direction orders it. (5) Consider calling for ALS backup; initiate early transport. (6) Apply pulse oximeter.

### HANDOUT 17-5: Cardiovascular Emergencies: Matching

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### HANDOUT 17-6: Nitroglycerin (completion)

#### Medication Names:
1. Generic: nitroglycerin
2. Trade: Nitrostat®, Nitrobid®, Nitrolingual® Spray

#### Indications:
1. Patient exhibits signs or symptoms of chest pain.
2. Patient has physician-prescribed nitroglycerin.
3. The EMT has received approval from medical direction, either on-line or off-line, to give the medication.

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Prehospital Emergency Care, 9th Ed.
Contraindications:
1. Patient’s baseline blood pressure is below 90 mmHg.
2. Patient has a suspected head injury.
3. Patient is an infant or a child.
4. Patient has already taken three doses.
5. Patient has already taken Viagra®.

Medication Form:
Tablet, sublingual spray.

Dosage:
One tablet or one spray under the tongue. This dose may be repeated in 3–5 minutes if (1) the patient experiences no relief; (2) the blood pressure remains above 90 mmHg systolic; and (3) medical direction gives authorization. The total dose is three tablets or sprays, including what the patient took prior to the arrival of EMS.

Actions:
1. Dilates blood vessels.
2. Decreases workload of the heart.
3. Decreases cardiac oxygen demand.

Side Effects:
1. Headache.
2. Drop in blood pressure.
3. Changes in pulse rate as the body compensates for changes in blood vessel size.

HANDOUT 17-7: Aspirin (completion)

Medication Names:
1. Generic: aspirin
2. Trade: ASA, Bayer, Ecotrin, St. Joseph’s, Bufferin

Indications:
1. Patient exhibits chest discomfort suggestive of heart attack.
2. Medical direction has given approval, either on-line or off-line.

Contraindication:
A known allergy or hypersensitivity to aspirin.

Medication Form:
Tablet.

Dosage:
160 mg to 325 mg as soon as possible after onset of symptoms.

Action:
Decreases ability of platelets to clump together.

Side Effects:
1. Stomach irritation.
2. Heartburn.
3. Nausea/vomiting.
CHAPTER 18 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. All of the following are structural causes of altered mental status except
A. brain tumor.  
B. bleeding in the brain tissue.  
C. trauma to the brain.  
D. hypoxia.

_______ 2. Assessment of patients with altered mental status must include all of the following except
A. head.  
B. pupils.  
C. tympanic membrane.  
D. chest.

_______ 3. Altered mental status and the inability to speak or feel sensation or move are all signs or symptoms of
A. trauma.  
B. neurological deficit.  
C. embolism.  
D. acute myocardial infarction.

_______ 4. The process of clot formation is referred to as
A. lordosis.  
B. thrombosis.  
C. embolism.  
D. hemorrhagia.

_______ 5. The most common nontraumatic brain injury is
A. seizure.  
B. hypoxia.  
C. stroke.  
D. hypothermia.

_______ 6. Paralysis that affects both lower extremities is called
A. paraplegia.  
B. quadriplegia.  
C. monoplegia.  
D. hemiplegia.

_______ 7. All of the following are signs and symptoms of a neurological deficit resulting from non-traumatic brain injury except
A. severe headache.  
B. paralysis.  
C. unequal pupils.  
D. fever.

_______ 8. Transient ischemic attack will always resolve within ____ hours.
A. 1  
B. 3  
C. 10  
D. 24

_______ 9. All of the following are types of headaches except
A. mastoid headache.  
B. vascular headache.  
C. cluster headache.  
D. tension headache.

_______ 10. All of the following are assessed for in the Cincinnati Prehospital Stroke Scale except
A. facial droop by having patient smile or show his teeth.  
B. abnormal speech by having the patient repeat “You can’t teach an old dog new tricks.”  
C. testing hand strength by grasping your fingers.  
D. arm drift by having the patient close his eyes and hold both arms out straight for 10 seconds.
CHAPTER 18 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The term ______________________________ ______________________________ is defined as any deficiency in the functioning of the brain or nervous system.

2. Because the ______________________________ controls breathing rate and depth, it is very possible to find inadequate breathing or unusual breathing patterns in a patient who presents with signs of stroke.

3. The two structures that must be intact in order for patients to remain in a conscious state are the reticular activating system and at least one ______________________________ ______________________________.

4. Though the EMT may rule out trauma at the scene, it is important to note if the patient has suffered a ______________________________ ______________________________ within the last few weeks.

5. When collecting a SAMPLE history, it is especially important to note if the possible stroke patient complained of a ______________________________ prior to becoming unresponsive.

6. An unconscious state where the patient does not respond to painful stimuli is referred to as a ______________________________.

7. If a stroke occurs on the left side of the brain, the damage is noticeable on the ______________________________ side of the body.

8. ______________________________ headaches are thought to be caused by an initial spasm of the vessels, followed by vasodilation, and a change in the chemicals that transmit nerve impulses in the brain.

9. Your patient complains of a tight or vise-like headache. You know this to be a ______________________________ type of headache.

10. Drugs that can reverse the consequences of stroke must be administered to certain stroke patients within ______________________________ ______________________________ of the first sign or symptom.
1. List four questions that will guide your emergency care of the possible stroke patient.

2. List seven signs or symptoms of altered mental status commonly associated with nontraumatic or medical conditions.

3. List five steps in the emergency treatment of patients with altered mental status.
Handout 18-3 (continued)

4. List three of the medical conditions that predispose a patient to a stroke.

5. List the four types of headaches.
CHAPTER 18 ANSWER KEY

HANDBOUT 18-1: Chapter 18 Quiz

1. D  5. C  9. A
3. B  7. D
4. B  8. D

HANDBOUT 18-2: Chapter 18 Review

1. neurological deficit
2. brain
3. cerebral hemisphere
4. head injury
5. headache
6. coma
7. right
8. Migraine
9. tension
10. 3 hours

HANDBOUT 18-3: Altered Mental Status, Stroke, and Headache: Listing

1. Any four: When did the symptoms begin? Is there any recent history of trauma to the head? Does the patient have a history of previous stroke? Was there any seizure activity noted prior to your arrival? What was the patient doing at the time of onset of signs and symptoms? Does the patient have a history of diabetes? Has the patient complained of a headache or stiff neck? Has the patient complained of dizziness, nausea, vomiting, or weakness? Has the patient experienced any slurred speech?

2. Any seven: abnormal respiratory pattern; dry or moist skin; cool or hot skin; pinpoint, mid size, dilated, or unequal pupils; stiff neck; lacerations to the tongue; high blood pressure; loss of bowel or bladder control; abnormally high or low blood sugar.

3. Any five: maintain manual spinal stabilization if trauma is suspected; maintain a patent airway; suction any secretions, vomitus, or blood; maintain oxygen therapy; be prepared to assist ventilation; position the patient; transport.

4. Atherosclerosis, heart disease, and/or hypertension.

5. Vascular headache; cluster headache; tension headache; organic, traction, or inflammatory headache.
Write the letter of the best answer in the space provided.

_______  1. A sudden and temporary alteration in brain function caused by massive electrical discharge in a group of nerve cells in the brain is called
    A. a convulsion.
    B. a seizure.
    C. postictal activity.
    D. dysrhythmias.

_______  2. The chronic brain disorder that is characterized by recurrent seizures is called
    A. the aura.
    B. CVA.
    C. epilepsy.
    D. postictal activity.

_______  3. All of the following are common causes of seizures except
    A. shock.
    B. hypoxia.
    C. infection.
    D. hypoglycemia.

_______  4. The period following a seizure in which the patient may be unresponsive, extremely sleepy, weak, and disoriented is called the
    A. grand mal state.
    B. postictal state.
    C. tonic phase.
    D. clonic phase.

_______  5. Many patients will tell the EMT that they knew they were going to seize because of the
    A. tonic phase.
    B. postictal state.
    C. clonic phase.
    D. aura.

_______  6. The period of a seizure when the patient’s muscles become contracted and tense with arching of the back is called the
    A. tonic phase.
    B. postictal state.
    C. clonic phase.
    D. aura.

_______  7. The period of a seizure when muscles spasm and then relax, producing violent and jerky activity, is called the
    A. clonic phase.
    B. tonic phase.
    C. aura.
    D. postictal state.

_______  8. A life-threatening condition characterized by a patient’s seizing for over 10 minutes or consecutive seizures without an intermittent period of consciousness is called
    A. a grand mal seizure.
    B. a convulsion.
    C. status epilepticus.
    D. epilepsy.

_______  9. A sudden and temporary loss of consciousness is called
    A. epilepsy.
    B. a convulsion.
    C. syncope.
    D. seizure.

_______ 10. The type of seizure most common in children between 6 months and 6 years old that is caused by high fever is called a(n) _____ seizure.
    A. absence (petit mal)
    B. fébrile
    C. grand mal
    D. complex partial
Handout 19-1 (continued)

11. A type of seizure most common in children, which is characterized by a blank stare, lasting only a few seconds, and beginning and ending abruptly, is called a(n) _____ seizure.
   A. complex partial  
   B. focal sensory  
   C. Jacksonian  
   D. absence (petit mal)

12. If a patient’s seizures last longer than 10 minutes, the EMT should begin
   A. endotracheal intubation.  
   B. CPR.  
   C. positive-pressure ventilations.  
   D. AED use.

13. All of the following are common medications used in the treatment of epilepsy except
   A. Dilantin®.  
   B. Mysoline®.  
   C. insulin.  
   D. phenobarbital.

14. The term for weakness on one side of the body is
   A. aphasia.  
   B. dysphasia.  
   C. hemiparesis.  
   D. hemiparesis.

15. Usually, a postictal patient should be placed in the _____ position.
   A. Trendelenburg  
   B. Fowler  
   C. lateral recumbent  
   D. prone
Review the following real-life situation. Then answer the questions that follow.

You and your partner are dispatched to the local mall for a man having a seizure. Upon your arrival, you are greeted by a mall security guard who reports that your patient was noted walking alone through the mall when he suddenly fell to the ground and began having a “convulsion.” The guard tells you that the episode must have lasted about 6 or 7 minutes. Your patient is a male, approximately 30 years old, who is in a semi-sitting position next to a water fountain. He appears to be breathing adequately and is conscious, although a bit dazed.

1. What type of seizure did the security guard describe to you?

2. In what stage of the seizure is the patient upon your arrival? How long should this stage last?

3. What emergency care measures should you take with this patient?

4. What should you do if the patient states that this is normal for him and he doesn’t want to go to the hospital?
Write the word or words that best complete each sentence in the space provided.

1. A(n) ______________________________ is a sudden and temporary alteration in brain function caused by massive electrical discharge in a group of nerve cells in the brain.

2. A common cause of seizures is ______________________________, a chronic brain disorder characterized by recurrent seizures.

3. The ______________________________ state follows the seizure and is the recovery period for the patient.

4. Seizure activity that is related to an injury or a medical condition may be an ominous sign of ______________________________ ______________________________ or even permanent brain damage.

5. You cannot force a patient to accept transport or treatment, but you do need to ______________________________ the call.

6. If the patient is talking normally, it indicates a(n) ______________________________ airway and ______________________________ breathing.

7. A patient who suffers seizures that last more than 10 minutes or seizures that occur consecutively without a period of responsiveness between them is considered to be in ______________________________ ______________________________.

8. Perform a(n) ______________________________ ______________________________ if the patient is postictal and still has an altered mental status or if she does not have a past medical history of epilepsy or seizures.

9. The ______________________________ serves as a warning that a seizure is going to begin and involves some type of sensory perception by the patient.

10. ______________________________ is a sudden and temporary loss of consciousness.

11. The EMT should place the syncopal patient in the ______________________________ position to allow for improved blood flow to the brain.

12. ______________________________ seizures, caused by high fever, are most common in young children.

13. The EMT needs to be aware that medical conditions such as ______________________________ ______________________________ and ______________________________ may be confused with a seizure or may produce a seizure.
14. A seizing patient’s movements should be ___________________________ rather than ___________________________ in order to prevent further injury.

15. The EMT should gather a(n) ___________________________ history from the responsive seizure patient, relatives, and/or bystanders.
SEIZURES AND SYNCOPE: LISTING

1. List five common causes of seizures.

2. List seven steps in the emergency medical care for a seizing patient.

3. List the stages or phases of a seizure.

4. List four steps of emergency medical care for a syncope patient.
### CHAPTER 19 ANSWER KEY

#### HANDOUT 19-1: Chapter 19 Quiz


#### HANDOUT 19-2: In the Field

1. A generalized tonic-clonic seizure or grand mal seizure.
2. Postictal state, 10–30 minutes
3. Position the patient in a lateral recumbent position, maintain oxygen therapy, transport.
4. You must contact medical direction (follow local protocol).

#### HANDOUT 19-3: Chapter 19 Review

1. seizure
2. epilepsy
3. postictal
4. brain injury
5. document
6. open, adequate
7. status epilepticus
8. rapid assessment
9. aura
10. Syncope
11. supine
12. Febrile
13. heart attack, stroke
14. guided, restrained
15. sample

#### HANDOUT 19-4: Seizures and Syncope: Listing

1. Any five: high fever; infection; poisoning; hypoglycemia; hyperglycemia; head injury; shock; hypoxia; stroke; drug or alcohol withdrawal; dysrhythmias; hypertension; pregnancy complications; idiopathic causes.
3. Aura; tonic phase; hypertonic phase; clonic phase; postictal state.
4. Conduct an initial assessment and focused history and physical exam. Place the patient in the supine position. Administer oxygen at 15 liters per minute via nonrebreather mask. Assess vital signs.
CHAPTER 20 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. Insulin can best be described as a(n)
   A. amino acid.                      C. blood sugar.
   B. hormone.                        D. platelet.

_______ 2. The organ(s) responsible for the production of insulin is (are) the
   A. liver.                          C. pancreas.
   B. kidneys.                       D. spleen.

_______ 3. All of the following are signs or symptoms commonly associated with a diabetic emergency except
   A. an elevated heart rate.        C. seizure activity.
   B. combativeness.                D. hot, dry skin.

_______ 4. The simple form of sugar that is the body’s main source of energy is
   A. insulin.                      C. adrenalin.
   B. glucose.                     D. diabanese.

_______ 5. Glucose is administered in the form of a
   A. tablet.                      C. suspension.

_______ 6. Which memory aid should be used to gather a history from a patient with an altered mental status?
   A. SAMPLE                        C. START
   B. AVPU                          D. DCAP-BTLS

_______ 7. The type of diabetes that requires a patient to inject insulin daily is
   A. Type I.                      C. “maturity-onset diabetes.”
   B. Type II.                    D. diabetic ketoacidosis.

_______ 8. If a patient has excessive thirst, breath with a fruity odor, and warm, dry skin, you would suspect
   A. hypoglycemia.                C. hyperglycemia.
   B. epilepsy.                   D. cerebral edema.

_______ 9. All of the following are medications often taken by diabetics except
   A. Glynase®.                    C. nitroglycerin.
   B. Humalog®.                   D. Orinase®.

_______ 10. For the EMT to administer oral glucose, the patient must meet all of the following criteria except
    A. an altered mental status.
    B. a baseline blood pressure that is greater than 90 mmHg systolic.
    C. a history of diabetes controlled by medication.
    D. the ability to swallow.

(continued)
11. Proper administration of oral glucose usually produces
   A. headache.  
   B. bradycardia. 
   C. diaphoresis. 
   D. no side effects.

12. What action does oral glucose take in the bloodstream?
   A. decreases blood sugar  
   B. increases blood sugar  
   C. decreases insulin level  
   D. increases insulin level

13. If you are in doubt as to whether the patient is suffering from an emergency related to hypoglycemia or hyperglycemia, err to benefit the patient and
   A. allow the patient to drink.  
   B. withhold liquids from the patient.  
   C. administer oral glucose. 
   D. withhold oral glucose.

14. Which of the following is a contraindication to the administration of oral glucose?
   A. history of diabetes  
   B. altered mental status  
   C. trauma  
   D. unresponsiveness

15. Patients with an altered mental status and without suspected spinal injury should be transported in what position?
   A. shock  
   B. lateral recumbent  
   C. prone  
   D. supine
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

You and your partner are dispatched at 1015 to the Riverside Apartments on Montgomery Drive, Apartment 323, for an unconscious male. Upon your arrival, the patient’s excited wife meets you at the door. As she leads you to the kitchen, she explains that her husband, who is diabetic, has not been feeling well and stayed home from work today due to nausea and vomiting. While they were sitting at the kitchen table, he suddenly passed out and she immediately called 911. As you enter the kitchen, you see a male patient in his late 50s slumped in a kitchen chair. Your initial assessment reveals that the patient is unresponsive, bradypneic (10 breaths per minute), with a weak and rapid radial pulse and pale, cool, and clammy skin.

1. What condition do these signs and symptoms suggest?

2. In addition to a SAMPLE history, what additional questions would you ask the patient’s wife?

3. Is oral glucose indicated for this patient? Why or why not?

4. What additional emergency medical care would you provide to this patient?
CHAPTER 20 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The body’s main source of energy is ______________________________.

2. The hormone secreted by the pancreas that is needed to promote the movement of glucose from the blood into the cells is known as ______________________________.

3. When there is a(n) ______________________________ of insulin, glucose cannot enter the cells; instead, it remains in the bloodstream, causing a high level of glucose in the blood, a condition known as ______________________________.

4. When a diabetic’s insulin level is too high, too much sugar enters the cells and not enough sugar remains in the blood, a condition called ______________________________.

5. ______________________________ ______________________________ is the medication of choice in the emergency medical care of the diabetic patient with an altered mental status.

6. Assess and document the mental status of a diabetic patient using the ______________________________ scale.

7. As an alternative to squeezing small portions of the tube of oral glucose into the patient’s mouth, the EMT could use a(n) ______________________________ ______________________________.

8. Type ______________________________ diabetes typically develops in adulthood and is controlled by diet, exercise, oral medications, and, in severe cases, with insulin.

9. ______________________________ ______________________________ is a disease characterized by an altered relationship between glucose and insulin.

10. If no mechanism of injury is apparent, you would suspect that a patient’s altered mental status is a result of a(n) ______________________________.

11. Never administer oral glucose to a patient who cannot swallow or who is ______________________________.

12. For a patient with an altered mental status, repeat the ongoing assessment every ______________________________ ______________________________.

13. The most common sign of hypoglycemia is a(n) ______________________________ ______________________________ ______________________________.

(continued)
14. An altered mental status from hypoglycemia will typically have an ______________________________ onset.

15. A patient may take as long as ______________________________ minutes before showing improvement from receiving oral glucose.
ACUTE DIABETIC EMERGENCIES: LISTING

1. List five medications often taken by diabetics.

2. List nine signs and symptoms associated with a diabetic emergency.

3. List the three indications for administering glucose to a diabetic patient.

4. List the four steps in the administration of glucose.
Handout 20-5

Oral Glucose

Write in the missing information on the medication flash card below and save the completed card for future reference.

Oral Glucose

Medication Names:
1. Generic: ____________________________________________
2. Trade: ____________________________________________

Indications:
1. _____________________________________________
2. _____________________________________________
3. _____________________________________________

Contraindications:
1. _____________________________________________
2. _____________________________________________

Medication Form: ____________________________________________

Dosage: ____________________________________________

Actions:
1. _____________________________________________
2. _____________________________________________

Side Effects: ____________________________________________
CHAPTER 20 ANSWER KEY

HANDOUT 20-1: Chapter 20 Quiz

4. B  8. C

HANDOUT 20-2: In the Field

1. A diabetic emergency.
2. Did the patient take his medication today? Did the patient eat (or skip any) meals today or yesterday?
3. Oral glucose is not indicated. Unresponsiveness (inability to swallow) is a contraindication to the administration of oral glucose.
4. Monitor and maintain open airway, administer oxygen by nonrebreather mask at 15 liters per minute, and transport.

HANDOUT 20-3: Chapter 20 Review

1. glucose  9. Diabetes mellitus
2. insulin  10. illness
3. lack, hyperglycemia  11. unresponsive
4. hypoglycemia  12. 5 minutes
5. Oral glucose  13. altered mental status
6. AVPU  14. sudden (rapid)
7. tongue depressor  15. 20
8. II (two)

HANDOUT 20-4: Acute Diabetic Emergencies: Listing

1. Any five of the following: Insulin, Humulin®, Novolin®, Iletin®, Semilente®, Diabanese®, Glucamide®, Orinase®, Micronase®, Diabeta®, Glynase®, Tolinase®, Glucotrol®, Humalog®, Glucophage®.
2. Any nine: rapid onset of altered mental status, intoxicated appearance, tachycardia, cool and moist skin, hunger, seizures, uncharacteristic or bizarre behavior, combativeness, anxiety or restlessness, bruising at insulin injection sites, weakness or paralysis (especially in the elderly), blood glucose < 60 mg/dL.
3. An altered mental status, a history of diabetes controlled by medication, the ability to swallow the medication.
4. Obtain order from medical direction. Ensure the signs and symptoms are consistent with an altered mental status associated with a history of diabetes controlled by medication. Ensure patient is responsive and able to swallow the medication and protect his airway. Administer the oral glucose by either squeezing small portions of the tube into the mouth or via a tongue depressor between the check and gum.

HANDOUT 20-5: Oral Glucose (completion)

Medication Names:
2. Trade: Glutose®, Insta-glucose®.

Indications:
1. Altered mental status.
2. History of diabetes controlled by medication.
3. Ability to swallow the medication.

Contraindications:
1. Unresponsive patient.
2. Patient unable to swallow the medication.

Medication Form:
Gel, in toothpaste-type tubes.

Dosage:
The typical dosage is one tube.

Actions:
1. Increases blood sugar level.
2. Increases sugar available to the brain.

Side Effects:
None, when administered properly.
Write the letter of the best answer in the space provided.

1. A severe form of allergic reaction is called
   A. an allergen.  
   B. anaphylaxis. 
   C. epinephrine.  
   D. an immune reaction.

2. Harmless to most individuals, allergens are foreign substances that cause an abnormal immune system response known as
   A. mitosis.  
   B. hypothyroidism.  
   C. an allergic reaction.  
   D. an immune response.

3. An EMT who notices that his hands are red and itchy after a call may be experiencing an allergic reaction to
   A. latex gloves.  
   B. talcum powder. 
   C. exercise.  
   D. heat exposure.

4. Signs and symptoms of an allergic reaction include all of the following except
   A. itching. 
   B. increased appetite.  
   C. decreased blood pressure.  
   D. watery eyes.

5. A sign of a severe allergic reaction is
   A. runny nose. 
   B. cyanosis.  
   C. mild edema.  
   D. malaise.

6. The dose of epinephrine that should be given to an adult suffering severe allergic reaction is ____ mg.
   A. 0.3  
   B. 0.5  
   C. 0.05  
   D. 0.15

7. Epinephrine is most commonly administered as a(n)
   A. tablet. 
   B. gel.  
   C. prescribed inhaler.  
   D. auto-injector.

8. When administered as a medication, epinephrine will accomplish all of the following except
   A. constrict blood vessels.  
   B. lower blood pressure.  
   C. relax the bronchioles.  
   D. stimulate the heartbeat.

9. The dose of epinephrine that should be given to infants/children is ____ mg.
   A. 0.5  
   B. 0.3  
   C. 0.15  
   D. 0.05

10. If the patient’s condition improves following the administration of epinephrine, you should
    A. perform ongoing assessment.  
    B. administer a second dose.  
    C. initiate CPR.  
    D. connect the AED.
IN THE FIELD

Review the following real-life situations. Then answer the questions that follow.

The patient is an 8-year-old boy with a known history of allergies and asthma. His mother tells you that she administered his EpiPen® 5 minutes before your arrival. However, you believe that she gave it incorrectly. “He pulled away when I tried to give the shot,” explains the mother. “I saw some of the medicine form a mist in the air.”

You examine the arm where the mother says that she gave the injection, but find no puncture mark. The child's distress has worsened since your arrival, and he now seems barely conscious.

“I have three more EpiPens®,” offers the mother.

1. What action(s) should you take at this time?

Your next patient is an unconscious construction worker named Fred. “He had barely started to work with some fiberglass insulation when he fainted,” explains one of his coworkers.

You ask the coworkers more questions and find out that Fred was sneezing and coughing just before he fainted. They also noticed that he was using a handkerchief to wipe his watery eyes and runny nose. “He usually wears a respiratory mask on the job site,” adds one of the coworkers, “but he forgot to bring it today.”

Upon conducting a physical examination of the patient, you find a Medic Alert tag indicating that Fred has a number of allergies. His vital signs include a blood pressure of 70/42 and a weak pulse of 136. During your initial assessment, the foreman hands you an EpiPen® kit. “I found this in Fred’s lunch box,” he says. “Will it help?”

2. What action(s) should you take at this time?
Write the word or words that best complete each sentence in the space provided.

1. An abnormal or excessive response of the body's immune system to a foreign material is called a(n) ______________________________.

2. Foreign substances recognized by the cells of the immune system and eventually destroyed by the body's response are called ______________________________.

3. A severe form of an allergic reaction is called ______________________________.

4. Antibodies are proteins that search for the antigen, combine with it, and then help to destroy it in a process known as ______________________________.

5. ______________________________ from insect bites or stings, especially of wasps, hornets, yellow jackets, and fire ants, may cause an allergic reaction and anaphylaxis.

6. Red, itchy, possibly raised blotches on the skin are known as ______________________________.

7. Management of the airway during anaphylaxis may require ______________________________, the placement of a tube in the trachea to facilitate breathing.

8. When administered as a medication, epinephrine will ______________________________ blood vessels to improve the patient's ______________________________ ______________________________.

9. A spring-loaded needle and syringe with a single dose of epinephrine is known as a(n) ______________________________.

10. The correct dose of epinephrine for an adult is ______________________________ mg; for a child, it is ______________________________ mg.
Indicate if the following statements are true or false by writing T or F in the space provided.

1. Generally, an individual must come into contact with an allergen more than once for an anaphylactic reaction to occur.  

2. Antibodies are proteins that search for an antigen, combine with it, and destroy it.

3. After 15 to 20 minutes, a patient suffering an allergic reaction has little risk of slipping into anaphylactic shock.

4. During an allergic reaction, you can expect to discover a higher-than-average blood pressure.

5. Epinephrine auto-injectors may not be administered to unconscious patients.

6. Epinephrine has no contraindications when used in a life-threatening situation.

7. A possible side effect of epinephrine use is chest pain.

8. Some anaphylactic reactions require repeated doses of epinephrine before the allergic reaction stops.

9. The two key categories of signs and symptoms that specifically indicate anaphylaxis are respiratory compromise and shock.

10. A patient experiencing an allergic reaction with no signs of respiratory distress or shock should receive epinephrine.
RECOGNIZING SIGNS AND SYMPTOMS OF ANAPHYLAXIS

Place a check mark in front of the signs and symptoms commonly associated with anaphylaxis or anaphylactic shock.

- increased pulse
- constipation
- decreased respirations
- increased appetite
- vomiting
- altered mental status
- flushed skin
- absent radial and/or pedal pulses
- diarrhea
- decreased pulse
- increased respirations
- decreased blood pressure
- feeling of impending doom
- stridor
## Epinephrine Auto-Injector

Write in the missing information on the medication flash card below, and save the completed card for future reference.

### Epinephrine Auto-Injector

**Medication Names:**
1. Generic: ____________________________________________
2. Trade: _____________________________________________

**Indications:**
1. ____________________________________________
2. ____________________________________________
3. ____________________________________________

**Contraindications:** __________________________________________________________________________________

**Medication Form:** __________________________________________________________________________________

**Dosage:** ___________________________________________________________________________________________

**Actions:**
1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________

**Side Effects:**
1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________
6. ____________________________________________
7. ____________________________________________

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*Prehospital Emergency Care, 9th Ed.*  

**CHAPTER 21**  
Anaphylactic Reactions
CHAPTER 21 ANSWER KEY

HANDOUT 21-1: Chapter 21 Quiz

3. A  6. A

HANDOUT 21-2: In the Field

1. Sample response: Immediately establish contact with medical direction. Inform them of the situation and request permission to administer a second dose of the medication or to provide additional instructions. All remaining EpiPens® should be taken on the ambulance. It may be necessary to request an ALS intercept on this call.

2. Sample response: Complete all steps in the initial assessment. Ensure that a member of the EMT team is managing BVM ventilation or intubation if local protocols allow. Call for an ALS intercept or begin rapid transport as soon as possible. Because the patient is unconscious and in shock, he meets the criteria for use of epinephrine. Contact medical direction if required to do so. Make sure that the medication in the EpiPen® kit belongs to the patient, that it is not expired, and that it is clear and colorless. After using the auto-injector, dispose of it in the appropriate biohazard container. Record the time of administration and reassess vital signs.

HANDOUT 21-3: Chapter 21 Review

1. allergic reaction
2. allergens
3. anaphylactic shock
4. sensitization
5. Venom
6. hives
7. tracheal intubation
8. constriction, blood pressure
9. auto-injector
10. 0.3, 0.15

HANDOUT 21-4: Allergic Reactions: True or False

3. F  6. T

HANDOUT 21-5: Recognizing Signs and Symptoms of Anaphylaxis

Check marks should appear before all of the following conditions: increased pulse; vomiting; altered mental status; flushed skin; absent radial and/or pedal pulses; diarrhea; increased respirations; decreased blood pressure; feeling of impending doom; stridor.

HANDOUT 21-6: Epinephrine Auto-Injector (completion)

Medication Name:
1. Generic:—epinephrine.
2. Trade:—Adrenalin® (EpiPen® and EpiPen Jr.® as auto-injectors).

Indications:
1. Patient exhibits signs and symptoms of anaphylaxis, including respiratory distress and/or shock.
2. Medication is prescribed to the patient.
3. EMT has received order approving use from medical direction, either on-line or off-line.

Contraindications:
None in a life-threatening situation.

Medication Form:
Liquid drug in auto-injector.

Dosage:
Adult (>66 lbs.)—0.3 mg. Infant and child (<66 lbs.)—0.15 mg.

Actions:
1. Constricts blood vessels to improve blood pressure.
2. Reduces leakage from blood vessels.
3. Relaxes smooth muscle in the bronchioles to improve breathing; stimulates heartbeat.
4. Works to reverse swelling and hives.

Side Effects:
1. Increased heart rate.
2. Pallor.
3. Dizziness.
5. Headache.
7. Excitability and anxiousness.
CHAPTER 22 QUIZ

Write the letter of the best answer in the space provided.

1. Any substance—liquid, solid, or gas—that impairs health or causes death by its chemical action when it enters the body or comes into contact with the skin is called a(n)
   A. allergen.
   B. poison.
   C. antigen.
   D. caustic.

2. The most common poisons ingested by children include all of the following except
   A. fertilizers.
   B. plants.
   C. cleaning products.
   D. toiletries.

3. Carbon monoxide is an example of an _____ poison.
   A. ingested
   B. inhaled
   C. absorbed
   D. injected

4. When treating an absorbed poisoning patient, if the poison is a liquid, you should irrigate all parts of the patient’s body for at least _____ minutes.
   A. 5
   B. 10
   C. 20
   D. 45

5. Use of activated charcoal is indicated in some cases of _____ poisoning.
   A. injected
   B. inhaled
   C. absorbed
   D. ingested

6. Activated charcoal is administered in the form of a(n)
   A. tablet.
   B. suspension.
   C. gel.
   D. inhaler.

7. All of the following are trade names for activated charcoal except
   A. SuperChar.
   B. CharCoal.
   C. Liqui-Char.
   D. Actidose.

8. The usual dose of activated charcoal for an adult is
   A. 12.5–25 grams.
   B. 3 grams/kg of body weight.
   C. 30–100 grams.
   D. 10 grams/kg of body weight.

9. In treating cases of inhaled poisons, the drug of first choice is
   A. activated charcoal.
   B. syrup of ipecac.
   C. glucose.
   D. oxygen.

10. The most common sources of injected poisons are
    A. drugs.
    B. bites and stings.
    C. plants.
    D. over-the-counter medications.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

The emergency medical dispatcher sends you to a residence at 7290 Riverside. The young woman who placed the 911 call is waiting for you on the doorstep, even though the day is chilly.

The woman reports that she dropped by the house to visit her friend Randy Johnson and saw through the window that he was passed out on the couch. The door was unlocked, so she went in to try to wake him but couldn’t. She tells you, “I wanted to stay and help him, but I just started feeling so bad. I felt sick to my stomach and my head hurt, almost like there was a band around it. Then I remembered that Randy had been having trouble with his furnace and was using a kerosene heater until he could get the furnace fixed. So I was afraid maybe something was wrong with the heater and came outside and called 911 from my cell phone. What’s going on?”

1. Based on your scene size-up, what answer would you give the woman?

2. What action(s) would you take?
Write the word or words that best complete each sentence in the space provided.

1. The ingestion of poisonous plants is an extremely common poisoning emergency, especially in
   ________________________________.

2. Protect the ingested poison patient from aspiration by placing him or her, if possible, in the
   ________________________________ ________________________________ position.

3. In some cases of ingested poisoning, medical direction will order administration of
   ________________________________ ________________________________.

4. Unless directed otherwise by medical direction, give both adults and children
   ________________________________ ________________________________ of activated charcoal per
   ________________________________ of body weight.

5. Activated charcoal absorbs poisons in the stomach, prevents their ________________________________ by
   the body, and enhances their elimination from the body.

6. ________________________________ ________________________________ poisoning is the leading cause of
   death among people who inhale smoke from fires.

7. Any treatment recommended by the poison control center should be discussed with
   ________________________________ ________________________________ before it is administered to the
   patient.

8. If poison has been splashed into the eye, ________________________________ the affected eye with clean
   water for at least ________________________________ ________________________________.

9. No matter what else is done regarding poisoning treatment, if the ________________________________
   and ________________________________ are not maintained, the patient will die.
1. List the four ways that poisons can enter the body.

2. List nine questions that should be asked during assessment of a patient with ingested poisoning.

3. List four contraindications for administration of activated charcoal.

4. List the emergency care steps for treating patients with inhaled poisoning.
Write the letter of the type of poisoning next to the appropriate scenario below.

1. You are called to a suburban home to assist an 18-year-old male who has been found on the floor of his bathroom. He has a reduced pulse rate and reduced rate of breathing. His pupils are constricted to pinpoint size. He seems very sleepy and unresponsive. There is a constricting band tied around his upper arm. You find a hypodermic needle behind a clothes hamper.

2. A 19-year-old male farm worker stumbles while carrying an open drum of pesticides. The powder spills all over his clothes and body. Within minutes, a stinging, burning sensation spreads across his hands, arms, neck, and face. “It’s like being on fire,” he tells another farm worker. “Get some help fast!”

3. A 38-year-old woman collapses on the floor of her garage while cleaning out her car. She had left the car idling so that she could listen to her favorite radio station without running down the battery. By the time her husband discovers her, the woman is barely breathing. He rushes to call an EMS unit.

4. A 45-year-old man in extreme pain from a recent back operation decides to double his self-administered dosage of Demerol. By the end of the day, he feels extremely lethargic and is sweating profusely. His pupils look pinpoint in size. Sensing trouble, his teenage son calls the nearest ambulance service.

A. ingested poisoning
B. inhaled poisoning
C. absorbed poisoning
D. injected poisoning
Activated Charcoal

Write in the missing information on the medication flash card below, and save the completed card for future reference.

**Activated Charcoal**

**Medication Names:**
1. Generic: ____________________________
2. Trade: ____________________________

**Indications:**
1. ____________________________
2. ____________________________
3. ____________________________

**Contraindications:**
1. ____________________________
2. ____________________________
3. ____________________________
4. ____________________________

**Medication Form:** ____________________________

**Dosage:** ____________________________

**Actions:**
1. ____________________________
2. ____________________________

**Side Effects:**
1. ____________________________
2. ____________________________
CHAPTER 22 ANSWER KEY

HANDOUT 22-1: Chapter 22 Quiz


HANDOUT 22-2: In the Field

1. Sample response: “It is likely that your friend may have been overcome by carbon monoxide fumes from the heater.”
2. Sample response: If you are trained and have proper gear, enter the room to remove the patient. (If not, call medical direction for instructions and request a fire department rescue unit.) Remember that you have two patients, the woman and her friend. Prioritize treatment, with the advice of medical direction. After the unconscious patient has been removed, establish an open airway and administer oxygen at 15 liters per minute via nonrebreather mask or begin ventilations with supplemental oxygen. Also administer oxygen therapy to the woman. Provide transport to the hospital, paying particular attention to the patients’ airways and breathing.

HANDOUT 22-3: Chapter 22 Review

1. children
2. lateral recumbent
3. activated charcoal
4. 1 gram, kilogram
5. absorption
6. Carbon monoxide
7. medical direction
8. irrigate, 20 minutes
9. airway, breathing

HANDOUT 22-4: Poisoning: Listing

1. Ingestion, inhalation, absorption, injection.
2. Was any substance ingested? Was alcohol ingested with the substance? When did the patient ingest the poison? Over what time period was the substance ingested? How much of the substance was taken? Has anyone attempted to treat the poisoning? Does the patient have a psychiatric history that may suggest a possible suicide attempt? Does the patient have an underlying medical illness, allergy, chronic drug use, or addiction? How much does the patient weigh?

3. Altered mental status, ingestion of acids or alkalies, inability to swallow, cyanide overdose.
4. Get the patient out of the toxic environment as quickly as possible. Place the patient in a supine position or position of comfort. As soon as possible, administer oxygen by nonrebreather mask. Start positive-pressure ventilation with supplemental oxygen immediately if the patient is not breathing or has inadequate breathing. Bring all containers, bottles, labels, or other clues about the poisoning agent to the receiving facility.

HANDOUT 22-5: Poisoning: Matching


HANDOUT 22-6: Activated Charcoal (completion)

Medication Name:

Indications:
Upon orders from medical direction, administer to a patient who has ingested poisons by mouth.

Contraindications:
1. Patient has altered mental status.
2. Patient has swallowed acids or alkalies.
3. Patient is unable to swallow.
4. Patient has cyanide overdose.

Medication Form:
(1) Premixed powder in water, shaken into a suspension.
(2) Powder—to be avoided in field.

Dosage:
Usually 1 gram per kilogram of body weight for both adults and children.

Actions:
Absorbs poisons in the stomach; prevents absorption of poisons by the body; enhances elimination of poisons from the body.

Side Effects:
1. Blackening of stools.
2. Vomiting.
CHAPTER 23 QUIZ

Write the letter of the best answer in the space provided.

1. All of the following vital organs are located in the abdominal cavity except the
   A. stomach.
   B. gallbladder.
   C. lungs.
   D. liver.

2. Pain that is felt in a body part removed from its point of origin is called _____ pain.
   A. referred
   B. ghost
   C. radiating
   D. provoked

3. Irritation and inflammation of the peritoneum is called
   A. costalgonitis.
   B. diverticulitis.
   C. appendicitis.
   D. peritonitis.

4. An abdominal wall muscle contraction that the patient cannot control, resulting from
   inflammation of the peritoneum, is called
   A. rigidity.
   B. guarding.
   C. protecting.
   D. posturing.

5. All of the following are common signs and symptoms of a spontaneous abortion except
   A. lower abdominal pain.
   B. vaginal bleeding.
   C. rapid pulse.
   D. increased blood pressure.

6. Abdominopelvic pain in the middle of a patient’s menstrual cycle is known as
   A. mittelschmerz.
   B. dysmenorrhea.
   C. endometrial.
   D. referred.

7. Endometriosis is most commonly diagnosed in patients between the ages of
   A. 35–45.
   B. 25–35.
   C. 15–25.
   D. 45–55.

8. All of the following are part of the urinary system except the
   A. kidneys.
   B. liver.
   C. bladder.
   D. urethra.

9. Risk factors associated with renal calculi include all of the following except
   A. hyperthyroidism.
   B. dehydration.
   C. obesity.
   D. increased dairy intake.

10. The abdomen is divided into _____ regions.
    A. four
    B. six
    C. nine
    D. eight
CHAPTER 23 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The left lower quadrant of the abdomen contains part of the ______________________________
   ________________________________ and the female reproductive organs.
2. ________________________________ pain is felt when the abdominal organ itself is involved.
3. Pancreatitis, or inflammation of the ______________________________, may cause severe pain in the
   middle or the upper quadrants (epigastric area) of the abdomen.
4. While assessing your patient you note hematochezia. This means that the patient had a
   ________________________________ onset of gastrointestinal bleeding.
5. The ovaries are the primary sex glands and are located on either side of the
   ________________________________
6. When treating the victim of a sexual assault it is extremely important to not let the patient
   ________________________________ ________________________________, bathe, comb, or clean any part of
   her body.
7. A ________________________________ cyst is a fluid-filled sac that forms inside of or on an
   ________________________________
8. Pelvic inflammatory disease is an infection of the female ________________________________ tract.
9. The ________________________________ are bean-shaped organs located in the retroperitoneal space.
10. ________________________________ is an artificial process used to remove water and waste substances
    from the blood when the kidneys fail to function properly.
1. List the three types of abdominal pain.

2. List the seven emergency care steps for a patient with acute abdominal pain.

3. List the four psychological effects of sexual assault.

4. List the six emergency care steps for a dialysis emergency.
CHAPTER 23 ANSWER KEY

HANDOUT 23-1: Chapter 23 Quiz
3. D  6. A

HANDOUT 23-2: Chapter 23 Review
1. large intestine  6. change clothes
2. Visceral  7. ovarian, ovary
3. pancreas  8. reproductive
4. rapid  9. kidneys
5. uterus  10. Dialysis

HANDOUT 23-3: Abdominal, Gynecologic, Genitourinary, and Renal Emergencies: Listing
1. Visceral, parietal, referred.
2. Keep the airway patent. Place the patient in a position of comfort. Administer oxygen at 15 liters per minute via a nonrebreather mask. Never give anything by mouth. Calm and reassure the patient. If signs and symptoms of hypoperfusion are present, treat for shock. Initiate a quick and efficient transport.
3. Severe anxiety, depression, or fear; Inappropriate feeling of guilt; Flashbacks or nightmares; Emotional withdrawal, numbness, or irritability.
4. Maintain the airway, breathing, and circulation. Support ventilation as needed. Provide high-flow, high-concentration oxygen. Stop any bleeding from the shunt or access site as needed. Position the patient; if the patient has signs of shock, place him in a supine position. If the patient has pulmonary edema, place him in an upright position. Transport.
CHAPTER 24 QUIZ

Write the letter of the best answer in the space provided.

1. Water chill, which occurs when clothing or the body gets wet, is an example of
   A. conduction. 
   B. convection. 
   C. radiation. 
   D. evaporation.

2. Wind chill, which occurs when currents of air pass over the body, is an example of
   A. conduction. 
   B. convection. 
   C. radiation. 
   D. evaporation.

3. All of the following are signs and symptoms of hypothermia except
   A. agitation and hyperactivity. 
   B. shivering in early stages. 
   C. loss of motor coordination. 
   D. cool abdominal skin temperature.

4. In providing emergency care steps for the hypothermic patient who is alert and responsive, an EMT should
   A. passively rewarm the extremities. 
   B. provide the patient with stimulants. 
   C. get the patient to walk around. 
   D. actively rewarm the patient.

5. Rough handling of a patient with hypothermia may result in
   A. apnea. 
   B. ventricular fibrillation. 
   C. blood clots. 
   D. seizures.

6. Superficial local cold injuries are sometimes referred to as
   A. “white nose.” 
   B. frost touch. 
   C. hyperthermia. 
   D. frostbite.

7. All of the following are signs and symptoms you might expect to find in a heat emergency patient with hot, dry skin except
   A. rapid, shallow breathing. 
   B. generalized weakness. 
   C. dilated pupils. 
   D. heavy perspiration.

8. To rapidly cool a patient with a hyperthermic emergency, apply ice packs to the neck, groin, and
   A. wrists. 
   B. armpits. 
   C. knees. 
   D. ankles.

9. The mildest form of hyperthermia is called
   A. heat exhaustion. 
   B. heat cramps. 
   C. heat stroke. 
   D. fever.

10. All of the following are factors that put a patient at risk for generalized hyperthermia except
    A. environment. 
    B. diet. 
    C. age. 
    D. drugs and poisons.

11. Hot skin that is either dry or moist represents
    A. a dire emergency. 
    B. heat exhaustion. 
    C. heat cramps. 
    D. a stable patient.
Review the following real-life situation. Then answer the questions that follow.

It is an overcast March afternoon when you are dispatched to a call for a woman who has fallen at 45 Stan-dish Street. The temperature is in the 30s, with gusty winds. Banks of dirty snow from last week’s storm still line the streets and sidewalks.

1. What might the information from dispatch plus the weather conditions lead you to expect at this call?

2. A police car is on the scene when you arrive. The officers assure you that the scene is safe. One officer says he’ll lead you to the patient, who has fallen in a snowdrift near the garbage can next to the garage. Given what you know of the situation to this point and given that the police are on the scene, what step might you take to prepare for this patient before leaving the ambulance?

3. Behind the house, you see a woman apparently in her 60s, lying just off an icy set of steps in a snow bank. She is wearing only a housecoat and slippers. What injury possibilities do these circumstances suggest? What actions should you take before proceeding further in your assessment?

4. As you proceed, you discover that the woman is not alert, but does respond inappropriately to loudly spoken questions. She is not shivering, and the skin on her abdomen is cool to the touch. She has a blood pressure of 102/60, a heart rate of 60, and a respiration rate of 14. Her skin is pale, cool, and firm to the touch. What do these findings indicate? How should you proceed?
CHAPTER 24 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The mechanism of ____________________________ causes body heat to be lost through direct contact.

2. The process of ____________________________ causes cold air molecules that are in immediate contact with the skin to be warmed.

3. The most significant mechanism of heat loss is ____________________________, which involves the transfer of heat from the surface of one object to the surface of another without physical contact.

4. Most radiant heat loss occurs from a person’s__________________________, ____________________________, and ____________________________.

5. The process in which a liquid or solid changes to a vapor is called ____________________________.

6. ____________________________ causes loss of body heat as a result of exhaled warm air.

7. When cooling affects the entire body, a problem known as ____________________________, ____________________________ develops.

8. Application of an external heat source to the body is known as ____________________________, ____________________________.

9. ____________________________ ____________________________ is taking measures to prevent further heat loss and giving the patient’s body the optimum chance to rewarm itself.

10. ____________________________ ____________________________ results from the freezing of body tissue.

11. Another name for late or deep local cold injuries is ____________________________.

12. Heat-related emergencies are grouped under the name ____________________________.

13. The patient with a(n) ____________________________ ____________________________, who also has hot skin, should be considered a priority patient.

14. Always transport a hyperthermic patient with hot skin that is ____________________________ or ____________________________.

15. Apply a(n) ____________________________ ____________________________ to an insect bite or sting to help relieve pain and swelling.

(continued)
16. Do not apply cold to bites of ______________________________ or to injuries inflicted by ______________________________.

17. The ______________________________ ______________________________
______________________________ ______________________________ is characterized by a shiny black body, thin legs, and a crimson red marking on its abdomen, usually in the shape of an hourglass or two triangles.

18. The ______________________________ ______________________________ gets its name from the intense, fiery, burning pain its bite causes.

19. The two classes of poisonous snakes in the United States are ______________________________ ______________________________
 ________________ and ______________________________
 ________________.

20. Soaking the affected area in ______________________________ water for 30 minutes or throughout transport will help break down venom from a marine bite or sting.
ENVIRONMENTAL EMERGENCIES: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Shivering is one of the body’s compensatory mechanisms.
2. Water chill, which happens when the body or clothes get wet, is an example of convectional cooling.
3. Administering a drink of alcohol is an effective way to reduce the effects of hypothermia.
4. In all cases of hypothermia, an EMT should begin active rewarming with the extremities.
5. If clothing is frozen to the skin, it should be left in place.
6. All heat emergency patients should be allowed to drink cool water.
7. A patient with hot skin that is either moist or dry represents a dire medical emergency.
8. Snakebites are relatively uncommon, and the number of people who die from them each year is extremely small.
9. Black widow spider bites are the leading cause of death from spider bites in the United States.
10. The bite of the brown recluse spider is a serious medical condition that usually does not heal and may require surgical repair.
CHAPTER 24 ANSWER KEY

HANDOUT 24-1: Chapter 24 Quiz

HANDOUT 24-2: In the Field
1. The fall coupled with the cold conditions should at least suggest the possibility of hypothermia.
2. Because you suspect the possibility of hypothermia and because police are present to secure the vehicle, you could leave the motor running and the heat turned up to high in the patient compartment.
3. The circumstances make the possibility of hypothermia even higher. In addition, because the woman is in her 60s and has suffered a fall, you would want to take in-line manual stabilization as a precaution. To try to protect her from the cold, you would, while maintaining manual stabilization, log roll her onto her side and slip a blanket under her before proceeding with the assessment. You will also want to immobilize her to a long board before transport.
4. Your findings indicate severe hypothermia. This is a priority patient. You should load the patient into the ambulance to prevent further heat loss (taking precautions noted above). Handle the patient as gently as possible to prevent the potential cardiac dysrhythmia, ventricular fibrillation. You should ensure an open airway and provide oxygen at 15 liters per minute (warmed and humidified, if possible) via nonrebreather mask. Wrap her in blankets and transport immediately.

HANDOUT 24-3: Chapter 24 Review
1. conduction
2. convection
3. radiation
4. neck, head, feet
5. evaporation
6. Respiration
7. generalized hypothermia
8. active rewarming
9. Passive rewarming
10. Local cold injury
11. frostbite
12. hyperthermia
13. altered mental status
14. moist, dry
15. cold pack
16. snakes, marine life
17. black widow spider
18. fire ant
19. pit vipers, coral snakes
20. hot

HANDOUT 24-4: Environmental Emergencies: True or False
2. F  5. T  8. T  10. T
3. F  6. F
CHAPTER 25 Quiz

Write the letter of the best answer in the space provided.

_______ 1. The term _____ describes a drowning event where a patient is pronounced dead within 24 hours of the event.
   A. drowning  B. submersion  C. water rescue  D. drowning-related death

_______ 2. Death that occurs 24 hours after a drowning is called a

_______ 3. If a swimmer may have been involved in a diving accident or may have been struck by a boat, water skier, surfboard, or another object, the EMT should suspect

_______ 4. A condition in which the stomach fills with water, enlarging the abdomen to the point that it interferes with the ability to inflate the lungs, is called

_______ 5. As a guideline, the EMT should attempt resuscitation on any pulseless, nonbreathing patient who has been submerged in _____ water, even if the drowning has been longer than 30 minutes.
   A. warm  B. cold  C. fresh  D. salt

_______ 6. All of the following are signs and symptoms of arterial gas embolism except

_______ 7. If you suspect that a patient has a spine injury, maintain in-line stabilization and then secure the patient to a backboard before
   A. evaluating breathing.  B. starting CPR.  C. starting rescue breathing.  D. removing from water.

_______ 8. Signs and symptoms of barotrauma include all of the following except

_______ 9. Decompression sickness may occur up to _____ following a dive.
   A. 2 days  B. 72 hours  C. 1 week  D. 2 weeks

_______ 10. The most important factor in determining whether EMTs enter the water to rescue a patient is
    A. the quality of their equipment.  B. their training.  C. the depth of the water.  D. their ability to use a rowboat.
IN THE FIELD

Review the following real-life situation. Then answer the question that follows.

It is 1400 in the afternoon and you and your partner are dispatched to a local neighborhood for a possible drowned child. As you arrive, you note that the police are already on the scene. One officer leads you to the backyard where another officer is performing CPR on a small child. A young woman is standing nearby. The officer explains that the 2-year-old had apparently snuck out of the house and had fallen in the pool. It is estimated that the child had been in the water for about 20 minutes before being discovered by the babysitter. Your partner instructs the officer to stop CPR, verifies that the child is apneic and pulseless, and then resumes CPR.

1. What additional actions should you and your partner take?
Write the word or words that best complete each sentence in the space provided.

1. The term ______________________________ describes an incident in which someone is submerged or immersed in a liquid, resulting in a primary respiratory impairment.

2. Drownings can be additionally complicated in cases where ______________________________ is involved, which can produce additional trauma.

3. The EMT should always assume that a diver has sustained ______________________________ injuries.

4. If a patient is responsive and close to shore, use the ______________________________, ______________________________, ______________________________, and ______________________________ strategy.

5. In the case of a drowning involving a possible spine injury, the goal is to support the back and stabilize the ______________________________ and ______________________________ as other care is provided.

6. When a person dives into cold water, the ______________________________ diving reflex can prevent death, even after prolonged submersion.

7. Some experts advise ______________________________ ______________________________ for every drowning patient, regardless of water temperature, even those who have been in the water for a prolonged period.

8. A(n) ______________________________ ______________________________ is a blocking of blood vessels by an air bubble or clusters of air bubbles.

9. The signs and symptoms of an arterial gas embolism have a(n) ______________________________ ______________________________.

10. ______________________________ sickness usually occurs when a diver ascends too quickly from a deep, prolonged dive.
Indicate if the following statements are true or false by writing T or F in the space provided.

________ 1. Drowning is the leading cause of accidental death in children under age 5.

________ 2. Drownings always occur in large bodies of water.

________ 3. The best prognosis for drowning patients occurs among those who are submerged in warm, dirty, or brackish (salty) water.

________ 4. During resuscitation of a drowning patient, gastric distension should be relieved whether or not it interferes with ventilations.

________ 5. Drowning patients may be unresponsive, not breathing, or pulseless, or they may be responsive and possibly gasping or coughing up water.

________ 6. In a water-related emergency, the EMT must reach the patient as soon as possible without regard for personal safety to initiate lifesaving measures.

________ 7. Injuries to the cervical spine are seen with many water-related accidents.

________ 8. The onset of decompression sickness may occur up to 72 hours after a dive.

________ 9. Divers with upper respiratory infections or allergies are at increased risk of barotrauma.

________ 10. Provision of oxygen is critical in cases of decompression sickness because it reduces the size of nitrogen bubbles and improves circulation.
CHAPTER 25 ANSWER KEY

HANDBOOK 25-1: Chapter 25 Quiz

HANDBOOK 25-2: In the Field
1. It is not known how the child fell into the water, and spinal injuries have to be suspected. The head and neck must be stabilized and the child secured to a backboard. As rapidly as possible, an airway should be established (suction as needed) and positive-pressure ventilations initiated. If gastric distension interferes with ventilations, it must be relieved. Manage any other trauma conditions and transport the patient as quickly as possible, continuing resuscitative measures during transport.

HANDBOOK 25-3: Chapter 25 Review
1. drowning
2. diving
3. spine
4. reach, throw, row, go
5. head, neck
6. mammalian
7. artificial ventilation (or positive-pressure ventilation)
8. arterial gas embolism
9. rapid onset
10. Decompression

HANDBOOK 25-4: Submersion Incidents: Drowning and Diving Emergencies: True or False
2. F 5. T 8. T 10. T
3. F 6. F
CHAPTER 26 Quiz

Write the letter of the best answer in the space provided.

1. A situation in which a person exhibits actions that are unacceptable to the patient, family, or community is known as
   A. a panic attack.  
   B. depression.  
   C. a behavioral emergency.  
   D. psychosis.

2. Which one of the following is not a factor in determining whether the use of force with an emotionally disturbed patient is reasonable or not?
   A. size and strength of patient  
   B. dispatch information  
   C. mental state of patient  
   D. method of restraint

3. The medical condition most likely to cause restlessness and confusion, cyanosis, and altered mental status is
   A. excessive heat.  
   B. inadequate blood to the brain.  
   C. excessive cold.  
   D. lack of oxygen.

4. One method of protecting against false accusations by a behavioral emergency patient is
   A. using medical responders of a different gender than the patient.  
   B. involving third-party witnesses.  
   C. limiting the involvement of other medical responders.  
   D. sharply limiting documentation.

5. The first step that an EMT takes in a behavioral emergency is to
   A. gather a thorough patient history.  
   B. complete an initial assessment.  
   C. identify him- or herself.  
   D. perform a careful scene size-up.

6. A state of painful uneasiness about impending problems is called
   A. anxiety.  
   B. depression.  
   C. psychosis.  
   D. mania.

7. In talking with a behavioral patient, an EMT should take all of the following actions except
   A. identifying him- or herself.  
   B. avoiding direct eye contact.  
   C. being as honest as possible.  
   D. standing at least 3 feet from the patient.

8. Of the groups listed, the highest suicide rates have been found in which age group?
   A. women under age 25  
   B. men over age 40  
   C. men ages 15 to 25  
   D. women over age 50

9. A patient who has attempted suicide in the past is
   A. looking for attention.  
   B. less likely to commit suicide than one who has not.  
   C. a candidate for forceful restraint.  
   D. more likely to commit suicide than one who has not.

10. In most localities, an EMT cannot legally restrain a patient without orders from
    A. dispatch.  
    B. the patient’s physician.  
    C. the police.  
    D. the patient’s family.
Review the following real-life situation. Then answer the questions that follow.

The emergency medical dispatcher reports a 14-year-old girl who is “acting in a bizarre manner.” Her father is currently trying to keep her from leaving the house.

Upon the EMS unit’s arrival at the scene, the father guides the team into the house. He states that his daughter has been depressed for the past few weeks. Today the daughter’s behavior changed dramatically. Instead of appearing to be lethargic, the daughter has become hyperactive. The father indicates that the family has a history of manic depression. “The doctor has a new word for it,” laughs the father nervously. “They call it bipolar disorder.” The father indicates that his daughter is on medication for the condition, but feels that she has stopped using it. The girl’s psychiatrist recommended that the father call 911.

The father takes you to meet his daughter, Stephanie. You see a clean, well-dressed young woman who appears to be happy. She speaks very fast and occasionally exhibits muscle twitches of the face and hands. Although Stephanie indicates no physical complaints, her vital signs are on the high side of normal. She doesn’t want to talk about her medical condition. She also doesn’t want to be transported to the hospital. With her eyes averted, Stephanie says a little too lightly, “My father worries much too much. I’m just fine.”

1. How should you proceed with patient care?

2. What information might you use to persuade the patient to accompany you to the hospital?
Write the word or words that best complete each sentence in the space provided.

1. ________________________________ is defined as the manner in which a person acts or performs.

2. A(n) ______________________________ ______________________________ exists when a person exhibits abnormal behavior.

3. There are many ______________________________ conditions as well as psychological conditions that are likely to alter a patient’s behavior.

4. ______________________________ is a condition characterized by deep feelings of sadness, worthlessness, and discouragement—feelings that often do not seem connected to the actual circumstances of the patient’s life.

5. In providing patient care during a behavioral emergency, an EMT should treat any life-threatening conditions during the ______________________________ ______________________________.

6. In talking with a patient experiencing a behavioral emergency, maintain good ______________________________ ______________________________ and avoid any quick ______________________________.

7. Whenever you are called to care for a patient who has attempted suicide, your first concern must be for ______________________________ ______________________________ ______________________________.

8. Suicide is more common among people with a history of ______________________________ or ______________________________ ______________________________.

9. Before you restrain any patient for any reason, contact ______________________________ ______________________________.

10. The best way to protect yourself against false accusations by a patient is to carefully and completely ______________________________ everything that happens during the encounter, including detailed aspects of the patient’s abnormal behavior.
**BEHAVIORAL EMERGENCIES: LISTING**

1. List seven physical conditions that are likely to alter a person’s behavior.

2. List seven basic principles to keep in mind whenever you encounter a behavioral emergency.
BEHAVIORAL EMERGENCIES: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. During a behavioral emergency, an EMT should only call the police as a last resort.  
2. When dealing with a patient with a behavior problem, always consider that the problem may be caused by a physical condition.  
3. Whenever an EMT is called to the scene of a suicide attempt, his or her first concern should be for the patient’s safety.  
4. Every suicidal act or gesture should be taken seriously, and the patient should be transported for evaluation.  
5. If a patient’s fear or aggression increases, an EMT should not push the issue of transport.  
6. In treating a behavioral emergency, an EMT should not leave the patient alone.  
7. Once a patient is acting rationally, an EMT may remove soft restraints.  
8. Under most state laws, any adult of sound mind has the right to determine whether he or she will be treated or, more specifically, touched by another person in the course of treatment.  
9. The patient who has become calm following a period of combativeness will most likely not revert to the earlier behavior.  
10. Depending on state and local law, a patient who is disoriented, in shock, mentally ill, or under the influence of drugs or alcohol may not be considered competent to refuse care.
CHAPTER 26 ANSWER KEY

HANDOUT 26-1: Chapter 26 Quiz

3. D  6. A

HANDOUT 26-2: In the Field

1. Sample response: Several factors indicate that the girl should be convinced to accept treatment: she’s a minor; her psychiatrist directed the father to call 911; she has a potentially hazardous condition. Medical direction should be contacted. Depending on local protocols, paperwork may have to be filled out if the girl refuses transport. The police may also need to intervene. The patient should be made aware of all possible options, but she should also understand that the outcome will be the same—a trip to the hospital.

2. Sample response: The girl might be told: “You are experiencing muscle twitches, which need to be checked out. Your father is worried about you, and we can set his mind at ease. Your doctor requested that you be checked out at the hospital.”

HANDOUT 26-3: Chapter 26 Review

1. Behavior
2. behavioral emergency
3. physical
4. Depression
5. initial assessment
6. eye contact, movements
7. your own safety
8. alcoholism, drug abuse
9. medical direction
10. document

HANDOUT 26-4: Behavioral Emergencies: Listing

1. Any seven of the following: low blood sugar, lack of oxygen, inadequate blood to the brain, head trauma, mind-altering substances, excessive cold, excessive heat, psychogenic substances, infections of the brain or its coverings.
2. Every person has limitations. Each person has a right to his or her feelings. Each person has more ability to cope with crisis than he or she might think. Everyone feels some emotional disturbance when involved in a disaster or when injured. Emotional injury is just as real as physical injury. People who have been through a crisis do not just “get better.” Cultural differences have special meaning when you are called to intervene in behavioral emergencies.

HANDOUT 26-5: Behavioral Emergencies: True or False

2. T  5. T  8. T  10. T
3. F  6. T

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Prehospital Emergency Care, 9th Ed.
CHAPTER 27 QUIZ

Write the letter of the best answer in the space provided.

1. Newton’s first law of motion states that a body at rest will remain at rest and a body in motion will remain in motion unless acted upon by

2. The term for the energy that is contained in a moving body is

3. An increase in which one of the following causes the greatest increase in kinetic energy?
   A. mass       B. velocity       C. size       D. width

4. Shearing or tearing forces are placed on the organs and their supportive tissues in the mechanism of injury called

5. A bullet traveling through a body part produces a temporary indentation around the bullet’s actual path. This process is known as

6. The chance of sustaining a fatal injury in a vehicle collision is increased by 300 percent when the occupant is
   A. unrestrained.       B. ejected.       C. an infant or a child.       D. improperly restrained.

7. In every motor vehicle collision there are at least how many impacts?
   A. two       B. three       C. four       D. five

8. A fall should be considered severe any time an adult patient has fallen _____ feet.
   A. 2       B. 5       C. 10       D. 15

9. On what does the extent of injury depend when a vehicle hits a pedestrian?
   A. how fast the vehicle was going       B. what part of the pedestrian’s body was hit       C. how far the pedestrian was thrown       D. all of the above

10. Which one of the following may be useful in determining the nature of illness/mechanism of injury?
    A. the patient       B. bystanders       C. family members       D. all of the above
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

Your EMS unit is dispatched to a one-vehicle automobile collision. You arrive and find a 22-year-old female who reportedly dodged an animal that was in the roadway. She ran off the road and hit a large cedar tree. After repeated questioning, she admits that she had just taken her seat belt off. You assess the car to find that the steering column is bent and that there is a starburst pattern on the windshield in front of the driver’s seat. The driver, meanwhile, is very anxious and restless. You note a large bruise over her sternum.

1. What injuries would you expect to find, considering the mechanism of injury?

2. How would you expect the injuries to be different if the patient had been wearing a seat belt? If the air bag had deployed?
CHAPTER 27 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Since the early 1970s, ______________________________ has been recognized as the leading cause of death for those between the ages of 1 and 40.

2. The science of analyzing the mechanism of injury is sometimes called the ______________________________ ______________________________ ______________________________.

3. The factors and forces that may have caused injury to a patient are the ______________________________ ______________________________ ______________________________.

4. The amount of kinetic energy an object contains depends on two factors: the body’s ______________________________ and the body’s ______________________________.

5. During the assessment of a patient who was involved in an MVC, the EMT must maintain a high ______________________________ ______________________________ ______________________________ based on the mechanism of injury.

6. Understanding the factor of ______________________________ is important in evaluating the mechanism of injury in vehicle collisions.

7. ______________________________ travels in a straight line unless it meets and is deflected by some type of interference.

8. The rate at which a body in motion increases its speed is known as ______________________________.

9. Over one-third of all deaths due to trauma occur from ______________________________ ______________________________ ______________________________.

10. The up-and-over pathway causes impact to the ______________________________

                                           ______________________________, ______________________________, and ______________________________.
TRAUMA OVERVIEW: THE TRAUMA PATIENT AND THE TRAUMA SYSTEM: LISTING

1. List four major factors in determining the force of an impact.

2. In the typical vehicular collision, there are actually three impacts. List these.

3. List five common mechanisms of injury.

4. List five types of motor vehicle collisions.
RECOgnIZING INJURY PATTERNS

For each of the three types of collisions pictured on the next page, identify the type of collision and the type of injuries commonly associated with it.

1. __________________________ collision
   Type of injuries: __________________________

2. __________________________ collision
   Type of injuries: __________________________

3. __________________________ collision
   Type of injuries: __________________________
HANDOUT 27-5 (continued)

1. _____________________________ collision
   Type of injuries:

2. _____________________________ collision
   Type of injuries:

3. _____________________________ collision
   Type of injuries:
TRAUMA OVERVIEW: THE TRAUMA PATIENT AND THE TRAUMA SYSTEM: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Children are initially struck higher in the body in pedestrian collisions than adults.  
2. Air bags are extremely effective in multiple collision incidents but are not effective in initial impact head-on collisions.  
3. Spinal fractures are more common with rear collisions than with lateral collisions.  
4. The EMT must not only recognize obvious injuries but must also maintain a high index of suspicion for hidden injuries.  
5. The concept of cavitation deals primarily with blunt trauma injuries.  
6. Trauma is nearly always the result of two or more bodies colliding with each other.  
7. A knife wound is potentially more traumatic than a bullet wound.  
8. The fall is actually the most common mechanism of injury.  
9. The “paper bag syndrome” results from compression of the chest against the steering column.  
10. Injuries from rotational crashes or rollover crashes are not as easy to predict as injuries from other crashes.
CHAPTER 27 ANSWER KEY

HANDOUT 27-1: Chapter 27 Quiz

HANDOUT 27-2: In the Field
1. Closed and/or open head injuries, soft tissue and blunt force injuries to the chest, abdominal injuries.
2. Seat belt: Head and neck injuries are still likely, as the seat belt does not hold them immobile. Deceleration injuries may be present without any outward signs of trauma. Air bag: Deceleration injuries are still likely. The air bag immediately deflates, allowing secondary impact with the steering wheel and/or windshield. Abrasions are likely on the arms and face from contact with the rapidly deploying air bag.

HANDOUT 27-3: Chapter 27 Review
1. trauma
2. kinetics of trauma
3. mechanisms of injury
4. mass, velocity
5. index of suspicion
6. velocity
7. Energy
8. acceleration
9. vehicle collisions
10. head, neck, chest, abdomen

HANDOUT 27-4: Trauma Overview: The Trauma Patient and the Trauma System: Listing
1. Mass, velocity, acceleration, deceleration.
2. Vehicle, body, organs.
3. Falls, vehicular collisions, penetrating gunshots or stabbings, explosions, blast injuries.
4. Head-on, rear-end, side impact, rollover, rotational.

HANDOUT 27-5: Recognizing Injury Patterns
1. Head-on collision. Types of injuries: up-and-over head, neck, chest, abdominal injuries; down-and-under knee, hip, and leg injuries.
2. Rear-end collision. Types of injuries: neck (most common), head, chest.

HANDOUT 27-6: The Trauma Overview: The Trauma Patient and the Trauma System: True or False
3. F 6. T
CHAPTER 28 QUIZ

Write the letter of the best answer in the space provided.

1. The first step an EMT should take when encountering a patient with severe bleeding is to
   A. apply pressure to the wound.
   B. utilize appropriate BSI.
   C. check the patient’s blood pressure.
   D. apply a tourniquet.

2. Open wounds in which flaps of skin and tissue are torn loose or pulled off completely are called
   A. avulsions.
   B. lacerations.
   C. amputations.
   D. punctures.

3. An average adult weighing 154 pounds will have _____ liters of total blood volume.
   A. 8–10
   B. 4.9
   C. 6.8
   D. 12–14

4. The type of shock most commonly caused by profound blood or fluid loss is _____ shock.
   A. hypovolemic
   B. cardiogenic
   C. vasogenic
   D. irreversible

5. In the average adult patient who weighs 154 pounds, a blood volume loss of _____ percent or more is considered significant and can lead to shock.
   A. 5
   B. 15
   C. 1
   D. 7.5

6. The next step in bleeding control after direct pressure is
   A. tourniquet.
   B. elevation.
   C. splinting.
   D. rapid transport.

7. Epistaxis is another way of saying the patient has
   A. high blood pressure.
   B. increased plaque in his arteries.
   C. nose bleed.
   D. abdominal bleeding.

8. All of the following medications will affect clotting except
   A. Coumadin.
   B. aspirin.
   C. Lasix.
   D. ibuprofen.

9. Of the following, which is a contraindication to the use of PAGS?
   A. suspected pelvic fracture with systolic BP less than 90 mmHg
   B. profound hypotension with systolic blood pressure less than 50 mmHg
   C. penetrating trauma to the chest with systolic blood pressure less than 80 mmHg
   D. none of the above

10. An injury caused by scraping, rubbing, or shearing away is an
    A. abrasion.
    B. contusion.
    C. laceration.
    D. avulsion.
HANDOUT 28-1 (continued)

11. The skin is composed of _____ layers.
   A. two  
   B. one  
   C. four  
   D. three

12. An injury to the blood vessels and tissue contained within the dermis is called a(n)
   A. contusion.  
   B. abrasion.  
   C. laceration.  
   D. avulsion.

13. The type of laceration caused by a knife or razor is
   A. stellar.  
   B. stellate.  
   C. linear.  
   D. clean.

14. When applying an occlusive dressing to a chest wound, the dressing should be secured on how many sides?
   A. two  
   B. one  
   C. four  
   D. three

15. Treatment for exposed internal abdominal organs include all of the following except
   A. application of PASG.  
   B. cover with a sterile moist dressing.  
   C. flex patient's hips and knees in the absence of suspected spinal injury.  
   D. apply high-flow, high-concentration oxygen.
CHAPTER 28 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The layers of the skin are the ______________________________, ______________________________, and ______________________________.

2. A wound in which there is no open pathway from the outside to the injured site is called a ______________________________.

3. Simple scrapes or scratches in the outer layer of the skin are known as ______________________________.

4. A(n) ______________________________ should never be removed in the field, unless it is in the cheek or neck and obstructing airflow through the trachea.

5. The three major types of blood vessels are ______________________________, ______________________________, and ______________________________.

6. Whenever bleeding is suspected or discovered, the use of ______________________________ precautions is essential for the EMT to avoid exposure of the skin and mucous membranes.

7. The final stage of shock, or ______________________________ shock, exists when the body has lost the battle to maintain perfusion to the organ systems.

8. The second step in bleeding control when direct pressure has failed is the use of a ______________________________.

9. A ______________________________ temperature may make the clotting process slower and less effective.

10. A blood loss of ______________________________ percent will affect the patient’s vital signs.
BLEEDING AND SOFT TISSUE TRAUMA: LISTING

1. List five of the contraindications to the use of PASG.

2. List four of the factors that may increase bleeding.

3. List the six emergency care treatments for open neck wounds.

4. List the four types of bandages.
Bleeding and Soft Tissue Trauma: True or False

Indicate if the following statements are true or false by writing T or F in the space provided.

1. A wound that is beneath unbroken skin is called a closed injury.  
2. Signs and symptoms of a closed soft tissue injury include swelling, pain, and discoloration at the injury site.  
3. An open injury may be the indicator of a deeper, more serious injury.  
4. With gunshot wounds, the entry wound usually appears larger than the exit wound.  
5. A common complication associated with bites is cellulitis.  
6. Arterial blood is dark red.  
7. Direct pressure is the first step in bleeding control.  
8. Shock from fluid loss is called fluid shock.  
9. Dilated pupils are a sign of shock.  
10. The use of a tourniquet is the last resort for bleeding control.
# CHAPTER 28 ANSWER KEY

## HANDOUT 28-1: Chapter 28 Quiz

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## HANDOUT 28-2: Chapter 28 Review

1. epidermis, dermis, subcutaneous layer  
2. closed wound  
3. abrasions  
4. impaled object  
5. arteries, capillaries, veins  
6. body substance isolation  
7. irreversible  
8. tourniquet  
9. low body  
10. 15

## HANDOUT 28-3: Bleeding and Soft Tissue Trauma: Listing

1. Any five: penetrating thoracic trauma, splinting of lower extremity fractures, eviscerated abdominal organs, impaled object in abdomen, pregnancy, cardiopulmonary arrest.

2. Any of the following: movement, low body temperature, medications, intravenous fluids, removing of bandages and dressings.

3. Place gloved hand over wound to control bleeding, apply occlusive dressing, cover the occlusive dressing with a regular bandage, apply only enough coverage to control bleeding, once bleeding is controlled, apply a pressure dressing, if there is suspected spinal injury, provide appropriate spinal immobilization.

4. Self-adhering bandage, gauze roll, triangular bandage, or splint.

## HANDOUT 28-4: Bleeding and Soft-Tissue Trauma: True or False

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CHAPTER 29 QUIZ

Write the letter of the best answer in the space provided.

1. In estimating BSA of a burn, each upper extremity in an adult represents what percentage of the total body area?
   A. 7 percent  
   B. 27 percent  
   C. 18 percent  
   D. 9 percent

2. The three layers of the skin are the
   A. outer dermis, dermis, and subcutaneous tissue.
   B. endodermis, dermis, and muscle tissue.
   C. mid-dermis, dermis, and subcutaneous tissue.
   D. epidermis, dermis, and subcutaneous tissue.

3. The innermost layer of the skin is the
   A. endodermis.  
   B. subcutaneous layer.  
   C. epidermis.  
   D. dermis.

4. An example of a superficial burn would be a(n)
   A. severe scalding.  
   B. eschar.  
   C. thermal flame burn.  
   D. sunburn.

5. One method that the EMT can use to estimate the body surface area damaged by a burn is the
   A. rule of nines.  
   B. BSC rule.  
   C. rule of sixes.  
   D. plantar system.

6. In a child under age 5, any partial-thickness burn involving between 10 and 20 percent of BSA should be considered
   A. minor.  
   B. moderate.  
   C. critical.  
   D. superficial.

7. All of the following are important factors to consider in determining burn severity except
   A. percentage of body surface area involved.  
   B. location of the burn.  
   C. patient age and preexisting medical conditions.  
   D. ambient environmental temperature.

8. A burn that encircles a body area such as the chest, an arm, or a leg is called
   A. full thickness.  
   B. circumferential.  
   C. immersional.  
   D. severe.

9. When determining the BSA involved in a burn, the EMT should remember that the palm of the patient’s hand is equal to about what percentage of total body area?
   A. 2 percent  
   B. 3 percent  
   C. 1 percent  
   D. ½ percent

10. Burns are classified according to
    A. location of the injury.  
    B. depth of the injury.  
    C. type of heat involved.  
    D. amount of heat involved.
11. The most important treatment for a patient who has sustained a chemical burn to the eyes is
   A. rapid application of dry, sterile dressings to both eyes.
   B. application of gauze pads soaked with saline.
   C. copious irrigation with water.
   D. provision of oxygen via nonrebreather mask.

12. A burn in which the epidermis is burned through and the dermis is damaged is known as a _____ burn.
   A. superficial
   B. partial-thickness
   C. full-thickness
   D. third-degree

13. Absence of pain in a patient with a severe burn is most commonly associated with a _____ burn.
   A. first-degree
   B. second-degree
   C. third-degree
   D. superficial

14. In managing a burn correctly, an EMT may take all of the following steps except
   A. apply dry, sterile dressings.
   B. apply ointments or sprays.
   C. keep the patient warm.
   D. keep the burn site clean.

15. A partial-thickness (second-degree) burn will appear
   A. white to cherry red.
   B. dark brown or black.
   C. charred.
   D. pink.

16. When the EMT is dealing with the victim of an electrical burn, the primary concern should be
   A. patient care.
   B. personal safety.
   C. rapid AED use.
   D. bystander history.

17. When administering emergency medical care to a burn patient, clothing that has adhered to a burned area should be
   A. covered with an antiseptic ointment.
   B. covered with a dry, sterile dressing.
   C. carefully removed from the burned skin.
   D. left in place after cutting around the adhered area.

18. When dealing with chemical burns, the EMT should remember that dry chemicals should be
   A. brushed away before irrigating.
   B. irrigated without delay.
   C. removed with a damp sterile gauze pad.
   D. irrigated with neutralizing vinegar.

19. In cases of chemical burns to the eyes, the EMT should flood the eyes with
   A. vinegar.
   B. baking soda and water.
   C. water.
   D. hydrogen peroxide solution.

20. The most serious problem usually associated with electrical shocks is
   A. internal bleeding.
   B. hypertension.
   C. hypothermia.
   D. respiratory and/or cardiac arrest.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

You receive a call to the side of a county highway where it is reported that a utility worker is “on fire and still up in his bucket.” While responding, you ask your dispatcher to arrange for aerial rescue apparatus to assist you.

Upon arrival at the scene, you notice a charred utility bucket still in the air near several electrical lines. The utility worker, while still on fire, has jumped from the bucket and landed on the roadside.

1. What are your immediate considerations at this scene?

2. Utility officials are on the scene and assure you that the power is off. The fire has been extinguished, and you approach the patient. He is a male in his early 30s, conscious, and oriented to person, place, and time. He is complaining of severe pain all over his body. His facial hair has been singed off and his face is cherry red. He is able to control his own airway. You apply high-flow, high-concentration oxygen via nonrebreather mask. What types of injuries do you suspect that the patient has suffered? What was the mechanism of injury?

3. What other emergency care steps would you provide for this patient?
CHAPTER 29 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Burns are classified according to the ______________________________ of the injury.
2. The three layers of the skin are the ______________________________, ______________________________, and ______________________________ ______________________________.
3. Most burn patients who die in the prehospital setting will die from a(n) ______________________________ ________________, ______________________________ ______________________________, or other ______________________________.
4. Examples of superficial burns include ______________________________ or a minor ______________________________ injury.
5. The tough and leathery dead soft tissue formed in a full-thickness burn injury is called ______________________________.
6. A superficial burn is an injury that involves only the ______________________________.
7. A partial-thickness burn is also called a(n) ______________________________-degree burn.
8. When calculating BSA, the EMT should remember that the genital region represents ______________________________ percent of the total BSA.
9. Burn injuries need to be ______________________________ ______________________________ within approximately the first 10 minutes of injury.
10. Once the EMT has determined that the scene of a burn emergency is safe to enter, he should immediately take ______________________________ ______________________________.
11. ______________________________ burns can cause severe damage not only to soft tissues, but to the body as a whole.
12. A(n) ______________________________-____________________________ burn, or third-degree burn, is a burn in which all layers of the skin are damaged.
13. An alternative to the rule of nines for estimating the BSA of a burn involves using a comparison of the burned area to the patient’s ______________________________.
14. All burns normally classified as moderate should be reclassified as ______________________________ in a person younger than 5 or older than 55 years of age.
15. If dry lime is the burn agent, do not irrigate the burn with ______________________________ until it has been ______________________________ ______________________________ the patient.
1. List the signs and symptoms of partial-thickness burns.

2. List the signs and symptoms of full-thickness burns.

3. List the four most important factors in determining burn severity.

4. List three considerations when treating burns of the eye.
The rule of nines is used to estimate the extent of the burn area on a patient's body. On the figures below, write in the percentage that each body area represents on the lines provided.
CHAPTER 29 ANSWER KEY

HANDOUT 29-1: Chapter 29 Quiz


HANDOUT 29-2: In the Field

1. Personal/EMS crew safety, scene safety, patient safety.
2. Thermal and electrical burns should be considered as well as multiple injuries related to the trauma of the fall. The mechanisms of injury to consider are primarily burns and then injuries associated with a fall from over 20 feet.
3. Remove any smoldering clothing and any jewelry. Establish and maintain cervical spine immobilization. Continue to monitor the airway and provide adequate ventilation with oxygen. Classify the severity of the burn. Arrange for rapid advanced life support transport to a burn center. Cover the burned areas with dry, sterile dressings. Maintain the patient’s body temperature and treat any other injuries.

HANDOUT 29-3: Chapter 29 Review

1. depth
2. epidermis, dermis, subcutaneous layers
3. occluded airway, toxic inhalation, trauma
4. sunburn, scald
5. eschar
6. epidermis
7. second
8. 1
9. cooled down
10. BSI precautions
11. Electrical
12. full-thickness
13. palm
14. critical
15. water, brushed off

HANDOUT 29-4: Burns: Listing

1. Blisters, intense pain, white to cherry red skin, moist and mottled skin, pain on peripheral edges of burn.
2. Dry, hard, tough, leathery skin that appears white-waxy to dark brown or black and charred; little or no pain.
3. Percentage of BSA involved; location of burn; patient’s age; preexisting medical conditions.
4. Do not attempt to open eyelids if they are burned. If dealing with a thermal burn, apply a dry, sterile dressing to both eyes in order to prevent simultaneous movement of both eyes. Chemical burns should be flushed with water for at least 20 minutes while en route to the hospital. Flush the eye from medial to lateral to avoid washing the chemical into the other eye.

HANDOUT 29-5: The Rule of Nines

THE RULE OF NINES

- Head and neck 9 percent
- Posterior trunk 18 percent
- Anterior trunk 18 percent
- Each upper extremity 9 percent
- Each lower extremity 18 percent
- External genitalia 1 percent
- 9 percent
- 14 percent
- 18 percent
- 18 percent
- 14 percent
- Posterior trunk 18 percent
CHAPTER 30 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. All of the following are part of the musculoskeletal system except
   A. bones.  
   B. joints.  
   C. cartilage.  
   D. skin.

_______ 2. The sound or feel of broken bone fragments grinding together is referred to as
   A. crepitus.  
   B. stridor.  
   C. assonance.  
   D. dissonance.

_______ 3. There are three kinds of muscle: voluntary, involuntary, and
   A. periosteum.  
   B. flexible.  
   C. cardiac.  
   D. skeletal.

_______ 4. The bones of the upper extremities include all of the following except the
   A. radius.  
   B. humerus.  
   C. femur.  
   D. carpal.

_______ 5. Tissues or fibers that cause movement of the body parts or organs are called
   A. periosteum.  
   B. muscles.  
   C. cartilage.  
   D. tendons.

_______ 6. The mechanism that causes the crushed tissues and fractures found in a patient struck by
   an auto is _____ force.
   A. direct  
   B. indirect  
   C. twisting  
   D. rotational

_______ 7. An injury in which the skin over a fracture site is broken may be described as a(n)
   A. closed fracture.  
   B. open injury.  
   C. vertical injury.  
   D. compromised injury.

_______ 8. An injury to a joint in which the bone ends become separated from each other is called
   a(n)
   A. dislocation.  
   B. angulation.  
   C. sprain.  
   D. fracture.

_______ 9. The soft pliable splints that are easily shaped for use with deformed extremities are called
   _____ splints.
   A. box  
   B. long bone  
   C. vacuum  
   D. traction

_______ 10. After taking BSI precautions, exposing the area, and controlling any external bleeding, 
   the next step in immobilizing a long bone fracture is 
   A. replacing protruding bones.  
   B. assessing distal PMS.  
   C. measuring the splint.  
   D. applying the splint.

_______ 11. If a patient’s injured leg appears either internally or externally rotated, an EMT should suspect 
   A. patella injury.  
   B. ankle dislocation.  
   C. fibula injury.  
   D. hip dislocation.
12. The term for a prickling or tingling feeling that indicates some loss of sensation is
   A. paresthesia.             C. paraplegia.
   B. anesthesia.              D. quadriplegia.

13. The splint best suited for stabilization of a dislocated shoulder or a foot/ankle injury is
    a(n) _____ splint.
   A. air-inflatable
   B. soft or pillow
   C. formable
   D. rigid

14. The splint best suited for easing pain of muscle spasm associated with fractures of the
    femur is a(n) _____ splint.
   A. air-inflatable
   B. traction
   C. vacuum
   D. PASG

15. Muscle injuries resulting from overstretching or overexertion of the muscle are called
    A. sprains.
    B. strains.
    C. dislocations.
    D. sublocations.

16. The mechanism that operates when one part of an extremity is held stationary while the
    rest rotates is _____ force.
    A. direct
    B. indirect
    C. twisting
    D. torsional

17. Another term for the collar bone is the
    A. clavicle.
    B. humerus.
    C. scapula.
    D. patella.

18. The displacement of a bone from its normal position in a joint is a
    A. fracture.
    B. sprain.
    C. dislocation.
    D. strain.

19. The bones of the lower extremities include all of the following except the
    A. pelvis.
    B. patella.
    C. femur.
    D. scapula.

20. Use of a traction splint is indicated for a painful, swollen, deformed
    A. ankle.
    B. hip.
    C. elbow.
    D. femur.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

Your unit responds to a 911 call from a mother who reports that her 7-year-old son “has fallen from his tree house.” When you arrive on the scene, the mother leads you into the backyard, where you see the boy grimacing in pain. He is holding his right leg. As you approach, he tells you that “it hurts all the way down to my toes.”

You introduce yourself and learn that the patient’s name is Roger. Roger tells you that he was climbing into the tree house and fell off of the ladder. You ask Roger if he remembers how he landed. “I think I landed on my feet first,” he says. “It hurt so much that I couldn’t stand up.”

1. Explain the mechanism of injury associated with Roger’s injuries.

2. What bones or joints do you suspect have been injured?

3. What type of splint will you use to immobilize Roger? Why?

4. What are four basic questions that should be asked of this patient?
CHAPTER 30 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The ______________________________ system is composed of all the bones, joints, and muscles of the body.

2. As components of the skeleton, bones provide the body’s ______________________________.

3. ______________________________ are the places where bones meet and are a critical element in the body’s ability to move.

4. A common type of bone injury is a break, or ______________________________.

5. With ______________________________ ______________________________, the force impacts on one end of the limb causing injury some distance away from the point of impact.

6. ______________________________ are bands of connective tissue that bind the muscles to the bones.

7. Three types of mechanisms that cause musculoskeletal injuries include ______________________________ force, ______________________________ force, and ______________________________ force.

8. The ______________________________ splint applies constant pull along the length of the femur to stabilize fractures and reduce muscle spasms.

9. The EMT should splint suspected dislocations in position unless ______________________________ ______________________________ are absent.

10. Proper ______________________________ and prehospital care of musculoskeletal injuries help prevent closed injuries from becoming ______________________________ injuries.

11. If the patient’s thigh is painful, swollen, or deformed, the EMT should treat the patient as if the ______________________________ is fractured.

12. To splint an injured extremity, an EMT must assess ______________________________,

   ______________________________ ______________________________, and

   ______________________________ before and after splinting.

13. Dramatic-looking or painful extremity injuries can sometimes distract an untrained person from looking for other ______________________________ - ______________________________ conditions.

14. For any splint to be effective, it must immobilize the extremity or joint ______________________________ and ______________________________ the injury.
15. The point of realignment of deformed extremities is to assist in restoring effective  
______________________________
16. A traction splint is indicated if there is an isolated ______________________________ fracture.
17. A patient with a hip fracture should be managed for ______________________________.
18. Any device used to immobilize a body part is referred to as a(n) ______________________________.
19. A(n) ______________________________ is an injury to a joint with possible damage to or tearing  
of ligaments.
20. A triangular bandage used to support the shoulder and arm is called a(n)  
______________________________
MUSCULOSKELETAL TRAUMA: LISTING

1. List the six basic components of the skeletal system.

2. List four types of musculoskeletal injuries.

3. List three types of mechanisms that cause musculoskeletal injury.

4. List the signs and symptoms of musculoskeletal injuries.
IDENTIFYING MAJOR BONES

Write the name of the following bones in the correct location on the diagram below.

Carpals
Clavicle
Femur
Fibula
Humerus
Metacarpals
Metatarsals
Patella
Phalanges
Radius
Scapula
Sternum
Tarsals
Tibia
Ulna
Vertebrae
Xiphoid process
MUSCULOSKELETAL TRAUMA: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. Proper splinting may serve to decrease the incidence of permanent injury._T_

2. The three kinds of muscles are voluntary, skeletal, and cardiac._T_

3. Voluntary muscles are those that are under the control of a person’s will._T_

4. Pulselessness and cyanosis distal to an injured extremity are signs of a very serious condition._T_

5. Both before and after applying a splint, assess pulses, movement, and sensation distal to the injury._T_

6. The most appropriate splint for a shoulder dislocation is the traction splint._F_

7. The EMT should align an extremity with gentle traction if there is severe deformity or absence of distal pulses._T_

8. Some types of rigid splints are often pliable enough to be molded to fit any appendage._F_

9. The major type of pressure splint is a rigid splint._T_

10. Improvised splints can be made from a cardboard box, an ironing board, a rolled-up magazine, a broom handle, or any similar object._T_
CHAPTER 30 ANSWER KEY

HANDOUT 30-1: Chapter 30 Quiz

HANDOUT 30-2: In the Field
1. The mechanism of injury involves both direct force and indirect force. The impact of the fall is transmitted along the bone shafts and damages bones farther up the extremity.
2. The bones and joints that could be injured include bones and joints of the feet and ankle (by direct force) and the tibia, fibula, and femur and joints of the knee, hip, pelvis, and spinal column (by indirect force).
3. Because the injury could involve the entire leg from hip to toes (as well as a spinal injury), the injury can be treated as a pelvic fracture. The boy can be secured on a long spine board with his legs stabilized by a folded blanket between them and secured with cravats. This will splint him rapidly and take care of all injuries at one time.
4. When did the injury occur? What happened? Where does it hurt? What did you feel at the time of injury?

HANDOUT 30-3: Chapter 30 Review
1. musculoskeletal
2. framework
3. Joints
4. fracture
5. indirect force
6. Tendons
7. direct, indirect, twisting
8. traction
9. distal pulses
10. splinting, open
11. femur
12. pulse, motor function, sensation
13. life-threatening
14. above, below
15. circulation
16. femur
17. shock
18. splint
19. sprain
20. sling

HANDOUT 30-4: Musculoskeletal Trauma: Listing
1. Skull, spinal column, thorax, pelvis, upper extremities, lower extremities.
2. Fracture, dislocation, sprain, strain.
3. Direct force, indirect force, twisting force.
4. Pain and tenderness; deformity or angulation; crepitus; swelling; bruising; exposed bone ends; joints locked into position; severe weakness and loss of function; disfigurement.

HANDOUT 30-5: Identifying Major Bones

HANDOUT 30-6: Musculoskeletal Trauma: True or False
1. T  6. F
2. F  7. T
3. T  8. T
4. T  9. F
5. T  10. T
CHAPTER 31 QUIZ

Write the letter of the best answer in the space provided.

1. The major components of the central nervous system include the brain and the
   A. cranium.  
   B. spinous process.  
   C. spinal cord.  
   D. dura mater.

2. If a patient tries to move away from or remove a painful stimulus, this response is termed _____ movement.
   A. purposeful  
   B. nonpurposeful  
   C. catatonic  
   D. decorticate

3. The helmet-like structure that protects the brain is called the
   A. basilar skull.  
   B. cranial skull.  
   C. dura mater.  
   D. meninges.

4. The weakest portion of the skull is made up of many separate bones. It is called the _____ skull.
   A. basilar  
   B. temporal  
   C. parietal  
   D. occipital

5. Because of the scalp’s rich blood supply, one likely result of a scalp injury is
   A. Battle’s sign.  
   B. bleeding from the ears.  
   C. cerebrospinal fluid from the nose.  
   D. profuse bleeding.

6. After taking BSI precautions, the first step in providing emergency care to a patient with skull fractures and brain injuries is to
   A. apply a cervical collar.  
   B. control bleeding.  
   C. provide manual stabilization of the head.  
   D. transport the patient immediately.

7. A collection of blood within the skull or brain tissue is called a
   A. hematoma.  
   B. contusion.  
   C. concussion.  
   D. laceration.

8. Within the skull, the brain is cushioned in a dense serous substance called _____ fluid.
   A. cerebrospinal  
   B. meningeal  
   C. pericardial  
   D. peritoneal

9. All of the following structures are part of the brain stem except the
   A. pons.  
   B. midbrain.  
   C. medulla.  
   D. arachnoid.

10. All of the following are highly vascular membranes separating the cranium and the brain except the
    A. subarachnoid space.  
    B. pia mater.  
    C. dura mater.  
    D. arachnoid.

11. All of the following are signs of Cushing’s reflex except a(n)
    A. increase in blood pressure.  
    B. decrease in heart rate.  
    C. increase in heart rate.  
    D. change in respiratory status.
12. The bruising and swelling of brain tissue that may accompany concussion is called a(n)
   A. contusion.
   B. stroke.
   C. epidural rupture.
   D. subdural avulsion.

13. The extreme emergency following a skull fracture in which arterial bleeding pools
    between the skull and the protective covering of the brain is called a(n)
   A. subdural hematoma.
   B. laceration.
   C. contusion.
   D. epidural hematoma.

14. In documenting a possible head or spine injury, it is critical to note whether the patient,
    even briefly, lost
   A. his breath.
   B. consciousness.
   C. his balance.
   D. capillary refill.

15. A head injury in which the scalp is lacerated but there is no opening in the skull is a(n)
   A. open head injury.
   B. closed head injury.
   C. epidural hematoma.
   D. subdural hematoma.
Review the following real-life situation. Then answer the questions that follow.

At 1800 hours on a hot summer afternoon, you and your crew are called to a domestic dispute. Dispatch informs you that guns were involved. When you arrive, the police have secured the scene and it is safe. As you approach the scene, you find a 32-year-old male patient who is combative and responds only to painful stimuli. You note an entrance wound on the left parietal area. In addition, you note the presence of Battle’s sign. Initial assessment reveals an increasing blood pressure, decreasing heart rate, and altered respirations.

1. What are your initial management considerations?

2. Explain your transport decision.

3. What five interventions should be carried out while en route to the definitive care facility?
CHAPTER 31 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The major components of the ______________________________ ______________________________ are the brain and the spinal cord.

2. The serous substance called ______________________________ ______________________________ protects the brain and spinal cord against impact.

3. Because head injuries can be so serious, the EMT must always be alert for signs of the mechanism of injury during the ______________________________ ______________________________.

4. The ______________________________ skull is made up of plates of large, flat bones that are fused together to form a helmet-like covering.

5. Inside the skull, the brain is protected from injury by three ______________________________.

6. The scalp has many ______________________________ ______________________________, so any scalp injury may bleed profusely.

7. ______________________________ hematoma is the most common type of head injury.

8. Bruising and swelling of the brain tissue, or a(n) ______________________________, occurs when the force of a blow is great enough to rupture blood vessels.

9. In addition to AVPU, some EMS systems use the ______________________________ ______________________________ ______________________________ for determining a patient’s level of responsiveness.

10. A late finding in a patient with isolated head trauma is that blood pressure ______________________________ and heart rate ______________________________.

11. Two nonpurposeful responses that a patient with a head injury might make include ______________________________ and ______________________________.

12. In a rapid trauma exam of a patient with a head injury, examine the head for ______________________________ ______________________________ ______________________________ or ______________________________ ______________________________ around the head and face.

13. The lowest level on the AVPU scale is ______________________________.

(continued)
14. A purplish discoloration of the soft tissues around one or both eyes is called ________________________________ ________________________________ and may be an indication of intracranial injury.

15. In documenting injuries to the head and spine, carefully note any changes in the patient’s ________________________________ ________________________________, throughout assessment, treatment, and transport.
HEAD TRAUMA: LISTING

1. List four types of brain injuries.

2. List, in order from outer to inner, the meninges.

3. List the three anatomical components of the brain and give one function or characteristic of each.

4. List four mechanisms of injury that commonly produce head injuries.

5. List the three signs indicative of Cushing’s reflex.
RECOGNIZING BRAIN STRUCTURE

Demonstrate your familiarity with the anatomy of the brain by writing the names of the following structures in the appropriate places on the diagram below.

- Arachnoid
- Cerebellum
- Cerebral cortex
- Cranium
- Dura mater
- Medulla oblongata
- Pia mater
- Spinal cord
CHAPTER 31 ANSWER KEY

HANDOUT 31-1: Chapter 31 Quiz

HANDOUT 31-2: In the Field
1. Cervical spine immobilization; ABCs (airway, breathing, circulation).
2. Based on the patient’s condition, mechanism of injury, and mental status compromise, you should immediately package and rapidly transport this patient.
3. The interventions include continued airway management and oxygen administration; constant evaluation of the level of consciousness; frequent obtaining of vital signs and comparison to the baseline vital signs; wound management; frequent assessment of neurological status. If it is available, a request for advanced life support assistance would be appropriate.

HANDOUT 31-3: Chapter 31 Review
1. central nervous system
2. cerebrospinal fluid
3. scene size-up
4. cranial
5. meninges
6. blood vessels
7. Subdural
8. contusion
9. Glasgow Coma Scale
10. increases, decreases
11. flexion, extension
12. deformities, depressions, lacerations, impaled objects
13. unresponsive
14. raccoon sign
15. mental status

HANDOUT 31-4: Head Trauma: Listing
2. Dura mater, arachnoid, pia mater.
3. Cerebrum—largest portion of the brain, responsible for most conscious and sensory functions, emotions, personality; cerebellum—controls equilibrium and coordinates muscle activity, controls muscle movement and coordination, coordinates reflexes; brain stem—most primitive and best protected part of brain, controls most automatic functions of the body.
4. Motor vehicle crashes, assaults/violence, falls, sports injuries.
5. Increase in systolic blood pressure, decrease in heart rate, change in respiratory pattern.

HANDOUT 31-5: Recognizing Brain Structure
Write the letter of the best answer in the space provided.

1. All of the following are signs and symptoms in patients with spinal injuries except
   A. paralysis.
   B. priapism.
   C. hyperglycemia.
   D. incontinence.

2. The part of the nervous system located outside of the brain and spinal cord that detects sensations such as pain is the _____ nervous system.
   A. peripheral
   B. autonomic
   C. central
   D. involuntary

3. The part of the nervous system that controls involuntary functions such as heartbeat and breathing is the _____ nervous system.
   A. peripheral
   B. autonomic
   C. central
   D. involuntary

4. Sports helmets most typically open in the
   A. front.
   B. back.
   C. left side.
   D. right side.

5. In the prehospital environment, the two most likely types of helmets to be encountered are the sports helmet and the _____ helmet.
   A. flight
   B. military
   C. football
   D. motorcycle

6. The mechanism of injury in which the vertebrae and spinal cord are stretched and pulled apart is called
   A. rotation.
   B. flexion.
   C. distraction.
   D. extension.

7. The appropriate time to initiate in-line stabilization of the cervical spine is
   A. prior to opening the airway.
   B. after opening the airway.
   C. during transport.
   D. after insertion of an oropharyngeal airway.

8. In spinal shock, a patient’s skin is
   A. cool and dry.
   B. warm and dry.
   C. flushed and damp.
   D. cool and sweaty.

9. Probably the most common and reliable sign of spinal-cord injury in conscious patients is
   A. Battle’s sign.
   B. pupil dilation.
   C. raccoon’s sign.
   D. paralysis of the extremities.

10. In the normal extrication of a patient with suspected spinal injury, the device that an EMT would apply first is the
    A. cervical collar.
    B. short spine board.
    C. Kendrick Extrication Device.
    D. long spine board.
Handout 32-1 (continued)

11. The mechanism of injury in which there is severe forward movement of the head or the torso is curved excessively forward is called
   A. rotation.  
   B. flexion.  
   C. distraction.  
   D. extension.

12. When applying a short spine board or flexible extrication device, you should first secure the
   A. torso.  
   B. chest.  
   C. shoulders.  
   D. head.

13. The move used to shift a supine patient onto a long backboard for immobilization is the
   A. blanket drag.  
   B. arm–forearm drag.  
   C. firefighter’s lift.  
   D. log roll.

14. The spinal column is composed of 33 bones called
   A. meninges.  
   B. vertebrae.  
   C. phalanges.  
   D. carpals.

15. Which one of the following is not an indication for removing a helmet in a case of suspected head or spine injury?
   A. Helmet interferes with assessment of the ABCs.  
   B. Helmet fits snugly.  
   C. Patient goes into cardiac arrest.  
   D. Helmet fits loosely.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

You and your partner are called to the football stadium at the local high school. You arrive to find the quarterback lying in the center of the field at the 30-yard line in a supine position. Coaches are gathered around him, and one of them meets you as you exit the ambulance. This coach tells you that the quarterback has not moved since he was tackled. As you approach, you notice that none of the quarterback’s protective gear has been removed.

1. What is your general impression of the mechanism of the patient’s injury?

2. As you approach the patient, what should you do?

3. What device would you use for transporting the patient?

4. What continuing emergency care steps would you provide for this patient?
CHAPTER 32 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Two major functions of the nervous system are ____________________________ and ____________________________.

2. The structural divisions of the nervous system are the ____________________________ nervous system and the ____________________________ nervous system.

3. The functional divisions of the nervous system are the ____________________________ nervous system and the ____________________________ nervous system.

4. The ____________________________ gives the body its framework, supports and protects vital organs, and permits motion.

5. The ____________________________ is the principal support system of the body.

6. The spinal column is made up of 33 irregularly shaped bones called ____________________________.

7. The first seven vertebrae, which form the neck, are called the ____________________________.

8. ____________________________ must not be released until the patient is securely strapped to a backboard and is completely immobilized.

9. A condition referred to as ____________________________ shock inhibits neural transmissions to the arteries and arterioles.

10. If neurogenic shock is caused by spinal-cord injury, it may be called ____________________________ shock.

11. ____________________________ is a persistent erection of the penis resulting from damage to the spinal nerves to the genitals.

12. Damage to the spinal cord and neck can produce complete paralysis of the entire body, a condition called ____________________________.

13. Paralysis to only one side of the body is more common in head injuries and stroke, and it is called ____________________________.

(continued)
Handout 32-3 (continued)

14. An EMT will need to ______________________________ ______________________________ a supine patient to apply the long backboard.
15. Whenever an EMT sees a spider-web-cracked windshield, he or she knows that the driver needs full ______________________________ ______________________________.
**SPINAL COLUMN AND SPINAL CORD TRAUMA: LISTING**

1. List the structural divisions and functional divisions of the nervous system.

2. List four signs or symptoms that suggest a possible spinal injury.

3. List the five divisions of the spinal or vertebral column and the number of vertebra in each.
4. Compression is one mechanism of spinal injury. List six others.

5. List questions that should be asked during assessment of a patient with suspected spine injury.
**SPINAL COLUMN AND SPINAL CORD TRAUMA: TRUE OR FALSE**

Indicate if the following statements are true or false by writing T or F in the space provided.

1. If the EMT suspects that the patient has a spinal injury, he or she should initiate spinal precautions.
2. Your suspicion regarding the presence of a spinal injury should *not* be altered by the patient’s ability to walk.
3. Until the EMT has completely immobilized the patient, manual stabilization of the head and neck should be maintained.
4. Because an improperly fitting immobilization device will do more harm than good, proper sizing is of utmost importance.
5. The larger head of the infant or young child will cause the head to flex when the patient is supine.
6. If a sports helmet is left in place on the patient, the spine is considered to be properly immobilized.
7. Spinal injury cannot exist without external evidence of trauma.
8. Spinal shock results specifically from injury to the spinal cord, usually high in the cervical spine.
9. A single spinal-cord injury can affect several body organ systems.
10. If a patient is responsive, a rapid trauma assessment is *not* indicated.
IMMOBILIZATION

Review your knowledge of immobilization techniques by putting the steps of the procedures below in proper order. With each procedure, write “1” in the space provided next to the step you would perform first, “2” next to the step you would perform next, and so on.

A. Spinal Immobilization of a Supine Patient
   _____ Immobilize patient’s torso to the board.
   _____ Move patient onto long board without compromising integrity of spine.
   _____ Apply appropriately sized cervical collar.
   _____ Immobilize patient’s head to the long board.
   _____ Secure patient’s legs to board.
   _____ Place head in neutral in-line position and maintain manual stabilization.
   _____ Position long spine board.

B. Spinal Immobilization of a Seated Patient
   _____ Immobilize to long spine board.
   _____ Apply appropriately sized cervical collar.
   _____ Rotate patient and lower to long spine board.
   _____ Pad behind patient’s head as necessary.
   _____ Manually stabilize patient’s head in neutral in-line position.
   _____ Position short immobilization device behind patient.
   _____ As needed, secure patient’s legs.
   _____ Secure patient’s head to the device.
   _____ Secure device to patient’s torso.
CHAPTER 32 ANSWER KEY

HANDOUT 32-1: Chapter 32 Quiz

HANDOUT 32-2: In the Field
1. The patient possibly suffered an injury to his spinal cord when he was tackled.
2. You should take BSI precautions, approach from the patient’s head to prevent movement, provide in-line stabilization of the cervical spine, assess the ABCs and PMS in the extremities, and assess the cervical region and spine. After those steps, you would apply the collar and prepare to immobilize the patient to a long spine board for transport.
3. A long spine board with appropriately sized cervical collar, straps, and head/cervical immobilization device.
4. Continuing emergency care steps include providing oxygen, performing a detailed assessment, continuing an ongoing assessment en route to the hospital, monitoring vital signs, and getting additional history, if possible.

HANDOUT 32-3: Chapter 32 Review
1. communication, control
2. central, peripheral
3. voluntary, autonomic
4. skeletal system
5. spinal column
6. vertebrae
7. cervical spine
8. Manual stabilization
9. neurogenic
10. spinal
11. Priapism
12. quadriplegia
13. hemiplegia
14. log roll
15. spinal immobilization

HANDOUT 32-4: Spinal Column and Spinal Cord Trauma: Listing
2. Any four of the following: paralysis of the extremities, loss of bowel or bladder control, pain independent of movement or palpation along spinal column or in lower legs; localized pain with movement; obvious deformity of spine upon palpation; tenderness anywhere along the spine; soft-tissue injuries to the head and neck, shoulders, back, abdomen, or lower extremities; numbness, weakness, tingling, or loss of sensation in extremities; priapism; impaired breathing.
3. Cervical, 7; thoracic, 12; lumbar, 5; sacral, 5; coccyx, 4.
4. Flexion, extension, rotation, lateral bending, distraction, penetration.
5. Does your neck hurt? Does your back hurt? Where does it hurt? Can you move your hands and feet? Do you have any pain or muscle spasms along your back or neck? Is there any numbness or tingling in arms or legs? Was the onset of pain associated with the injury? Did you move or did someone move you before EMTs arrived? Were you walking around before EMTs arrived?

HANDOUT 32-5: Spinal Column and Spinal Cord Trauma: True or False
2. T  5. T  8. T  10. F
3. T  6. F

HANDOUT 32-6: Immobilization
The order of steps reading down in each column should be:
A. 5, 4, 2, 6, 7, 1, 3
B. 9, 2, 8, 6, 1, 3, 5, 7, 4
CHAPTER 33 QUIZ

Write the letter of the best answer in the space provided.

1. The part of the eye that contains the aqueous humor is the
   A. lens.  
   B. cornea.  
   C. anterior chamber.  
   D. vitreous body.

2. An eye injury that involves an eye being pulled out of its socket is called a(n)
   A. extrusion.  
   B. evisceration.  
   C. orbital fracture.  
   D. periorbital ecchymosis.

3. The neck contains all of the following structures except the
   A. carotid arteries.  
   B. mandible.  
   C. jugular veins.  
   D. trachea.

4. The facial bone that is not fused into immovable joints is the
   A. mandible.  
   B. malar.  
   C. temporal bone.  
   D. maxillae.

5. An EMT should only attempt to remove a foreign object from the
   A. retina.  
   B. cornea.  
   C. globe.  
   D. conjunctiva.

6. The globe of the eye, or eyeball, is a sphere approximately 1 inch in diameter that is covered with a tough outer coat called the
   A. cornea.  
   B. pupil.  
   C. sclera.  
   D. iris.

7. A primary treatment for a patient with chemical burns to the eye is
   A. plentiful irrigation.  
   B. bandaging only the injured eye.  
   C. covering both eyes with dry dressings.  
   D. covering both eyes with soaked gauze pads.

8. The signs and symptoms of orbital fracture include all of the following except
   A. vision improvement.  
   B. double vision.  
   C. nasal discharge.  
   D. tenderness to palpation.

9. The portion of the eye that focuses light to the retina is the
   A. cornea.  
   B. pupil.  
   C. iris.  
   D. lens.

10. If a patient has sustained a chemical burn to the eye, the EMT should irrigate the eye for at least 20 minutes or, if the injury involves an alkali, for at least
   A. 1½ hours.  
   B. 1 hour.  
   C. 45 minutes.  
   D. 30 minutes.

11. An appropriate irrigant for an EMT to use for a chemical burn is
   A. diluted vinegar.  
   B. alcohol.  
   C. saline.  
   D. sodium bicarbonate.
12. The thin covering of the inner eyelids is called the
   A. conjunctiva.
   B. sclera.
   C. retina.
   D. orbit.

13. The correct emergency treatment for profuse bleeding with facial injuries includes
   A. application of cold packs.
   B. application of heat packs.
   C. application of alum.
   D. application of direct pressure.

14. Clear or bloody fluid draining from the ear can indicate a
   A. dangerously high fever.
   B. skull fracture.
   C. foreign body.
   D. flexion injury.

15. If a nose fracture is suspected, the EMT should
   A. apply direct pressure.
   B. apply cold compresses.
   C. apply warm compresses.
   D. pack the nose with saline gauze.
**IN THE FIELD**

*Review the following real-life situation. Then answer the questions that follow.*

Today is a particularly warm day in July. You and your partner respond to a call to a residence not far from your station. A woman is standing in the front yard flagging you down and appears to be quite upset. As you follow her to the back of the house, she explains to you, between sobs, that her 8-year-old son was hosting a pool party for his baseball team. Two of the young boys were scuffling, and her son was inadvertently pushed into a plate glass window into the house.

You enter the house and you note a very upset and crying child lying just inside the den. You note moderate bleeding from the patient’s face and neck. In addition, the boy is holding his hand over his left eye. He complains of pain in that eye. After you convince him to remove his hand and allow you to inspect the injury, you note a 1-inch vertical laceration on the left lower eyelid. There is also a laceration on the left side of the neck.

1. List the basic steps you would take in treating this patient.

2. List your steps in management of the eyelid injury.

3. Name at least four considerations for the assessment and treatment of these face and neck injuries.
CHAPTER 33 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The bony structures of the skull that surround the eyes are called the ______________________________.

2. The face has ______________________________ bones.

3. The proper medical term for the cheekbones is the ______________________________ bones.

4. When considering an injury to the eye, the EMT must be aware that ______________________________ is a critical consideration in the treatment.

5. If a foreign object becomes lodged in the ______________________________, the EMT should not attempt to disturb it.

6. The face has many ______________________________ ______________________________, so any facial injuries may bleed profusely.

7. Injuries serious enough to cause orbital fractures may also cause trauma to the ______________________________.

8. Eyelid injuries include ______________________________, ______________________________, and ______________________________.

9. Injuries to the globe are best treated at the ______________________________.

10. A chemical burn to the eye represents a(n) ______________________________ ________________________________.

11. If an eyeball injury is not suspected, the EMT should cover an injured eyelid with ______________________________ ______________________________ to help reduce swelling.

12. In all calls involving chemical burns to the eye, the EMT should begin ______________________________ with ______________________________ or ______________________________ immediately on contact with the patient.

13. The primary concern with facial fractures is ______________________________ ________________________________.

14. With chemical burns to the eye, the EMT should irrigate the eye for at least ______________________________ minutes or until arrival at the hospital.

15. Eye injuries are often complicated by the presence of ______________________________ ________________________________.
1. List five anatomical structures of the eye.

2. List four structures contained in the neck.

3. List four types of facial fractures.

4. List four signs and/or symptoms of orbital fractures.
EYE, FACE, AND NECK TRAUMA: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

_______ 1. When treating bleeding wounds to the neck, the EMT should use circumferential bandages.

_______ 2. When treating an injury to the nose, the EMT should not probe for a foreign body.

_______ 3. Maintaining an airway is extremely important in neck injuries as is maintaining a high index of suspicion for spine injuries.

_______ 4. When dressing an injured ear, place part of the dressing between the ear and side of the head.

_______ 5. If the patient has a foreign object impaled in the cheek of the face, the EMT should immediately remove it and transport the patient.

_______ 6. When assessing and treating a facial fracture, your first priorities should be to establish and maintain a patent airway, support breathing, and control bleeding.

_______ 7. If a tooth has been lost, the tooth should be wrapped in dry gauze.

_______ 8. The specialized structures of the face are prone to injury because of their location, but injuries to them are rare.

_______ 9. Only attempt removal of objects in the conjunctiva; do not attempt removal of objects on or lodged in the cornea.

_______ 10. Even though they are designed for extended wear, soft contact lenses can cause damage if left in for a long time.

_______ 11. Generally, you should not remove contact lenses if there has been a chemical burn to the eye.

_______ 12. The EMT should always attempt to replace an extruded eyeball back into the socket.

_______ 13. If fracture of the orbits is suspected, you should establish and maintain spinal immobilization.

### CHAPTER 33 ANSWER KEY

#### HANDOUT 33-1: Chapter 33 Quiz

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8. bruising, burns, lacerations
9. hospital
10. dire emergency
11. cold compresses
12. irrigation, water, saline
13. airway compromise
14. 20
15. contact lenses

#### HANDOUT 33-2: In the Field

1. Take BSI precautions; ensure stabilization of the cervical spine; assess and control of airway, breathing, and circulation.
2. Control bleeding with light pressure; cover lid with sterile gauze soaked in saline (if lid skin is avulsed, preserve and transport with the patient); cover lid with cold compresses; patch both eyes.
3. Assess the bleeding wounds and the amount of blood lost. Apply a sterile dressing with direct pressure to the open wounds. Use an occlusive dressing on the neck wound to prevent air from entering. Provide stabilization and later immobilization of the spine in a neutral, in-line position.

#### HANDOUT 33-3: Chapter 33 Review

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<td>5.</td>
<td>eyeball (or globe)</td>
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<td>3.</td>
<td>zygomatic</td>
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<td>6.</td>
<td>blood vessels</td>
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<td>7.</td>
<td>cervical spine</td>
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#### HANDOUT 33-4: Eye, Face, and Neck Trauma: Listing

1. Any five: sclera, cornea, pupil, lens, retina, conjunctiva, aqueous humor, vitreous humor, orbit.
2. Any four: carotid arteries, jugular arteries, trachea, larynx, cervical spine.
4. Any four: double vision; marked decrease in vision; loss of sensation above the eyebrow, over the cheek, or in the upper lip; nasal discharge; tenderness upon palpation; bony “step-off”; paralysis of an upward gaze in the involved eye.

#### HANDOUT 33-5: Eye, Face, and Neck Trauma: True or False

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CHAPTER 34 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. The respiratory and circulatory organs are protected by the
   A. ribs.                     C. vena cavae.
   B. mediastinum.              D. clavicles.

_______ 2. A flail segment occurs
   A. when initiated by paradoxical motion.
   B. with fracture of two or more ribs in two or more places.
   C. only from bullet or knife wounds.
   D. after a pneumothorax.

_______ 3. When a patient presents with jugular venous distension, respiratory distress, and hypotension following a closed chest injury, suspect
   A. rib fractures.           C. subcutaneous emphysema.
   B. a sucking chest wound.  D. a tension pneumothorax.

_______ 4. A screwdriver impaled in the chest should be managed by
   A. stabilizing it with a bulky dressing.
   B. removing it and covering with an occlusive dressing.
   C. applying vaseline around the screwdriver to seal the edge.
   D. removing it and covering the wound with a pressure dressing.

_______ 5. If a patient develops respiratory distress after an occlusive dressing has been applied to a chest wound, the EMT should
   A. cover the wound with more dressing.
   B. lift a corner of the dressing to allow pressure to escape.
   C. begin assisting breathing with positive-pressure ventilation.
   D. continue monitoring, as this reaction is to be expected.

_______ 6. A pulmonary contusion can be life-threatening because it can
   A. reduce oxygen exchange via the alveoli.
   B. cause a hemorrhage into the trachea.
   C. take up space needed by the heart to contract.
   D. penetrate the lung.

_______ 7. During traumatic asphyxia there is a
   A. slow increase in pressure in the chest.
   B. slow decrease in pressure in the chest.
   C. rapid increase in pressure in the chest.
   D. rapid decrease in pressure in the chest.

_______ 8. In a cardiac contusion the most likely area of the heart to be injured is the
   A. right atrium.              C. left atrium.
   B. right ventricle.          D. left ventricle.
9. The most common cause of cardiac tamponade is
   A. shotgun wound to the chest.
   B. fall from a ladder.
   C. stab wound to the heart.
   D. explosion.

10. All of the following are signs and symptoms of major chest trauma except
   A. hemoptyis.
   B. cyanosis.
   C. paradoxical movement.
   D. bradycardia.
IN THE FIELD

Read the following real-life situation. Then answer the questions that follow.

You are dispatched to a tavern where a fight has just taken place. The caller had stated that one man was injured and needed an ambulance because he couldn’t breathe.

1. Given the reported circumstances, what causes might you expect for this problem?

2. What would you do first upon arrival at the scene?

3. After you are able to enter the scene, you find a 24-year-old male lying on the floor, splinting his right rib area and having some difficulty breathing. Blood is noted on the floor, and a raspy noise is heard each time he takes a breath. What would you do next?

4. What emergency care would you provide?

5. During transport, the young man complains of greater difficulty breathing. He is cool, tachypneic, and his neck veins are distended. Examination reveals no breath sounds on the right side. What is likely to be the cause of the problem?

6. What emergency care would you provide?
CHAPTER 34 Review

Write the word or words that best complete each sentence in the space provided.

1. The ______________________________ is the tube-like structure that connects the stomach with the mouth.

2. The two types of chest injuries are ______________________________ and ______________________________.

3. The aorta, vena cava, esophagus, and trachea are located in the ______________________________, a hollow area in the center of the thoracic cavity.

4. The heart is a special type of ______________________________ muscle that can be damaged by penetrating or blunt trauma.

5. Inhalation occurs when the ______________________________ contracts and drops downward and the ______________________________ pull the ribs outward.

6. A(n) ______________________________ occurs when air trapped in the thoracic cavity expands under pressure.

7. A(n) ______________________________ is an injury that is created by a rib segment unattached to the rest of the rib cage.

8. In ______________________________, the rib segment will move inward during inhalation and outward during exhalation.

9. Stabilize a flail segment in the ______________________________ position.

10. Apply a(n) ______________________________ to seal an open chest wound.

11. If a(n) ______________________________ exists, it will become increasingly difficult to ventilate the patient.

12. An open chest wound can pull air into the thoracic cavity, sometimes with a noticeable sound. This injury is referred to as a(n) ______________________________.

13. Fractured ribs may produce ______________________________, a grating sound or sensation.

14. An impaled object in the chest must be ______________________________ before moving the patient.
CHEST TRAUMA: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. The mediastinum houses the trachea. T
2. During exhalation, the diaphragm contracts and moves downward. T
3. A pneumothorax occurs only if there is a break in the skin over the chest cavity. F
4. An occlusive dressing must be taped on all four sides to protect the chest wound. T
5. Air in the chest cavity is a hemothorax. F
6. Penetrating chest trauma occurs most often with violence. T
7. Gloves and eye protection are considered minimal body substance isolation precautions for an open chest injury. T
8. Jugular venous distension is an early sign of a tension pneumothorax. T
9. Crepitation with rib fractures is generally felt over the abdomen. T
10. When a sucking chest wound is detected, immediate care is to dress and bandage it. T
11. A patient with a chest injury is considered a high priority. T
12. A blow to the chest may cause ineffective heart pumping. T
Chest Trauma: Matching

Write the letter of the term in the space provided next to the appropriate definition.

1. Air trapped in the thoracic cavity under pressure
   - A. bradycardia

2. Blood in the sac surrounding the heart
   - B. crepitation

3. Contrary chest motion during respiration
   - C. flail segment

4. Engorgement of the neck veins
   - D. intercostal muscles

5. Sudden compression of the thoracic cavity
   - E. jugular venous distension

6. Muscles between the ribs
   - F. paradoxical movement

7. Collapsed lung
   - G. pericardial tamponade

8. The space within the chest
   - H. pneumothorax

9. An open chest wound that permits air entry
   - I. sucking chest wound

10. Slow heart rate
    - J. tachypnea

11. Rapid respiratory rate
    - K. tension pneumothorax

12. Condition created by the fracture of two or more ribs in two or more places
    - L. thoracic cavity

13. Grating sensation
    - M. tracheal deviation

14. Movement of the primary breathing tube from its usual position
    - N. traumatic asphyxia
CHAPTER 34 ANSWER KEY

HANDOUT 34-1: Chapter 34 Quiz
3. D  6. A

HANDOUT 34-2: In the Field
1. Blunt or penetrating trauma to the chest following the violence of a fight.
2. You should not enter the scene until police have secured it and made it safe to enter.
3. Take BSI precautions including gloves and eye protection. Then begin assessment.
5. A developing tension pneumothorax.
6. Lift one edge of the dressing to allow pressure to escape and then reassess.

HANDOUT 34-3: Chapter 34 Review
1. esophagus
2. open, closed
3. mediastinum
4. contractile
5. diaphragm, intercostal muscles
6. tension pneumothorax
7. flail chest
8. paradoxical motion
9. inward
10. occlusive dressing
11. tension pneumothorax
12. sucking chest wound
13. crepitation
14. stabilized

HANDOUT 34-4: Chest Trauma: True or False

HANDOUT 34-5: Chest Trauma: Matching
Write the letter of the best answer in the space provided.

1. The damage that results from ruptured hollow abdominal organs is
   A. treatable in the field.  
   B. caused by profuse bleeding.  
   C. caused by acids and bacteria.  
   D. non-life-threatening.

2. Your patient is the driver of a car that was hit head on. You find her lying on the sidewalk with her knees drawn toward her chest. She has no specific complaints. You suspect
   A. little or no injury because she has gotten out of the car.  
   B. abdominal trauma due to mechanism of injury and positioning.  
   C. cavitational injuries due to mechanism of injury.  
   D. paradoxical motion due to patient positioning.

3. Your patient with evisceration becomes tachycardic, cool, and hypotensive during transport; your next action should be to
   A. replace the dressing.  
   B. support the injury with the patient’s arm.  
   C. reevaluate priority status and expedite transport.  
   D. loosen one corner of the dressing.

4. Management of an injury caused by blunt trauma to the scrotum may include
   A. direct pressure.  
   B. cold compresses.  
   C. oxygen.  
   D. all of the above.

5. Management of a female patient who has suffered a laceration to the genital area will include all of the following except
   A. direct pressure.  
   B. use of a moistened sanitary pad.  
   C. vaginal packing.  
   D. assessment for hypoperfusion.

6. The abdominal cavity is separated from the chest cavity by the
   A. diaphragm.  
   B. stomach.  
   C. lower ribs.  
   D. pelvis.

7. All of the following are hollow organs except the
   A. stomach.  
   B. gallbladder.  
   C. urinary bladder.  
   D. liver.

8. Shoulder pain caused by blood irritating the diaphragm is caused by
   A. Kehr sign.  
   B. Babinsky sign.  
   C. Starling’s law.  
   D. none of the above.

9. Abdominal aortic aneurysm may cause the pulses of the lower extremity to
   A. be weaker than the upper extremities.  
   B. be different on either side.  
   C. be absent.  
   D. all of the above.

10. Which is the most common cause of blunt abdominal trauma?
    A. gunshot wounds  
    B. assaults  
    C. motor vehicle crashes  
    D. falls
ABDOMINAL AND GENITOURINARY TRAUMA: MATCHING

Write the letter of the term in the space provided next to the appropriate description.

1. Protrusion of the abdominal organs
2. The inner lining of the peritoneum
3. Liver, spleen, pancreas, and kidneys
4. Abdominal aorta and inferior vena cava
5. Pain in the shoulder
6. Retroperitoneal organs
7. Inflammation of the peritoneal lining
8. During inhalation moves down by as much as 3 inches
9. Assess airway, breathing, and circulation
10. Part of the secondary assessment

A. solid organs
B. Kehr sign
C. vascular structures
D. evisceration
E. OPQRST
F. kidneys
G. peritonitis
H. visceral
I. primary assessment
J. diaphragm
CHAPTER 35 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. The abdominal cavity is lined by a ______________________________-______________________________ sheath-like membrane.
2. ______________________________ spill their contents into the abdominal cavity.
3. Blood is not irritating to the ______________________________ ______________________________ and may not cause severe abdominal pain.
4. The ______________________________ and ______________________________ ________________________________ will bleed massively and quickly lead to hemorrhagic shock.
5. ______________________________ injuries result from penetrating trauma.
6. It takes ______________________________ liter(s) of blood to expand the girth of the abdomen by 1 inch.
7. In conscious patients abdominal pain can be evaluated by using the ______________________________ ______________________________ ______________________________ ______________________________ mnemonic.
8. ______________________________ cause excruciating pain and can be quite embarrassing for the patient.
9. An injury to the ______________________________ and ______________________________ should be treated as a soft tissue injury.
10. Patients with abdominal injuries are not allowed to ______________________________ or ______________________________ in case they need to have emergency surgery.
1. List six of the hollow organs contained in the abdominal cavity.

2. List six emergency treatments for abdominal trauma.
## CHAPTER 35 ANSWER KEY

### HANDOUT 35-1: Chapter 35 Quiz

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### HANDOUT 35-2: Abdominal and Genitourinary Trauma: Matching

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### HANDOUT 35-3: Chapter 35 Review

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### HANDOUT 35-4: Abdominal and Genitourinary Trauma: Listing

1. Any six of the following: stomach, gallbladder, urinary bladder, ureters, internal urethra, fallopian tubes, small intestine, large intestine.
2. Any six of the following: continue oxygen therapy, reassess the breathing status, treat for hemorrhagic shock, control any external bleeding, position the patient, stabilize the impaled object, apply pneumatic antishock garment, transport as quickly as possible.
CHAPTER 36 MULTISYSTEM TRAUMA QUIZ

Write the letter of the best answer in the space provided.

_______ 1. Trauma is the leading cause of death for people
   A. 1–20 years of age.          C. all ages.
   B. 20–40 years of age.        D. 1–37 years of age.

_______ 2. Trauma occurs in _____ percent of all pregnancies.
   A. 10–20                        C. 1–2
   B. 6–7                         D. less than 1

_______ 3. What percentage of minor trauma involving pregnant patients results in fetal loss?
   A. 1–3 percent                  C. 10–20 percent
   B. 6–12 percent                D. less than 1 percent

_______ 4. Geriatric patients account for what percentage of all trauma victims?
   A. 1–10 percent                 C. 14–20 percent
   B. 10–14 percent               D. 20–30 percent

_______ 5. When dealing with multisystem trauma, cervical spine stabilization
   A. should be your first step and maintained throughout your care.
   B. should be done only after all injuries have been identified.
   C. should be done only after you determine the patient has an altered level of
      consciousness.
   D. does not need to be done on critical patients.

_______ 6. Blood pressure readings in children _____ are unreliable due to their ability to
   A. less than 10 years old       C. less than 6 months old
   B. less than 1 years old       D. less than 3 years old

_______ 7. Your patient is a 36-year-old pregnant female whose car struck a tree while traveling at a
   slow rate of speed. The patient is complaining of severe abdominal pain and bleeding.
   The most likely injury is
   A. placenta previa.            C. abruption placenta.
   B. lacerated placenta.         D. lacerated liver.

_______ 8. In an unstable multi-trauma patient, when should all musculoskeletal injuries be
   splinted?
   A. prior to leaving the scene    B. while en route to the hospital
   C. they do not need to be splinted due to the severity of the patient
   D. this would be up to the advanced life support

(continued)
Handout 36-1 (continued)

9. Patients are considered to have multisystem trauma when more than ____ major
   system(s) are involved.
   A. three C. one
   B. two D. four

10. All of the following are signs of child abuse except
    A. bruises or burns in unusual shapes and locations.
    B. more injuries than usual for a child that same age.
    C. children with scrapes to the elbows and knees.
    D. an injury that does not correlate with the cause provided.
CHAPTER 36 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Typically a patient is considered to have ______________________________
   ______________________________ when more than one major system is involved.

2. Rapid extrication and rapid ______________________________ of the multisystem trauma patient is
   essential.

3. Trauma is the leading cause of death for pregnant women. They are especially susceptible to abuse
   and ______________________________.

4. When immobilizing a patient in her third trimester the EMT must tilt the backboard to the left in
   order to prevent ______________________________ ______________________________
   ______________________________.

5. Half of all deaths in children ages 1–14 are the result of ______________________________.

6. During spinal immobilization the EMT must pad from the shoulders to the hip in patients less than
   ______________________________ years old.

7. ______________________________ are considered the most common cause of injury in the elderly.

8. When performing the primary assessment on a trauma patient, the EMT should always suspect
   ______________________________ ______________________________ injury.

9. In the multisystem trauma patient, vital signs should be assessed every
   ______________________________ minutes.

10. When establishing an airway in the trauma patient, the EMT must use the
    ______________________________ - ______________________________ ______________________________
    while maintaining manual stabilization of the cervical spine.
MULTISYSTEM TRAUMA: LISTING

1. List eight of the golden principles for prehospital multisystem trauma care.

2. List six of the emergency medical treatments for trauma patients.
CHAPTER 36 ANSWER KEY

HANDOUT 36-1: Chapter 36 Quiz
3. A  6. D

HANDOUT 36-2: Chapter 36 Review
1. multisystem trauma
2. transport
3. falls
4. supine hypotensive syndrome
5. trauma
6. 8
7. Falls
8. cervical spine
9. 5
10. jaw-thrust method

HANDOUT 36-3: Multisystem Trauma: Listing
1. Any eight of the following: ensure safety of the rescue personnel and the patient; determine additional resources needed; understand kinematics; identify and manage any life threats; manage the airway while maintaining cervical spinal stabilization; support ventilation and oxygenation; control external hemorrhage and treat for shock; perform a secondary assessment and obtain a medical history; splint musculoskeletal injuries and maintain spinal immobilization on a long spine board; make transport decisions.
2. Any six of the following: take standard precautions; establish and maintain manual in-line spinal stabilization; maintain a patent airway, adequate breathing, and oxygenation; monitor the airway, breathing, pulse, and mental status for deterioration; control bleeding; treat for shock; identify any other injuries and treat them appropriately; transport immediately.
CHAPTER 37 QUIZ

Write the letter of the best answer in the space provided.

1. Women have _____ ovaries.
   A. one
   B. two
   C. four
   D. every woman is different

2. The organ that is known as the organ of pregnancy is the
   A. cervix.
   B. uterus.
   C. placenta.
   D. fallopian tube.

3. The embryonic phase is from
   A. day 15 to 8 weeks.
   B. 8–12 weeks.
   C. start of the third trimester.
   D. 1–10 days.

4. During pregnancy, maternal blood volume increases by _____ percent.
   A. 10
   B. 25
   C. 35
   D. 45

5. Around _____ percent of all spontaneous abortions occur prior to the
   A. 14th week.
   B. 18th week.
   C. 12th week.
   D. 22nd week.

6. All of the following are types of placenta previa except
   A. total.
   B. partial.
   C. marginal.
   D. complete.

7. Your patient is a 28-year-old female in her third trimester. The patient is complaining of vaginal bleeding with no pain. What is the most likely cause?
   A. placenta abruptio
   B. placenta previa
   C. miscarriage
   D. labor

8. Ectopic pregnancy is most common in women
   A. 25–34 years old.
   B. 18–25 years old.
   C. 34–44 years old.
   D. less than 18 years old.

9. Pregnancy-induced hypertension is defined as a blood pressure greater than 140/90 mmHg on at least _____ occasions that are 6 hours apart.
   A. four
   B. six
   C. two
   D. three

10. The cervix is said to be fully dilated at _____ centimeters.
    A. 6
    B. 10
    C. 8
    D. 12

11. The third stage of labor begins following
    A. onset of contractions.
    B. delivery of the placenta.
    C. arrival of the physician.
    D. delivery of the baby.
12. All of the following are signs of imminent delivery except
   A. crowning.
   B. the patient’s abdomen is extremely hard.
   C. contractions are 2 minutes apart or closer and last at least 60 seconds.
   D. the patient’s water broke.

13. When cutting the umbilical cord, it should be cut ____ inches from the infant.
   A. 2  C. 10
   B. 6  D. 4

14. In a breech birth, the presenting part of the baby is the
   A. feet/buttocks.  C. arm.
   B. head.          D. umbilical cord.

15. When faced with a limb presentation the EMT should
   A. try to reinsert the limb.
   B. remain on-scene and complete delivery.
   C. place patient on oxygen and transport immediately.
   D. begin transport and try to turn the infant.

16. Infants born before ____ weeks are considered premature.
   A. 28  C. 40
   B. 38  D. 20

17. Post-term pregnancy is when gestation of the fetus extends past ____ weeks.
   A. 32  C. 50
   B. 42  D. 60

18. Postpartum hemorrhage is the loss of ____ milliliters of blood following delivery.
   A. 100  C. 500
   B. 1,000  D. 250

19. The initial APGAR score should be completed at ____ seconds after birth.
   A. 60  C. 20
   B. 30  D. 10

20. Which of the following are signs of severely depressed newborns?
   A. respiratory rate greater than 60 bpm  C. pulse rate greater than 180
   B. diminished breath sounds  D. all of the above
Write the word or words that best complete each sentence in the space provided.

1. The ______________________________ are the female gonads or sex glands.
2. The first 14 days after conception are called the ______________________________ stage.
3. Preeclampsia occurs frequently in the ______________________________ trimester.
4. ______________________________ refers to the number of times a woman has been pregnant.
5. ______________________________ is the term used to describe the process of birth.
6. The second stage of labor begins with ______________________________ cervical
   ______________________________ and ends with delivery of the baby.
7. A(n) ______________________________ emergency is one that occurs during the period from the onset
   of labor to the actual delivery of the neonate.
8. When dealing with a prolapsed cord, you should position the patient in the
   ______________________________-______________________________ position.
9. A ______________________________ birth is one in which the buttocks or lower extremities are the
   presenting part of the baby.
10. ______________________________ is the area of skin between the vagina and the anus.
1. List the three types of placenta previa.

2. List three of the predisposing factors for an ectopic pregnancy.

3. List 16 of the emergency medical care treatments for patients in active labor.
OBSTETRICS AND CARE OF THE NEWBORN: MATCHING

Write the letter of the term in the space provided next to the appropriate description.

1. The period of pregnancy prior to the onset of labor
   ________

2. The neck of the uterus
   ________

3. A greenish or brownish-yellow staining of the amniotic fluid
   ________

4. An umbilical cord that is wrapped around the infant’s neck
   ________

5. The period following delivery of the infant
   ________

6. An extension of the placenta through which the fetus receives nourishment while in the uterus
   ________

7. An infant weighing less than 5 pounds, or an infant born prior to 38 weeks gestation
   ________

8. An infant from birth to discharge from the hospital
   ________

9. The child in the uterus from third month of pregnancy to birth
   ________

10. The mucus and blood that are expelled from the vagina as labor begins
    ________
**CHAPTER 37 ANSWER KEY**

**HANDOUT 37-1: Chapter 37 Quiz**

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**HANDOUT 37-2: Chapter 37 Review**

1. ovaries  
2. preembryonic  
3. third  
4. Gravida  
5. Labor  
6. complete, dilation  
7. intrapartum  
8. knee-chest  
9. breech  
10. Perineum

Permits; monitor the patient for vomiting; continually assess for crowning; place your gloved fingers on the bony part of the infant’s skull when it crowns; tear the amniotic sac if it is not already ruptured; determine the position of the umbilical cord; suction fluids from the infant’s airway; as the torso and full body are expelled, support the newborn with both hands; grasp the feet as they are born; clean the newborn’s mouth and nose; dry, wrap, warm, and position the infant; assign your partner to monitor and complete initial care of the newborn; clamp, tie, and cut the umbilical cord as pulsations cease; observe for delivery of the placenta; transport the delivered placenta; place one or two sanitary pads over the vaginal opening; record the time of delivery and transport the mother, infant, and placenta to the hospital.

**HANDOUT 37-3: Obstetrics and Care of the Newborn: Listing**

1. All of the following: total, partial, and marginal.  
2. Any three of the following: previous ectopic pregnancies; pelvic inflammatory disease; adhesions from surgery; tubal surgery, including elective tubal ligation.  
3. Any 16 of the following: position the patient; create a sterile field around the vaginal opening if time permits; monitor the patient for vomiting; continually assess for crowning; place your gloved fingers on the bony part of the infant’s skull when it crowns; tear the amniotic sac if it is not already ruptured; determine the position of the umbilical cord; suction fluids from the infant’s airway; as the torso and full body are expelled, support the newborn with both hands; grasp the feet as they are born; clean the newborn’s mouth and nose; dry, wrap, warm, and position the infant; assign your partner to monitor and complete initial care of the newborn; clamp, tie, and cut the umbilical cord as pulsations cease; observe for delivery of the placenta; transport the delivered placenta; place one or two sanitary pads over the vaginal opening; record the time of delivery and transport the mother, infant, and placenta to the hospital.

**HANDOUT 37-4: Obstetrics and Care of the Newborn: Matching**

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*Prehospital Emergency Care, 9th Ed.*
Write the letter of the best answer in the space provided.

1. The leading medical cause of cardiac arrest in infants and children is
   A. seizure.    C. anaphylactic shock.

2. In caring for a sick child, the EMT should have the parent or caregiver
   A. step out of the room.
   B. assist in the care of the child when appropriate.
   C. follow the ambulance to the hospital.
   D. speak only with the doctor about the child.

3. Artificial ventilations should be performed on an infant or a child at a minimal rate of
   ____ breaths per minute.
   A. 10    C. 20
   B. 15    D. 30

4. The EMT recognizes that a normal developmental characteristic of toddlers is that they
   A. do not like to be touched.
   B. are very accepting of an oxygen mask.
   C. are eager to show independence from caregivers.
   D. need detailed explanations.

5. The first step in emergency care for a pediatric patient in shock is
   A. providing oxygen.
   B. managing bleeding.
   C. keeping the patient warm.
   D. ensuring an open airway.

6. Children develop hypothermia more easily than adults because of their
   A. lower metabolisms.
   B. slower heart rates.
   C. smaller lung capacity.
   D. larger surface area in proportion to body mass.

7. In assessing a toddler, the EMT knows that the rib cage is
   A. more susceptible to fracture than in adults.
   B. much more pliable than in adults.
   C. a likely spot for fractures.
   D. composed of incomplete skeletal plates.

8. Signs of early respiratory distress in an infant include all of the following except
   A. retractions.
   B. “seesaw” respirations.
   C. fontanelles.
   D. nostril flaring.

9. Approximately 5 percent of children have seizures caused by
   A. fever.
   B. epilepsy.
   C. head injuries.
   D. shock.

(continued)
Handout 38-1 (continued)

10. After a pediatric submersion patient has been removed from the water, you should provide _____ while establishing an airway.
   A. suctioning
   B. chest thrusts
   C. back blows
   D. immobilization

11. The leading cause of death in children ages 1–14 is
   A. fever.
   B. drowning.
   C. trauma.
   D. respiratory arrest.

12. The most common injuries sustained by children who are struck by a car while riding a bike are to the
   A. leg, hand, and back.
   B. head, spine, and abdomen.
   C. head, spine, and lower extremity.
   D. upper extremity, lower extremity, and abdomen.

13. The most common cause of hypoxia in the unconscious pediatric patient with a head injury is
   A. the tongue.
   B. intracranial pressure.
   C. intercranial pressure.
   D. Kussmaul’s respirations.

14. One complication that pediatric burn patients are especially susceptible to is
   A. hyperthermia.
   B. febrile seizure.
   C. hypothermia.
   D. hypoxia.

15. The only major cause of infant and child death to have increased in the last 30 years is
   A. vehicular trauma.
   B. poisoning.
   C. child abuse.
   D. burns.

16. When a child who an EMT has cared for dies, it can be a good idea for the EMT to turn for assistance to the
   A. ALS crew.
   B. CISD team.
   C. QI manual.
   D. ICS plan.
Review the following real-life situations. Then answer the questions that follow.

You are dispatched to a home where you find an 8-month-old child in her mother’s arms. The mother says the child is lethargic. She is breathing at a rate of 46 times a minute, and her pulse rate is 190. Her skin is cool to the touch, and she is pale. The mother states that the child has been sick for 2 days. This afternoon she became worse. The mother adds that the child has been vomiting and has had diarrhea.

1. What is likely to be the cause of the problem?

2. What emergency care would you provide?

You are called to the home of a frantic mother of a 4-year-old girl. Her daughter is normally active, and this morning was no exception. After putting her daughter to bed for a morning nap, the mother went downstairs and returned a little later to find the child in the bathroom, lethargic and unresponsive, with several empty prescription pill bottles nearby. The mother immediately called for the ambulance.

3. What is likely to be the cause of the problem?

4. What emergency care would you provide?
You are at the home of a family with a 10-month-old child. The father explains he called because the child had a seizure that lasted about a minute. The child appears flushed. You touch her skin, which is extremely hot to the touch. The father says the child has been running a fever all day. He put her to bed about an hour ago. About 10 or 15 minutes ago he heard a crash in the infant’s room and went to investigate. When he entered, the child was convulsing in the crib. That’s when he called 911.

5. What is likely to be the cause of the problem?

6. What emergency care would you provide?
CHAPTER 38 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. During the assessment and treatment of a young child, you will, if possible, want the child to sit in the ______________________________ ______________________________.

2. When opening a child’s airway, it is important not to ______________________________ the child’s neck.

3. Use ______________________________ ______________________________ alternating with ______________________________ ______________________________ to clear a complete airway obstruction in an infant 1-year-old or younger.

4. In infants and children, the ______________________________ system is usually an early indicator of other medical problems.

5. For infants and young children who are frightened by the oxygen mask, provide oxygen using the ______________________________ technique.

6. For infants and children, provide artificial ventilations at a minimum rate of ______________________________ breaths per minute.

7. Diarrhea and/or vomiting, dehydration, infection, abdominal injuries, and blood loss are common causes of ______________________________ in infants and children.

8. Because children have a large surface area in proportion to their body mass, they are especially prone to ______________________________.

9. Fever, epilepsy, meningitis, drug overdose, hypoglycemia, head trauma, and decreased levels of oxygen can bring on ______________________________ in children.

10. If a pediatric patient has a seizure and there is no possibility of spinal injury, position the patient ______________________________ ______________________________ ______________________________.

11. In the case of a submersion, assume that ______________________________ has occurred and fully immobilize the child.

12. The diagnosis of SIDS is made ______________________________.

13. Inflation of the abdominal compartment of the PASG with a pediatric patient may compromise ______________________________.

(continued)

15. When dealing with suspected foreign body airway obstruction in an infant or a child, never perform ___________________________.

16. If you suspect abuse as the cause of injury with a child trauma patient, do not ___________________________ the caregivers about abuse or ___________________________ them.

17. If there is bleeding in a pediatric patient with a central intravenous line, your emergency care will consist of ___________________________ to the device and ___________________________ the patient.

18. Pediatric calls are among the most ___________________________ for EMTs.

19. For children with special airway needs, the most common problems that EMS will encounter are with ___________________________ tubes, ___________________________ tubes, central lines, and feeding tubes.

20. ___________________________ tubes are placed into the stomach to assist with feeding.
Indicate if the following statements are true or false by writing T or F in the space provided.

1. The term “toddler” refers to a child between 2 and 4 years old.  
2. Modesty and body image are very important issues for school-age children.  
3. With children, padding under the shoulders is often necessary to maintain an open airway during immobilization to a spine board.  
4. Because children have a smaller blood volume than adults, issues of blood loss are less serious in those patients.  
5. Determining the cause of respiratory distress in a pediatric patient is an important part of an EMT’s assessment.  
6. Provide an initial series of six back blows to any infant or child patient suffering a partial airway obstruction.  
7. Capillary refill can be a useful tool in assessing circulation in pediatric patients.  
8. Infants and children need a respiratory tidal volume of approximately 10 mL/kg.  
9. In a pediatric patient with a foreign body airway obstruction, perform a “blind” finger sweep of the oral cavity if back blows do not dislodge the obstruction.  
10. Seizures that last longer than 10 minutes or recur without interruption represent a true medical emergency.  
11. To assess an unresponsive child, give him or her a gentle shake.  
12. With any infant or child poisoning patient, administer activated charcoal once you determine that the airway is open.  
13. A sunken fontanelle is a sign of dehydration in an infant.  
14. A drop in blood pressure is a late sign of shock in children.  
15. With submersion patients in whom normal breathing is restored, deterioration can still take place from minutes to hours after the event.  
16. Explaining to parents that SIDS is a relatively common occurrence is one way the EMT can help them cope with the loss of a child.  
17. With child patients, slow delivery of ventilations and cricoid pressure can help reduce gastric distension.
Handout 38-4 (continued)

18. Use a single leg of the PASG to control serious bleeding in an infant.

19. Never ask a suspected victim of child abuse to explain the circumstances of an incident while the possible abuser is present.

20. CISD is one way EMTs can defuse the stress created by dealing with pediatric emergencies.
1. List at least five signs of respiratory distress in pediatric patients.

2. List the emergency care steps for a child with fever and seizures.

3. List the basic emergency care steps for the pediatric trauma patient.

4. List four signs of possible child abuse.
CHAPTER 38 ANSWER KEY

HANDOUT 38-1: Chapter 38 Quiz

HANDOUT 38-2: In the Field
1. The child is likely in the early stages of shock (hypoperfusion) from infection and hypovolemia.
2. Ensure an open airway. Provide oxygen at 15 liters per minute by nonrebreather mask and be prepared to provide positive-pressure ventilations. Keep the child warm. Expedite transport.
3. The child may be suffering from poisoning.
4. Establish and maintain an airway. Be prepared to suction. Provide high-flow, high-concentration oxygen and be prepared to provide positive-pressure ventilation with supplemental oxygen as needed. Expedite transport. Perform a rapid trauma assessment.
5. The child may have suffered a febrile seizure.
6. Maintain the airway and provide oxygen at 15 liters per minute by nonrebreather mask. (Provide positive-pressure ventilation, if necessary.) Lower the infant’s body temperature. Be alert for possible vomiting and the need to suction. Transport.

HANDOUT 38-3: Chapter 38 Review
1. parent’s (caregiver’s) lap
2. hyperextend
3. back blows, chest thrusts
4. respiratory
5. “blow-by”
6. 20
7. shock (hypoperfusion)
8. hypothermia
9. seizures
10. on his side
11. spinal injury
12. postmortem
13. respirations
14. blunt, penetrating
15. blind finger sweeps
16. question, accuse
17. applying pressure, transporting
18. stressful
19. tracheostomy, mechanical ventilators
20. Gastrostomy

HANDOUT 38-4: Pediatrics: True or False

HANDOUT 38-5: Pediatrics: Listing
1. Any five: nasal flaring, retractions; neck muscle use; “seesaw” respirations; breathing noises such as stridor, wheezing, or grunting; breathing rate above normal for child’s age. Additional: cyanosis, decreased muscle tone, poor peripheral perfusion, altered mental status, head bobbing.
2. Establish and maintain an airway. Protect patient from injury. Suction secretions for no longer than 5–10 seconds at a time. Provide positive-pressure ventilations with supplemental oxygen at 20/minute if breathing is inadequate; administer oxygen; consider blow-by oxygen in very young children. Remove clothing and cool by fanning or sponging with tepid water. Consider advanced life support transport. Ongoing assessment every 5 minutes.
3. Establish and maintain in-line spinal stabilization and open the airway using the jaw-thrust maneuver. Suction as necessary, no more than 5–10 seconds at a time. Provide oxygen by nonrebreather mask at 15 liters per minute or provide positive-pressure ventilation with supplemental oxygen for inadequate breathing. Provide occlusive dressings for any open wound to the chest. Cover any eviscerations with moist, sterile gauze dressing and secure. Provide complete spinal immobilization. Consider request for ALS support. Apply PASG if pelvic injury is suspected and local protocols direct. Transport. Splint fractures and dress open wounds. Perform ongoing assessment every 5 minutes.
4. Any four of the following: multiple abrasions, lacerations, incisions, bruises, broken bones; multiple injuries or bruises in various stages of healing; injuries on both sides or both front and back of child’s body; unusual wounds; a fearful child; injuries to the genitalia; injuries to spinal cord and brain when child is violently shaken; situations in which the injuries are not consistent with the story; lack of adult supervision; untreated chronic illness; malnourishment; delay in reporting injuries.
CHAPTER 39 QUIZ

Write the letter of the best answer in the space provided.

1. The best place to check for signs of dehydration in the elderly patient is/are the
   A. scalp.
   B. skin of the forearms.
   C. palms of the hands or soles of the feet.
   D. mucous membranes of the eyes and mouth.

2. If an elderly patient has altered mental status and is unable to swallow, position him
   A. on a backboard, using pillows to support the head.
   B. in the left lateral recumbent position.
   C. in a Fowler position.
   D. supine.

3. When assessing an elderly patient in a nursing home or extended-care facility who shows
   signs and symptoms of a respiratory disorder, the EMT should
   A. put a surgical mask on the patient.
   B. make the patient a high priority for transport.
   C. immediately begin positive-pressure ventilations.
   D. put on a HEPA or N-95 respirator.

4. Which one of the following should be performed for an elderly trauma patient regardless
   of mechanism of injury or level of responsiveness?
   A. focused medical exam
   B. rapid trauma assessment
   C. focused trauma exam
   D. historical exam

5. Ongoing assessment of an elderly patient who is alert but has an injured arm should take
   place every _____ minutes.
   A. 5
   B. 10
   C. 15
   D. 20

6. When obtaining a history from an elderly patient, the EMT should
   A. shout loudly, as the patient is probably deaf.
   B. use terms of endearment like “honey” to break the ice.
   C. address the patient as “Mr.” or “Mrs.” unless asked to do otherwise.
   D. speak first to family members, as they are most likely to have accurate information.

7. With an elderly patient who has aching in her shoulders, fatigue, and trouble breathing,
   an EMT should suspect
   A. kyphosis.
   B. a heart attack.
   C. arteriosclerosis.
   D. degenerative spinal changes.

8. Efforts to save money by elderly people living on fixed incomes may lead to cases of
   A. lordosis.
   B. pulmonary embolus.
   C. hypothermia.
   D. stroke.

(continued)
Handout 39-1 (continued)

9. Emergency care for an elderly patient experiencing a seizure includes
   A. suctioning the airway as necessary.
   B. restraining the patient to prevent injury.
   C. placing the patient in the prone position.
   D. oxygen at 21 liters per minute via nasal cannula.

10. Inconsistencies in a patient’s history as supplied by the patient and caregivers should increase suspicions of the possibility of
    A. TIA.
    B. geriatric abuse.
    C. COPD.
    D. “silent heart attack.”
Review the following real-life situation. Then answer the questions that follow.

You and your partner are dispatched to a senior citizen’s apartment complex in the center of town. The caller stated that her husband is “talking gibberish” and not acting right. Your partner, a new EMT, says, “What does she expect? He’s old!” Since the complex was now less than a minute away, you decide to explore that comment later.

Upon arrival, you are met by Mrs. Heisler, a spry 80-year-old, who tells you that about 20 minutes ago her husband began speaking in a slurred voice and not making sense. She didn’t know how to help him, and so she called 911. “I’m really sorry. I hope I’m not bothering you people.” After looking for hazards, putting on BSI, and reassuring Mrs. Heisler that she had done the right thing, you approach the patient. He is an elderly man, sitting slouched in a chair and drooling. You introduce yourself and ask his name. The reply is garbled.

1. During the scene size-up and initial assessment, what special considerations must be kept in mind?

2. How should the EMTs address the patient? How can they obtain a chief complaint and a history?

3. After performing the initial assessment and rapid medical assessment, the EMTs note the following results:
   - Unequal pupils
   - Weakness on the right side of the body
   - Slurred speech
   - Alterations in respiratory patterns and pulse

What is the likely cause of these signs and symptoms? How should the EMTs manage them?
CHAPTER 39 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. With age, degenerative changes decrease the ability of the heart to ______________________________
   ______________________________.

2. The net effect of changes in the respiratory systems of elderly people is that
   ______________________________ air enters the system, ______________________________ gas exchange
takes place, and there is ______________________________ likelihood of an infection.

3. In the elderly, there is a decrease in ______________________________ and
   ______________________________ of the brain, leading to more cerebrospinal fluid to fill the space.

4. A decrease in the size of the liver with aging means that many elderly patients who take prescription
   medication suffer from drug ______________________________.

5. Aging decreases the effectiveness of the ______________________________ as a protective barrier that
   keeps microorganisms out of the body.

6. The geriatric patient’s mental status may be influenced by chronic illness, the present illness
   or ______________________________, ______________________________, or by familiarity with
   surroundings.

7. Perform a ______________________________ ______________________________
   ______________________________ on any elderly trauma victim regardless of responsiveness or
   mechanism of injury.

8. Exercise extreme caution in ______________________________ the geriatric patient for transport.

9. Due to changes in pain perception, the elderly may experience a(n) ______________________________
   heart attack.

10. ______________________________ ______________________________ ______________________________ is
    caused by a heart that has become weakened over time.

11. Fluid that has leaked into the space between the capillaries and alveoli causes
    ______________________________ ______________________________

12. ______________________________ pneumonia results from inhaled food or vomitus.

   (continued)
Handout 39-3 (continued)

13. If a patient with COPD becomes fatigued from the effort of breathing, be prepared to provide ________________ - ________________ ________________.

14. ________________ is a temporary loss of responsiveness that is caused by a reduced flow of blood to the brain.

15. In the case of suspected geriatric abuse, your first priority is to provide ________________ ________________ for the injuries.
1. List six factors that make a geriatric patient especially at risk for a medical/trauma emergency.

2. List at least five conditions commonly responsible for an assessment finding of altered mental status in geriatric patients.

3. List at least six signs that may indicate geriatric abuse.
CHAPTER 39 ANSWER KEY

HANDOUT 39-1: Chapter 39 Quiz

HANDOUT 39-2: In the Field
1. Special considerations include: Be aware of environmental concerns (too hot or too cold). Consider the possibility of TB. During the initial assessment, remember that mental status can be affected by chronic illness, medications, or changes in the surroundings. Any diminished gag reflex leaves the patient at risk for aspiration. Be prepared to maintain the airway and assist breathing if the patient is tiring. Assess both peripheral and central pulses. Note irregularities. Keep in mind the differences in the skin of the elderly. Look for hydration status in the mucous membranes of the mouth or eyes.
2. The EMT should call the patient “Mr. Heisler.” They should speak to the patient while his wife is available to listen also. If they cannot get satisfactory answers from the patient himself, they should then ask the wife directly. At all times, they must treat the patient with respect.
3. Stroke may be the most likely cause. The EMT should provide aggressive oxygenation and ventilation, continue to protect the airway and prevent aspiration, and transport in a Fowler position (change to left lateral recumbent if the patient loses consciousness).

HANDOUT 39-3: Chapter 39 Review
1. pump blood
2. less, less, greater
3. mass, weight
4. toxicity
5. skin
6. injury, drugs
7. rapid trauma assessment
8. packaging
9. silent
10. Congestive heart failure
11. pulmonary edema
12. Aspiration
13. positive-pressure ventilations
14. Syncope
15. emergency care

HANDOUT 39-4: Geriatrics: Listing
1. The patient lives alone, is incontinent, is immobile, has recently been hospitalized, has recently been bereaved, has an altered mental status.
3. Any six: bruises, bite marks, bleeding beneath the scalp (indicates hair-pulling), lacerations on the face, trauma to the ears, broken bones, deformities of the chest, cigarette burns, rope marks, inconsistencies in patient history.
CHAPTER 40 QUIZ

Write the letter of the best answer in the space provided.

1. Glaucoma increases intraocular pressure which damages the
   A. orbit.  
   B. optic nerve.  
   C. lens.  
   D. sclera.

2. All of the following can be causes of language disorders except
   A. stroke.  
   B. head trauma.  
   C. brain tumor.  
   D. all of the above.

3. Cerebral palsy
   A. is a specific disease involving the nervous system.  
   B. is an umbrella term.  
   C. is a specific disease involving the muscular system.  
   D. none of the above.

4. Paraplegia refers to paralysis
   A. of the entire body.  
   B. from the arms down.  
   C. from the waist down.  
   D. of just the arms.

5. According to the Centers for Disease Control and Prevention _____ percent of adults are either overweight or obese.
   A. 70  
   B. 80  
   C. 50  
   D. 60

6. All of the following are categories of child abuse except
   A. physical abuse.  
   B. sexual abuse.  
   C. emotional abuse.  
   D. psychological abuse.

7. The most common type of elder abuse occurs among
   A. elderly men living with their son.  
   B. elderly men living with their daughter and son-in-law.  
   C. elderly women living with their son.  
   D. elderly women living with their daughter.

8. If a tracheostomy opening is permanent, it is referred to as a
   A. stoma.  
   B. trachea.  
   C. POT (permanent tracheal opening).  
   D. colostomy.

9. A type of machine that delivers a high pressure on inhalation and a lower pressure on exhalation is called
   A. CPAP.  
   B. PiPAP.  
   C. BiPAP.  
   D. pressure delivery device.

10. Patients with hydrocephalus have an excess accumulation of
    A. cerebrospinal fluid.  
    B. plasma.  
    C. water.  
    D. metabolites.
CHAPTER 40 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Hospice is a __________________________ of care that is aimed at providing palliation of symptoms for the patients and support for their family.

2. Nasogastric tubes are used by advanced life support units in the prehospital setting to __________________________ the __________________________.

3. __________________________ is a medical procedure designed to support the lost function of the kidneys.

4. Vascular access devices are typically embedded in the __________________________ right side of the __________________________.

5. The type of ventilator which encircles the patient’s chest is a __________________________ pressure ventilator.

6. The pulse oximeter is used to monitor the patient’s __________________________ __________________________.

7. An apnea monitor is designed to constantly monitor the patient’s __________________________.

8. Annually over __________________________ million children are victims of abuse.

9. Statistics show that over __________________________ percent of Americans will live below the poverty level for at least 1 year.

10. Patients who cannot pronounce words correctly are said to have __________________________.
PATIENTS WITH SPECIAL CHALLENGES: MATCHING

Write the letter of the term in the space provided next to the appropriate description.

1. A condition in which the lens of the eye becomes cloudy
   _______  A. abuse

2. A condition that interferes with how a body part or system operates
   _______  B. palliative care

3. A patient who is paralyzed to all four extremities
   _______  C. developmental

4. The branch of medicine that deals with the management of obese patients
   _______  D. hydrocephalus

5. Any action or failure to act that results in unreasonable suffering, harm, or misery to a person, whether physical or mental
   _______  E. quadriplegic

6. Excess cerebrospinal fluid
   _______  F. terminal illness

7. Progressive deterioration causing death
   _______  G. Texas catheter

8. Medical interventions centered on reducing the severity of disease symptoms
   _______  H. bariatrics

9. Least invasive device used to divert urine out of the bladder
   _______  I. OG tube

10. A tube inserted through the mouth that ends up in the stomach
    _______  J. cataracts
### CHAPTER 40 ANSWER KEY

**HANDOUT 40-1: Chapter 40 Quiz**

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**HANDOUT 40-2: Chapter 40 Review**

1. philosophy  
2. decompress, stomach  
3. Dialysis  
4. upper, chest  
5. negative  
6. oxygen saturation  
7. breathing  
8. three  
9. 90  
10. dysarthia

**HANDOUT 40-3: Patients with Special Challenges: Matching**

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*Prehospital Emergency Care, 9th Ed.*
CHAPTER 41 QUIZ

Write the letter of the best answer in the space provided.

1. The EMT’s first duty to the patient is to arrive at the scene
   A. quickly.  
   B. by the most direct route.  
   C. safely.  
   D. with red lights, horn, and siren.

2. The EMT should not exceed the posted speed limit unless
   A. traffic is light.  
   B. traveling on holidays.  
   C. the situation is critical.  
   D. using a police escort.

3. Using a police or other emergency vehicle escort en route to the collision or the hospital should be
   A. a last resort.  
   B. standard procedure.  
   C. used with all critical patients.  
   D. only used at night.

4. The standard color for ambulances is
   A. orange.  
   B. red.  
   C. yellow.  
   D. white.

5. The most common collisions in which ambulances are involved are those at
   A. intersections.  
   B. railroad crossings.  
   C. interstate off-ramps.  
   D. pedestrian crosswalks.

6. Most states allow an emergency vehicle operator to do all of the following except
   A. pass a school bus whose lights are flashing.  
   B. pass other vehicles in a no-passing zone.  
   C. proceed past red lights.  
   D. exceed the speed limits.

7. A reason for using the siren sparingly is that it signals “emergency,” and it can create emotional and physical stress for
   A. bystanders.  
   B. EMTs.  
   C. the patient.  
   D. dispatchers.

8. The daily inspection of the ambulance should include all of the following except
   A. checking emergency lights.  
   B. checking power systems.  
   C. inspecting tie rods.  
   D. testing the horn.

9. En route to an emergency call, EMTs should do all of the following except
   A. think about what equipment will be carried to the scene.  
   B. determine crew responsibilities.  
   C. call for ALS support.  
   D. decontaminate essential equipment.

10. A common danger when an ambulance follows an escort vehicle is
    A. losing contact with the escort.  
    B. creating additional stress for the patient.  
    C. confusion for the emergency dispatchers.  
    D. following the escort too closely.

(continued)
11. The minimum distance an ambulance should be parked from wreckage or a burning vehicle is _____ feet.
   A. 100
   B. 200
   C. 300
   D. 400

12. At the receiving facility, the complete oral report to appropriate emergency department personnel should include all of the following except
   A. the patient’s chief complaint.
   B. any history not given previously.
   C. diagnosis of patient’s illness.
   D. vital signs taken en route.

13. Once a helicopter has set down and the pilot has indicated it is safe, you should approach a helicopter that has landed on an incline from the
   A. front.
   B. uphill side.
   C. rear.
   D. downhill side.

14. If tires are worn, hydroplaning on a wet road can begin at speeds as low as _____ mph.
   A. 30
   B. 15
   C. 20
   D. 35

15. The level of disinfection required for reusable instruments that have come into contact with mucous membranes is
   A. low level.
   B. intermediate level.
   C. high level.
   D. sterilization.

16. When the ambulance is ready to return to quarters, one of the first steps should be to
   A. inform the dispatcher.
   B. complete the log entry.
   C. refuel the vehicle.
   D. check the lights and siren.

17. When cleaning ambulance surfaces where there is no visible blood or body fluid contamination, the EMT should use
   A. a high-pressure hose.
   B. an infrared lamp.
   C. soap and water.
   D. an EPA-approved germicide.

18. Equipment that will be used invasively should be treated with
   A. a 1:100 bleach-to-water mixture.
   B. sterilization techniques.
   C. Lysol.
   D. a 1:10 bleach-to-water mixture.

19. An operational reason to request air rescue is
   A. a Glasgow Coma Scale score of less than 13.
   B. prolonged extrication.
   C. head injury with altered mental status.
   D. penetrating injury to the body cavity.

20. If you have to set up a helicopter landing zone at night, its minimum size should be _____ feet.
    A. $50 \times 50$
    B. $75 \times 75$
    C. $100 \times 100$
    D. $200 \times 200$
Review the following real-life situation. Then answer the questions that follow.

“I am an experienced emergency vehicle operator. I took the defensive driving courses, the emergency vehicle operator’s course, and everything else I could get my hands on. And my supervisor still put me through an extensive driver’s training program. So I was proud to be a driver, and I took my job seriously. At least I thought I did. But here I am, in court, getting ready to tell a grand jury what happened. Let me tell you, first.

“It was a sunny day. Business was brisk, but not too busy. We’d had a couple of runs, and we thought we’d take a break. My partner, Jan, and I liked to go to the coffee shop on the other end of town. It was a little out of the way, but we liked the company there.

“Wouldn’t you know it! As soon as we sat down, the tones go out. ‘Ambulance 60: respond Code 3 to a person down, unconscious, possible cardiac arrest. Citizen CPR in progress. Address: Oak Crest Apartments, Apartment 222. Time out is 1245 hours.’

“We grabbed our coffees and hauled out fast. Traffic was heavy, and I had to make time being on the other side of the district and all. So I didn’t ‘spare the horses’ as they say.

“Then up ahead I saw a police car. The police in our town first respond to medical emergencies when they can. To tell the truth, they’ve pulled us out of jams more than once, so I’m usually glad to see them. Anyway, I got right in behind him, following him carefully. I’d changed my siren to yelp so that other drivers could hear the difference as we came up to the intersection.

“I couldn’t have been doing more than 30 when we went through the intersection. She must have run the light or something. I had the red, but it should have changed by the time I was in the intersection. And I thought it was OK because the police car got through.

“Next thing, there’s a crash and Jan’s on top of me and the rig’s rolling on its side. My arm was busted and a few of Jan’s ribs. We were lucky, though, luckier than the lady who hit us. The ED did what they could, but she was too far gone.

“Anyway, a couple of days later, I’m back at the station. That police officer I followed comes in. He arrests me for reckless endangerment. Now, I’m waiting to talk to the grand jury.”

1. List the factors that contributed to this incident.

2. Did the driver make a mistake in following the police car into the intersection? Why or why not?
3. Did the ambulance driver show “due regard for the safety of others”?

4. If you were on the grand jury, would you find sufficient cause to indict the driver on the charges of reckless endangerment?
CHAPTER 41 REVIEW

Write the word or words that best complete the following sentences in the space provided.

1. The General Services Administration and the U.S. Department of _____________________________ have published federal specifications for ambulances.

2. Always wear ______________________________ ______________________________ when driving or riding in an ambulance.

3. Activate ______________________________ ______________________________ on the ambulance at all times when responding to an emergency call.

4. All emergency-vehicle operators must demonstrate ______________________________ ______________________________ for the safety of others when driving their vehicles.

5. During transport, select the route best suited for ______________________________ ______________________________.

6. In some states, one ______________________________ in the patient compartment is considered the minimum standard; however, two are preferred.

7. At the scene, determine if it is ______________________________ to approach the patient.

8. During an emergency call, ambulance headlights should always be ______________________________.

9. Take the time needed to properly immobilize injured extremities ______________________________ you move the patient, unless he or she is a high priority for immediate transport.

10. Use ordinary ______________________________ and ______________________________ to wash your hands at the end of the run and after all cleaning procedures have been completed.
AMBULANCE OPERATIONS AND AIR MEDICAL RESPONSE: LISTING

1. List at least six factors other than speed that affect the ability to control the ambulance during a call and that the EMT must be alert to.

2. List the eight major phases of an ambulance call.

3. List four activities commonly performed while en route to a receiving facility.

4. List five medical conditions that would justify a request for air medical transport.
AMBULANCE OPERATIONS AND AIR MEDICAL RESPONSE: TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

1. As an ambulance operator, you should be familiar only with the laws and regulations that apply on the local level.  
2. During transport, select the shortest route—this is not necessarily the least congested route.
3. The most common collisions in which ambulances are involved are head-ons.
4. The General Services Administration and the DOT developed and published federal specifications for ambulances.
5. Most states allow ambulances to be parked anywhere if they do not damage personal property or endanger lives.
6. If an ambulance operator acts without due regard for the safety of others, he or she is still protected by Good Samaritan laws.
7. The insulation in a newer automobile can reduce the interior decibel level of an approaching siren by 35–40 percent when the car is parked.
8. Upon arrival at a vehicle collision, the EMT should park the ambulance in front of or behind the collision, but never alongside it.
9. At a car wreck, the ambulance should be parked as close to the wreckage as possible to speed the loading of patients.
10. If, en route to the hospital, you are the EMT with the patient, you should keep the driver informed of the patient’s condition.
11. If the patient vomits en route, clean up the vomitus with paper towels and dispose of them as soon as you arrive at the receiving facility.
12. As a rule, the dispatcher should know the amount of time it takes to travel to a medical facility so there is no need to notify dispatch when you arrive there.
13. A mixture of 1:100 bleach-to-water is equivalent to an EPA-registered “hospital disinfectant.”
14. Stopping an ambulance on wet pavement takes approximately twice the distance as stopping on dry pavement.
15. When choosing a landing site for a helicopter, the site should not be more than 40 yards from the vehicles involved in a collision in order to facilitate patient loading.
CHAPTER 41 ANSWER KEY

HANDOUT 41-1: Chapter 41 Quiz


HANDOUT 41-2: In the Field

1. Contributing factors: distance between the ambulance and patrol car; speed entering the intersection; failure to yield in the intersection.
2. Yes, following the patrol car too closely raised the risk that the ambulance wouldn’t be identified by other drivers.
3. No, his actions directly contributed to a fatality.
4. Student responses may vary, but at least the grounds for indicting are here, whether or not they believe he was actually guilty.

HANDOUT 41-3: Chapter 41 Review

1. Transportation  6. EMT
2. seat belts  7. safe
3. emergency lights  8. on
4. due regard  9. before
5. safe travel  10. soap, water

HANDOUT 41-4: Ambulance Operations and Air Medical Response: Listing

1. Any six: braking; railroads; school buses; bridges and tunnels; day of the week; time of day; road surface; backing up; higher speeds; escorts; intersections.

2. Prerun vehicle and equipment preparation; dispatch; en route to the scene; at the scene; en route to the receiving facility; at the receiving facility; en route to the station; postrun.
3. Any four of the following: Give calming reassurance. Make sure that the patient is stabilized and settled. Collect patient information with a standard report. Continue your ongoing assessment; reassess vital signs. Review patient priorities. Check your medical interventions. The driver should drive prudently. Advise the driver of any changing conditions in the patient. Notify dispatch and the hospital of the number of patients you are transporting and the condition of the patient(s).
4. Any five: shock; head injury with altered mental status; chest or abdominal trauma with signs of respiratory distress or shock; serious mechanism of injury with alteration of vital signs; penetrating injury to the body cavity; other time-critical illnesses such as severe carbon monoxide poisoning, digit or limb amputation, or heart attack.

HANDOUT 41-5: Ambulance Operations and Air Medical Response: True or False

4. T  8. T  12. F
CHAPTER 42 QUIZ

Write the letter of the best answer in the space provided.

__________ 1. The majority of electric current and associated hazards in vehicle collisions can be eliminated most easily by
A. grounding the vehicles.
B. disconnecting the battery.
C. flooding the engine compartment with CO₂.
D. turning off the engine.

__________ 2. Upon arrival at the scene of a collision, the EMT’s first task is to
A. stabilize the vehicle.
B. gain access to the patient.
C. perform a scene size-up.
D. provide manual in-line stabilization for the patient.

__________ 3. Which article of protective equipment provides an acceptable level of head protection?
A. bump cap
B. firefighter’s helmet
C. uniform cap
D. bicyclist’s helmet

__________ 4. The role of the EMT in vehicle stabilization and patient extrication is that of
A. a public information officer.
B. traffic control.
C. a rescuer.
D. patient care provider.

__________ 5. The safest shoes to wear when involved in the patient extrication process of a vehicle collision are
A. rubber boots.
B. high-top cross-training shoes.
C. deck shoes.
D. steel-toed boots.

__________ 6. In general, approach a vehicle that has been involved in a collision and contains a patient from the
A. front.
B. driver’s side.
C. passenger side.
D. rear.

__________ 7. Traffic at the scene of a motor vehicle collision should be routed away a minimum distance of _____ feet.
A. 50
B. 100
C. 150
D. 200

__________ 8. Before entering a vehicle that was involved in a collision, it must be
A. removed.
B. stabilized.
C. ticketed.
D. marked.

__________ 9. The least costly method of forceful entry into a residence is
A. calling a locksmith.
B. using the jaws of life.
C. breaking a window.
D. breaking a door.

__________ 10. By far, the most common access problems encountered by the EMT involve
A. crime scenes.
B. children.
C. pets.
D. motor vehicle collisions.

(continued)
11. The easiest method of properly stabilizing a vehicle that is upright and on its wheels is to
   A. use parallel step chocks.
   B. use jacks at the front and rear bumpers.
   C. place two wheel chocks.
   D. put the car in park.

12. The most common tool used in vehicle extrication and patient disentanglement is the
   A. air bag.
   B. come-along.
   C. power hydraulic rescue tool.
   D. axe.

13. Complex access requires the use of
   A. specialized tools.
   B. protective equipment.
   C. no special tools or equipment.
   D. heavy gloves.

14. All windows in modern automobiles are made of tempered safety glass that will break
   into rounded pieces rather than sharp shards except the
   A. windshield.
   B. rear windows.
   C. driver’s window.
   D. sunroof.

15. Excluding motor vehicle collisions, most injuries are the result of
   A. hunting.
   B. gravity.
   C. electricity.
   D. weather.
IN THE FIELD

Review the following real-life situation. Then answer the questions that follow.

Dispatch: Medic Three, Ambulance 1701, respond Code 3 to a car off the road. Time is now 0315 hours.

“We roll out of our bunks and grab our boots. In minutes, we are on the road, running lights and sirens into the dark night. Trying to shake the sleep from my head, I’m wondering what happened. As we pull up to the scene, we see the State Trooper’s patrol car with its lights on up ahead. His spotlight is slowly panning the scene, but we can’t see a car.

“Getting out of the ambulance, making sure that there are no downed wires nearby, I walk toward the trooper. He points down a steep embankment and there is the vehicle, resting on its roof. Looking around, I see no other access but down the 65-foot embankment.”

1. What would your initial report from this scene say?

2. What special rescue equipment/assistance would be needed?

3. Suppose that once you got down to the patients, they tell you the driver ran off and that they think he was hurt and probably intoxicated. What would you do then?
CHAPTER 42 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. A(n) ______________________________ patient may be found anywhere under any circumstances.

2. The most important point to remember in an emergency is that your own ________________ as an EMT is always your highest priority.

3. Once the scene is secure and it is safe to approach the vehicle, walk around it once to identify mechanisms of injury, and approach ______________________________ the patient.

4. ______________________________ always precedes removal from the vehicle unless delay would endanger the life of the patient, EMS personnel, or other rescuers.

5. Stabilize and, if possible, immobilize the patient’s ______________________________ securely before you remove the patient from the vehicle by normal or rapid extrication procedures.

6. The first step to properly stabilize an upright vehicle is to immobilize the ______________________________.

7. The primary goal of patient disentanglement is to remove the ______________________________ from around the ______________________________.

8. The ______________________________ posts are the front posts supporting a vehicle’s roof.

9. When the patient is pinned between the dash, steering wheel, and seat, the technique known as a(n) ______________________________ ______________________________ may provide the safest and easiest disentanglement.

10. An EMT should consider all vehicles involved in a collision to be ______________________________.

11. The ______________________________ is always the access of choice because it is the largest uncomplicated opening into the passenger compartment of a vehicle.

12. Getting into a vehicle by opening a door or rolling down a window is called ______________________________ ______________________________.

13. If the ______________________________ cable on a battery is removed first, a spark may occur that could ignite acid fumes or gasoline spilled from the accident.
14. All ambulances should be equipped with ______________________________ so that scenes can be assessed from a safe distance and position.

15. When called to a motor vehicle collision, look for ______________________________ both at the site of the emergency and in the immediate vicinity.

16. A vehicle is considered ______________________________ when it is in a secured position and can no longer move, rock, or bounce.

17. There are two types of window glass in modern vehicles: laminated and ______________________________.

18. When using chocks to stabilize an upright vehicle, they should be pushed in until they touch the ______________________________.
GAINING ACCESS AND PATIENT EXTRICATION: LISTING

1. List five of the questions the EMT should ask upon receiving a call from dispatch to evaluate whether there may be obstacles to the patient access and extrication.

2. List the personal protective equipment required for personnel involved in the patient extrication process.

3. List the two common hazards at motor vehicle collisions.

4. List three means of stabilizing an upright vehicle.

5. List the two types of access to a patient involved in a motor vehicle collision.
CHAPTER 42 ANSWER KEY

HANDOUT 42-1: Chapter 42 Quiz

HANDOUT 42-2: In the Field
1. That you established EMS Command and that you are requesting lights, heavy rescue, and high-angle rescue personnel and equipment.
2. Ropes, possibly heavy hydraulic tools, even air medical rescue.
3. Inform the trooper and have him form a search party and proceed with a lost person wilderness search while you continue to triage and care for the patients on-scene.

HANDOUT 42-3: Chapter 42 Review
1. trauma  10. unstable
2. safety  11. door
3. facing  12. simple access
4. Patient care  13. positive
5. spine  14. binoculars
6. suspension  15. patients
7. vehicle, patient  16. stable
8. A  17. tempered
9. dash roll  18. undercarriage

HANDOUT 42-4: Gaining Access and Patient Extrication: Listing
1. Any five of the following: Is the patient ill or injured? What is the mechanism of injury? What is the location of the incident? What time of day is it? What is the weather? Is there a report of entrapment? Is there a report of a leak or spill?
2. Full turnout gear: bunker coat, bunker pants, steel-toed boots, head protection (i.e., standard fire helmet), eye protection (goggles or safety glasses), and heavy leather gloves; in addition, appropriate BSI gear would be needed for patient contact.
3. Electrical lines, traffic.
4. Step chocks, box crib with wedges, cutting valve stems/tires.
5. Complex access, simple access.
CHAPTER 43 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. According to the Department of Transportation, a hazardous material is a substance that
   A. can explode.
   B. can cause death.
   C. poses a threat or unreasonable risk to health, safety, and property if not properly
      controlled.
   D. does not meet OSHA guidelines for workplace and product safety.

_______ 2. According to OSHA, EMS responders likely to witness or discover a hazardous materials
   emergency should have what minimum level of training?
   A. Hazardous Materials Specialist
   B. First Responder Operations
   C. Hazardous Materials Technician
   D. First Responder Awareness

_______ 3. The level of training required of rescuers who actually plug, patch, or stop the release of
   a hazardous material is
   A. Hazardous Materials Specialist.
   B. First Responder Operations.
   D. First Responder Awareness.

_______ 4. Normal triage, stabilization, and treatment are performed in the _____ zone.
   A. warm  C. cold
   B. control  D. hot

_______ 5. Initial (gross) patient decontamination should be carried out in the _____ zone.
   A. warm  C. cold
   B. hot  D. triage

_______ 6. The first and primary concern of the EMT at a hazardous materials incident is for
   A. his or her own personal safety.
   B. the safety of the HAZMAT team.
   C. the safety of the public.
   D. the patient’s medical needs.

_______ 7. The blue color of the NFPA 704 system indicates a _____ hazard.
   A. chemical  C. health
   B. fire  D. reactivity

_______ 8. The U.S. Department of Transportation requires that vehicles carrying hazardous mate-
   rials display
   A. specific hazard labels or placards.
   B. red warning flags.
   C. red and yellow flashers.
   D. a CHEMTREC number.

_______ 9. A public service division of the Chemical Manufacturer’s Association that can answer any
   questions and advise you on how to handle any emergency involving hazardous materials
   is called
   A. CHEMTREC.
   B. CHEMSAT.
   C. OSHA.
   D. MSDS.
10. A U.S. DOT publication that lists more than a thousand hazardous materials, each with an identification number cross-referenced to complete emergency instructions, is
A. OSHA Emergency Response Standards.  
B. NFPA Standard #473.  
C. Material Safety Data Sheets.  
D. Emergency Response Guidebook.

11. The first course of action that should be taken by the EMT at a hazardous materials incident is
A. securing the scene.  
B. limiting exposure of rescuers.  
C. beginning rescue of victims.  
D. contacting an ALS team.

12. The most essential part of hazardous materials rescue operations is
A. the training of EMTs.  
B. use of SCBA.  
C. effective preincident planning.  
D. use of specialized HAZMAT suits.

13. Receiving facilities handling patients from hazardous materials incidents should be
A. the closest to the scene.  
B. designated in the incident plan.  
C. OSHA approved.  
D. specialized chemical centers.

14. Lifesaving emergency care, such as airway management and immobilization, should be performed in the _____ zone.
A. hot  
B. containment  
C. warm  
D. cold

15. Radiation contamination occurs when the patient comes into direct contact with radioactive
A. gases.  
B. particles.  
C. liquids.  
D. all of these.
IN THE FIELD

Review the following real-life situation. Then consult the Material Safety Data Sheet on page 6 to help you answer the following questions.

Returning to the station after several back-to-back calls, you and your partner, Juan, start to clean up. You begin on the inside of the ambulance, while Juan agrees to wash down the backboards. The backboards are particularly dirty after a couple of tough extrication calls. There is dried blood as well as grease and antifreeze on the boards.

Juan takes the backboards into the dirty utility room off the main bays. It has a deep sink, as well as brushes and cleaners to clean equipment. He reviews the cleaning procedures for washing down a dirty backboard. He then dons a pair of heavy gloves, a plastic gown, and a pair of goggles.

Juan is having a tough time cleaning off the grease from the board, so he decides to mix a little bleach into the ammonia and soapy water mixture he was using. Smelling the mixture, he thinks to himself, “Boy is that strong!” He then continues to scrub the boards.

Soon he realizes that his eyes are watering and burning. But he wants to get the job done, so he keeps on working. Pretty soon he is breathing heavily, more heavily than he should be considering how much work he is doing. He feels a funny tightness in his chest and gets a little apprehensive.

Having completed washing down the inside of the rig, you go see if you can help Juan out. One look tells you that something is wrong with Juan. Juan tells you he is having trouble breathing. You call out for the supervisor and go to work helping your partner.

1. What caused Juan’s problem?

2. What health hazards may be present on the scene?

3. What first aid would you provide in this case?
4. Do you need to wear any special protection?

5. Who could you call for more instructions on first aid?
### Material Safety Data Sheets

**I – CHEMICAL IDENTIFICATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>CAS No.</th>
<th>RTECs No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>regular Clorox Bleach</td>
<td>clear, light yellow liquid with chlorine odor</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Other Designations**

- EPA Reg. No. 5813-1
- Sodium hypochlorite solution
- Liquid chlorine bleach
- Clorox Liquid Bleach

**Manufacturer**

The Clorox Company
1221 Broadway
Oakland, CA 94612

**Emergency Procedure**

- Notify your supervisor
- Call your local poison control center
- OR
- Rocky Mountain Poison Center
  (303)573-1014

**II – HEALTH HAZARD DATA**

- Causes severe but temporary eye injury. May irritate skin. May cause nausea and vomiting if ingested. Exposure to vapor or mist may irritate nose, throat and lungs. The following medical conditions may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, chronic bronchitis or obstructive lung disease. Under normal consumer use conditions the likelihood of any adverse health effects are low.

**FIRST AID:**

**EYE CONTACT:**

Immediately flush eyes with plenty of water. If irritation persists, see a doctor.

**SKIN CONTACT:**

Remove contaminated clothing. Wash area with water.

**INGESTION:**

Drink a glassful of water and call a physician.

**INHALATION:**

If breathing problems develop remove to fresh air.

**III – HAZARDOUS INGREDIENTS**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Concentration</th>
<th>Worker Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>5.25%</td>
<td>not established</td>
</tr>
<tr>
<td>CAS# 7681-52-9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen list. Occasional clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Routine clinical tests conducted on intact skin with Clorox Liquid Bleach found no sensitization in the test subjects.

**IV – SPECIAL PROTECTION INFORMATION**

**Hygienic Practices:**

- Wear safety glasses. With repeated or prolonged use, wear gloves.
- Use general ventilation to minimize exposure to vapor or mist.

**Work Practices:**

- Avoid eye and skin contact and inhalation of vapor or mist.

**V – SPECIAL PRECAUTIONS**

Keep out of reach of children. Do not get in eyes or on skin. Wash thoroughly with soap and water after handling. Do not mix with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products. Store in a cool, dry place. Do not reuse empty container; rinse container and put in trash container.

**VI – SPILL OR LEAK PROCEDURES**

Small quantities of less than 5 gallons may be flushed down drain. For larger quantities wipe up with an absorbent material or mop and dispose of in accordance with local, state and federal regulations. Dilute with water to minimize oxidizing effect on spilled surface.

**VII – REACTIVITY DATA**

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.

**VIII – FIRE AND EXPLOSION DATA**

Not flammable or explosive. In a fire, cool containers to prevent rupture and release of sodium chlorate.

**IX – PHYSICAL DATA**

- Boiling point: 212°F/100°C (decomposes)
- Specific Gravity (H₂O = 1): 1.085
- Solubility in Water: complete
- pH: 11.4

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*Prehospital Emergency Care, 9th Ed.*

**CHAPTER 41** Ambulance Operations and Air Medical Response
CHAPTER 43 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Any substance that in any quantity poses a threat or an unreasonable risk to health, safety, and property if not properly controlled is considered a(n) ______________________________ ______________________________.

2. The EMT should never attempt a hazardous materials rescue unless he or she has had the necessary ______________________________ ______________________________.

3. Regulations developed by the federal agencies ______________________________ and ______________________________ spell out requirements for HAZMAT training.

4. All emergency responders likely to witness or discover a hazardous materials emergency must be minimally trained to the ______________________________ ______________________________ ______________________________ level.

5. Generally, in the preplanning of incident management, you should prepare for the ______________________________ ______________________________ scenario.

6. There should be a clear chain of command from each rescuer to the ______________________________ ______________________________.

7. The only work done in the ______________________________ is actual rescue, initial decontamination, and treatment for life-threatening conditions by specially trained personnel who are wearing appropriate protective clothing.

8. Before entering the ______________________________ from the warm zone, rescuers should shed all contaminated protective gear and patients should be as fully decontaminated as possible.

9. The area immediately adjacent to the contamination zone is called the ______________________________ ______________________________.

10. The 24-hour emergency chemical information and assistance center reachable at 800-424-9300 is ______________________________.

11. The NFPA 704 Hazard Identification System identifies potential danger with the use of numbers ranging from ______________________________ to ______________________________.
12. ____________________ occurs when the patient is in the presence of radioactive material without any of the radioactive material actually touching his or her clothing or body.

13. ____________________ occurs when the patient has come into direct contact with the source of radioactivity or with radioactive gases, liquids, or particles.

14. A(n) ____________________ is an expert specifically trained under federal government provisions to handle radiation-related accidents.

15. ____________________ is the critical factor in managing radiation emergencies.
ANALYZING A HAZMAT INCIDENT

Review the following situation. Then answer the questions that follow.

It’s an early Thursday morning when you are dispatched to a reported overturned truck in the Guilderland Industrial Park near the sewage treatment plant. Upon arrival, you can clearly see smoke and vapors coming from an overturned tank truck.

You stay back and view the scene with your binoculars from the cab of the ambulance. On the side of the overturned truck, you can read the UN identification placard number 1017.

Review your hazardous materials information (accompanying pages) and your map and answer the following questions. You should also know that the winds are from the east at 5–10 mph. The top of the map is north and the scale is printed on the map.

1. What material does the tank truck contain?

2. This is a potentially large spill of material that is a highlighted substance. How large an isolation zone should be set up at first? How should that zone be changed later?

3. What basic public safety guidelines apply in this situation?

4. Will evacuation be necessary? What are areas of major concern in this incident?
<table>
<thead>
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<th>ID No.</th>
<th>Guide No.</th>
<th>Name of Material</th>
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<td>1014</td>
<td>122</td>
<td>Oxygen and carbon dioxide mixture</td>
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<tr>
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<td>122</td>
<td>Oxygen and carbon dioxide mixture, compressed</td>
</tr>
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<td>126</td>
<td>Carbon dioxide and nitrous oxide mixture</td>
</tr>
<tr>
<td>1015</td>
<td>126</td>
<td>Nitrous oxide and carbon dioxide mixture</td>
</tr>
<tr>
<td>1016</td>
<td>119</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>1016</td>
<td>119</td>
<td>Carbon monoxide, compressed</td>
</tr>
<tr>
<td>1017</td>
<td>124</td>
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</tr>
<tr>
<td>1038</td>
<td>115</td>
<td>Ethylene, refrigerated liquid (cryogentic liquid)</td>
</tr>
<tr>
<td>1039</td>
<td>115</td>
<td>Ethyl methyl ether</td>
</tr>
<tr>
<td>1039</td>
<td>115</td>
<td>Methyl ethyl ether</td>
</tr>
<tr>
<td>1040</td>
<td>119</td>
<td>Ethylene oxide</td>
</tr>
<tr>
<td>1040</td>
<td>119</td>
<td>Ethylene oxide with nitrogen</td>
</tr>
<tr>
<td>1041</td>
<td>115</td>
<td>Carbon dioxide and ethylene oxide mixture, with more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 9% but not more than 87% ethylene oxide</td>
</tr>
<tr>
<td>1041</td>
<td>115</td>
<td>Carbon dioxide and ethylene oxide mixture, with more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 9% but not more than 87% ethylene oxide</td>
</tr>
<tr>
<td>1041</td>
<td>115</td>
<td>Carbon dioxide and ethylene oxide mixture, with more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 6% ethylene oxide</td>
</tr>
<tr>
<td>1041</td>
<td>115</td>
<td>Carbon dioxide and ethylene oxide mixture, with more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 9% but not more than 87% ethylene oxide</td>
</tr>
<tr>
<td>1041</td>
<td>115</td>
<td>Carbon dioxide and ethylene oxide mixture, with more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 6% ethylene oxide</td>
</tr>
<tr>
<td>1043</td>
<td>125</td>
<td>Fertilizer, ammoniating solution, with free ammonia</td>
</tr>
<tr>
<td>1044</td>
<td>126</td>
<td>Fire extinguishers with compressed gas</td>
</tr>
<tr>
<td>1044</td>
<td>126</td>
<td>Fire extinguishers with liquefied gas</td>
</tr>
<tr>
<td>1045</td>
<td>124</td>
<td>Fluorine</td>
</tr>
<tr>
<td>1045</td>
<td>124</td>
<td>Fluorine, compressed</td>
</tr>
<tr>
<td>1046</td>
<td>121</td>
<td>Helium</td>
</tr>
<tr>
<td>1046</td>
<td>121</td>
<td>Helium, compressed</td>
</tr>
<tr>
<td>1048</td>
<td>125</td>
<td>Hydrogen bromide, anhydrous</td>
</tr>
<tr>
<td>1049</td>
<td>115</td>
<td>Hydrogen</td>
</tr>
<tr>
<td>1049</td>
<td>115</td>
<td>Hydrogen, compressed</td>
</tr>
<tr>
<td>1050</td>
<td>125</td>
<td>Hydrogen chloride, anhydrous</td>
</tr>
<tr>
<td>1051</td>
<td>117</td>
<td>Hydrocyanic acid, aqueous solutions, with more than</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20% hydrogen cyanide</td>
</tr>
<tr>
<td>1051</td>
<td>117</td>
<td>Hydrocyanic acid, liquefied</td>
</tr>
<tr>
<td>1051</td>
<td>117</td>
<td>Hydrocyanic acid, anhydrous, stabilized</td>
</tr>
<tr>
<td>1051</td>
<td>117</td>
<td>Hydrocyanic acid, stabilized</td>
</tr>
<tr>
<td>1052</td>
<td>125</td>
<td>Hydrogen fluoride, anhydrous</td>
</tr>
<tr>
<td>1053</td>
<td>117</td>
<td>Hydrogen sulfide</td>
</tr>
<tr>
<td>1053</td>
<td>117</td>
<td>Hydrogen sulfide, liquefied</td>
</tr>
<tr>
<td>1053</td>
<td>117</td>
<td>Hydrogen sulphide</td>
</tr>
<tr>
<td>1055</td>
<td>115</td>
<td>Isobutylene</td>
</tr>
<tr>
<td>1056</td>
<td>121</td>
<td>Krypton</td>
</tr>
<tr>
<td>1056</td>
<td>121</td>
<td>Krypton, compressed</td>
</tr>
<tr>
<td>1057</td>
<td>115</td>
<td>Cigarette lighter, with flammable gas</td>
</tr>
<tr>
<td>1057</td>
<td>115</td>
<td>Flammable gas in lighter for cigars, cigarettes, etc.</td>
</tr>
<tr>
<td>1057</td>
<td>115</td>
<td>Lighter refills (cigarettes) (flammable gas)</td>
</tr>
<tr>
<td>1057</td>
<td>115</td>
<td>Lighters (cigarettes) (flammable gas)</td>
</tr>
<tr>
<td>1058</td>
<td>121</td>
<td>Liquefied gas (nonflammable)</td>
</tr>
<tr>
<td>1058</td>
<td>121</td>
<td>Liquefied gases, non-flammable, charged with nitrogen,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbon dioxide or air</td>
</tr>
<tr>
<td>1060</td>
<td>116P</td>
<td>Methylacetylene and propadiene mixture, stabilized</td>
</tr>
<tr>
<td>1060</td>
<td>116P</td>
<td>Propadiene and methylacetylene mixture, stabilized</td>
</tr>
</tbody>
</table>
GUIDE 124  GASES-TOXIC AND/OR CORROSIVE-OXIDIZING  NAERG96

POTENTIAL HAZARDS

HEALTH
- TOXIC; may be fatal if inhaled or absorbed through skin.
- Fire will produce irritating, corrosive, and/or toxic gases.
- Contact with gas or liquefied gas may cause burns, severe injury, and/or frostbite.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION
- Substance does not burn but will support combustion.
- Vapors from liquefied gas are initially heavier than air spread along ground.
- These are strong oxidizers and will react vigorously or explosively with many materials including fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react violently with air, moist air, and/or water.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY
- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Isolate spill or leak area immediately for at least 100 to 200 meters (330 to 660 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters’ protective clothing is recommended for fire situations ONLY; it is not effective in spill situations.

EVACUATION
Spill
- See the Table on Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substance, increase, in the downwind direction, as necessary, the isolation distance under “PUBLIC SAFETY.”

Fire
- If tank, rail car, or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE
Small Fires: Water only; no dry chemical, CO₂ or Halon®.
- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from ventilating safety devices or discoloration of tank.
- ALWAYS stay away from the ends of tanks.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK
- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or direct vapor cloud drift.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or combined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

FIRST AID
- Move victim to fresh air. Call emergency medical care.
- Apply artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet. Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
### TABLE OF INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

<table>
<thead>
<tr>
<th>ID No.</th>
<th>NAME OF MATERIAL</th>
<th>SMALL SPILLS</th>
<th>LARGE SPILLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>FIRST</strong></td>
<td><strong>THEN</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ILATE</strong></td>
<td><strong>TECT</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>EVERS</strong></td>
<td><strong>OWN</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>D</strong></td>
<td><strong>IGHT</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ISTANCES</strong></td>
<td><strong>ISTANCES</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Meters</strong></td>
<td><strong>Kilometers (Miles)</strong></td>
</tr>
<tr>
<td>1005</td>
<td>Ammonia, anhydrous</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1006</td>
<td>Ammonia solution, with more than 50% ammonia</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1007</td>
<td>Anhydrous ammonia</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1008</td>
<td>Boron trifluoride, compressed</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1009</td>
<td>Carbon monoxide, compressed</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1010</td>
<td>Chlorine</td>
<td>60 m (200 ft)</td>
<td>0.3 km (0.2 mi)</td>
</tr>
<tr>
<td>1011</td>
<td>Coal gas, compressed</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1012</td>
<td>Cyanogen, liquefied</td>
<td>60 m (200 ft)</td>
<td>0.3 km (0.2 mi)</td>
</tr>
<tr>
<td>1013</td>
<td>Cyanogen gas</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1014</td>
<td>Ethylene oxide with nitrogen</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1015</td>
<td>Fluorine</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1016</td>
<td>Hydrogen bromide, anhydrous</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1017</td>
<td>Hydrogen chloride, anhydrous</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1018</td>
<td>Hydrocyanic acid, aqueous solutions, with more than 20% hydrogen cyanide</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1019</td>
<td>Hydrogen fluoride, anhydrous</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1020</td>
<td>Hydrogen sulfide, liquefied</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1021</td>
<td>Methyl bromide</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1022</td>
<td>Methyl mercaptan</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1023</td>
<td>Dinitrogen tetroxide, liquefied</td>
<td>60 m (200 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1024</td>
<td>Nitrosyl chloride</td>
<td>60 m (200 ft)</td>
<td>0.3 km (0.2 mi)</td>
</tr>
<tr>
<td>1025</td>
<td>Oil gas, compressed</td>
<td>30 m (100 ft)</td>
<td>0.2 km (0.1 mi)</td>
</tr>
<tr>
<td>1026</td>
<td>Diphosgene, Phosgene</td>
<td>125 m (400 ft)</td>
<td>0.6 km (0.4 mi)</td>
</tr>
</tbody>
</table>

(continued)
HAZARDOUS MATERIALS: LISTING

1. List the three routes of potential exposure to oxidizers and organic peroxides.

2. List the colors included in the NFPA 704 system and identify the hazard each identifies.

3. List the levels of training identified by the EPA and OSHA in “29 CFR 1910.120—Hazardous Waste Operations and Emergency Response Standards.”

4. List the three general priorities for hazardous materials emergencies.
CHAPTER 43 ANSWER KEY

HANDOUT 43-1: Chapter 43 Quiz

HANDOUT 43-2: In the Field
1. Juan probably created a chlorine gas or other chlorinated species by mixing the bleach and ammonia.
2. The resulting product is severely irritating to the skin and eyes on contact. If inhaled, it may induce asthma-like symptoms including bronchospasm.
3. Move him to fresh air immediately. Call poison control.
4. At a minimum, wear safety glasses and gloves.
5. Either your regional local poison control center or the Rocky Mountain Poison Center.

HANDOUT 43-3: Chapter 43 Review
1. hazardous material
2. specialized training
3. OSHA, EPA
4. First Responder Awareness
5. worst possible
6. command officer
7. hot zone
8. cold zone
9. warm zone
10. CHEMTREC
11. 0, 4
12. Exposure
13. Contamination
14. Radiation Safety Officer (RSO)
15. Time

HANDOUT 43-4: Analyzing a HAZMAT Incident
1. Chlorine.
2. Initially isolate the spill 600 feet in all directions. Later expand the isolation area downwind to 0.5 miles.
4. Yes. The major area of immediate concern is the school. But if the winds shift slightly, the fire station and nursing home could be threatened.

HANDOUT 43-5: Hazardous Materials: Listing
1. Skin and eyes; inhalation; ingestion.
2. Red—flammability; Yellow—reactivity; Blue—health hazard; White—special hazards.
4. Protect the safety of all rescuers and victims; provide patient care; decontaminate clothing, equipment, and the vehicle.
CHAPTER 44 QUIZ

Write the letter of the best answer in the space provided.

1. Any event that places excessive demands on emergency response personnel and equipment is called a
   A. catastrophe.
   B. disaster.
   C. multiple-casualty incident.
   D. tragedy.

2. The senior EMT who arrives at the scene of an MCI or disaster assumes responsibility as the _____ commander.
   A. unified
   B. sole
   C. incident mobile
   D. EMS incident

3. The unit responsible for distributing the medical materials and equipment necessary to render care is called the _____ unit.
   A. staging
   B. extrication
   C. supply
   D. triage

4. A system used for sorting patients to determine the order in which they will receive medical care or transportation to definitive care is called
   A. staging.
   B. assessment.
   C. triage.
   D. treatment.

5. In the four-priority triage system, patients who are dead receive what priority level?
   A. Priority 3
   B. Priority 4
   C. Priority 1
   D. Priority 2

6. The unit responsible for the monitoring, overseeing of inventories, and direction of available ambulances to the treatment unit is called the _____ unit.
   A. incident command
   B. transportation
   C. staging
   D. communication

7. As an EMT at an MCI, do not let communication difficulties distract you from
   A. patient care.
   B. contacting the incident commander.
   C. using radio codes.
   D. direct communication with the receiving hospital.

8. A sudden catastrophic event that overwhelms natural order and causes great loss of property and/or life is called a
   A. disaster.
   B. Force 10 event MCI.
   C. calamity.
   D. tragedy.

9. Critical to any successful rescue effort is an efficient communications system that includes
   A. multiple frequencies.
   B. EMT dispatchers.
   C. E911 capabilities.
   D. a backup system.

10. A typical color-coding system for triage tags assigns high-priority patients the color:
    A. yellow.
    B. green.
    C. red.
    D. black.
11. A key to dealing with non-life-threatening injuries in the treatment unit is
   A. detailed tagging.
   B. taking treatment shortcuts.
   C. frequent consultation with medical direction.
   D. performing detailed assessments.

12. After an incident commander is determined, he or she should begin to establish all of the
    following EMS units except
   A. triage.
   B. transportation.
   C. finance.
   D. supply.

13. EMTs arriving at an MCI should first report to the ____ unit.
    A. mobile command
    B. supply
    C. staging
    D. transportation

14. Patients should be moved from the triage unit to the treatment unit in order of their
    A. age.
    B. priority.
    C. seniority.
    D. complaints.

15. During an MCI, radio communications from the scene of the incident to the receiving
    hospitals should be handled by the
    A. incident commander.
    B. individual EMTs.
    C. transportation officer.
    D. EMD.
Review the following real-life situation. Then answer the following questions.

Our fire department does not make that many EMS calls; however, we are all EMTs. I still remember the day that we were toned out to a two-car collision with multiple patients. This wasn’t your regular car crash, at least not in our town. Upon our arrival, Captain Schultz noted one car with severe front-end damage sitting upright in the intersection with two patients still in the car. The other vehicle was on its side with the driver still in his seat belt. There was a little girl in the back seat and another child sitting up crying on the ground.

Captain Schultz immediately requested three more ambulances and another engine company for assistance and then took charge of the triage. He took two firefighters with him to assist. In accordance with our SOP for multiple-casualty incidents, the lieutenant took control of getting the responding units and personnel to the patients that Captain Schultz identified as priority.

When the ambulances started to arrive, Captain Schultz directed firefighters to load the priority patients and waited for additional ambulances for the stable patients. All in all, we transported six patients in five ambulances.

1. Did this event meet the criteria of a multiple-casualty event?

2. Who was the EMT incident commander in this scenario?

3. Who was the staging unit officer in this scenario?
CHAPTER 44 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. A multiple-casualty incident (MCI) is any event that places ______________________________
   ______________________________ on personnel and equipment.

2. Multiple-casualty incidents do not always involve victims of ______________________________.

3. Effective management of multiple-casualty incidents consists of getting enough help, positioning
   vehicles properly, giving appropriate ______________________________ ______________________________
   ______________________________, transporting patients efficiently, and providing
   ______________________________ - ______________________________ ______________________________ at
   receiving facilities.

4. The ______________________________ ______________________________ is responsible for seeing that the multiple-casualty incident is
   responded to in a controlled and orderly way and that all responsibilities are carried out.

5. A(n) ______________________________ ______________________________ system works best when the
   multiple-casualty incident involves more than one emergency response agency.

6. The ______________________________ ______________________________ should be stationed in a com-
   mand center located in a safe area near or at the area where patients will be loaded for transport.

7. The incident commander ______________________________ duties to the various unit officers.

8. EMTs responding to the scene of an MCI should first report to the ______________________________
   ______________________________ for instructions.

9. The ______________________________ ______________________________ is responsible for distributing
   the medical materials and equipment necessary to render care.

10. ______________________________ is a system used for sorting patients to determine the order in which
    they will receive medical care or transportation to definitive care; it is performed in the
    ______________________________ ______________________________.

11. In triage, the ______________________________ priority involves patients with severe injuries but who
    should still survive even if care is somewhat delayed.
12. The ______________________________ ______________________________ officer ensures that
   ambulances are accessible and that transportation does not occur without the direction of the EMS
   incident commander.

13. As each ambulance leaves, the ______________________________ ______________________________
   ________________ should radio the hospital that the ambulance is en route, briefly
   describing the injuries involved and giving an estimated time of arrival.

14. Effective ______________________________ among emergency responders is one of the most difficult
   aspects of a multiple-casualty incident.

15. A(n) ______________________________ is a sudden catastrophic event that overwhelms natural order
   and causes great loss of property and/or life.

16. Faced with the grim physical injuries that can accompany a disaster, it is difficult to remember that
   the ______________________________ injuries can be severe—even among those not
   ______________________________

17. In a disaster, the families of patients need and deserve ______________________________
   ______________________________—something that is too often overlooked in the rush to begin
   emergency medical care.

18. Arrange for all those involved in a disaster—including ______________________________—to get good
   follow-up care and support.
ATTACHED YOU WILL FIND AN EXAMPLE OF A TYPICAL INCIDENT TACTICAL WORKSHEET. GIVEN THE FOLLOWING SCENE SIZE-UP INFORMATION PLUS REPORTS FROM THE UNIT OFFICERS, ANSWER THE QUESTIONS AND COMPLETE AS MUCH OF THE SHEET AS YOU ARE ABLE TO.

The Southcross apartment complex is on fire. Starting as a small kitchen fire, the fire has spread to five other units and displaced at least 30 people. At least five volunteer fire companies are on the scene, each with at least five firefighters.

Reports of victims are streaming in. As EMS command on-scene, you have coordinated with fire and police command to establish a perimeter. You have also instructed the next senior EMT on the scene to establish a forward triage point near the front door of the building. His first report reveals the following:

- 1 patient that firefighters have started CPR on—Priority 0
- 2 seriously burned adult patients—Priority 1
- 2 elderly people, a married couple, both with extensive medical histories, both complaining of shortness of breath—Priority 1
- 1 person with bilateral broken ankles from jumping from the third story—Priority 2
- 3 persons with burns to the hands from helping victims escape—Priority 3

Police also report about 15 residents who are out of the building and exposed to the elements.

A roll call of available receiving facilities shows the following:

**St. Mary’s Hospital—5 minutes away**
- 5 critical care beds
- 10 emergency department beds
- 5 clinic rooms
- no morgue

**Galivan Hospital—20 minutes away**
- no critical care beds
- 5 emergency department beds
- 5 clinic rooms
- no morgue

**Memorial Hospital (regional trauma center)—10 minutes away**
- 5 critical care beds
- 10 emergency department beds
- 5 clinic rooms
- 5 morgue openings

1. There are two major missions that EMS command must cope with at this scene. What are they?

2. Is this a multiple-casualty incident (MCI)? Why?

3. Assume you are the staging officer. How many ambulances will be needed?

4. Assume you are the transportation officer. Based on the initial triage report, which patients would you send to which hospital?
### GUILDERLAND EMS Incident Tactical Work Sheet

**Call Location** ______________________  
**Medical Command Location** ______________________

- Establish unified command with Fire & Police  
- Designate Triage Officer  
- Advise units to switch radios to 715. (Level 2 & Level 3)  
- Put on EMS Command bib  
- Advise inbound units where to stage  
- Advise crews to stay with units until given instructions  
- Level 1, RESCUES & SIGNAL 30’s STAY ON GEMS CHANNEL.

<table>
<thead>
<tr>
<th>Level 1 3–6 Patients</th>
<th>Level 2 7–15 Patients</th>
<th>Level 3 16+ Patients</th>
<th>Rehab &amp; Rescues</th>
<th>Signal 30 (Major Fires)</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ Declare MCI ___</td>
<td>___ Declare MCI ___</td>
<td>___ Declare MCI ___</td>
<td>___ Assess # and Types of Units Needed. (With Fire Command) ___</td>
<td>___ Establish Perimeter ___</td>
</tr>
<tr>
<td>___ EMS All Call ___</td>
<td>___ EMS All Call ___</td>
<td>___ EMS All Call ___</td>
<td>___ Establish Perimeter ___</td>
<td>___ Designate Triage Area ___</td>
</tr>
<tr>
<td>___ Request other units ___</td>
<td>___ Request other units ___</td>
<td>___ Request other units ___</td>
<td>___ Establish Perimeter ___</td>
<td>___ Designate Rehab Area ___</td>
</tr>
<tr>
<td>___ Cover Town ALS ___</td>
<td>___ Cover Town ALS ___</td>
<td>___ Cover Town ALS ___</td>
<td>___ Designate Triage Area ___</td>
<td>___ Call in EMS Coordinator ___</td>
</tr>
<tr>
<td>___ Cover Town BLS ___</td>
<td>___ Cover Town BLS ___</td>
<td>___ Cover Town BLS ___</td>
<td>___ Call in Medical Director ___</td>
<td>___ Call in Medical Director ___</td>
</tr>
<tr>
<td>___ Roll Call Hospitals ___</td>
<td>___ Roll Call Hospitals ___</td>
<td>___ Roll Call Hospitals ___</td>
<td>___ Medical Supply ___</td>
<td>___ Second BLS Unit ___</td>
</tr>
<tr>
<td>___ Call in EMS Coordinator ___</td>
<td>___ Call in EMS Coordinator ___</td>
<td>___ Call in EMS Coordinator ___</td>
<td>___ Second ALS Unit ___</td>
<td>___ Second ALS Unit ___</td>
</tr>
<tr>
<td>___ Call in Medical Director ___</td>
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<td>___ Call in Medical Director ___</td>
<td>___ Medical Supply ___</td>
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<tr>
<td>___ Transport Officer ___</td>
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<tr>
<td>___ Staging Officer ___</td>
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<td>___ Staging Officer ___</td>
</tr>
<tr>
<td>___ Field Com. ___</td>
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<td>___ Field Com. ___</td>
<td>___ Field Com. ___</td>
<td>___ Field Com. ___</td>
</tr>
</tbody>
</table>

3–5 Ambulances Needed  
6–10 Ambulances Needed  
11+ Ambulances Needed

<table>
<thead>
<tr>
<th>Hospital Roll Call</th>
<th>AMCH</th>
<th>ST. PETERS</th>
<th>MEMORIAL</th>
<th>VA</th>
<th>ELLIS</th>
<th>ST. CLARES</th>
<th>ST. MARYS</th>
<th>SAMARITAIN</th>
</tr>
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<tbody>
<tr>
<td>CAN TAKE</td>
<td># PT. SENT</td>
<td></td>
<td></td>
<td></td>
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</table>

**NUMBER OF PATIENTS BY PRIORITY**

<table>
<thead>
<tr>
<th>1 (RED)</th>
<th>2 (YELLOW)</th>
<th>3 (GREEN)</th>
<th>0 (BLACK)</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

**RESPONDING UNITS**

<table>
<thead>
<tr>
<th>GUILDERLAND</th>
<th>M15 M18 M19 M30 R1 R5 R40 R50 R60 MED. SUPPLY EMS20 EMS5 EMS10</th>
<th>BETHLEHAM</th>
<th>5181 5182</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLONIE</td>
<td>621 622 631 632 641 642 651 652</td>
<td>RAVENA</td>
<td>2687 2689</td>
</tr>
<tr>
<td>ALBANY COUNTY</td>
<td>M1 M2 M3</td>
<td>ROTTERDAM</td>
<td>A10 A30</td>
</tr>
<tr>
<td>VOORHEESVILLE</td>
<td>5680 5685</td>
<td>DUANSBURG</td>
<td>A40</td>
</tr>
<tr>
<td>HELDERBURG</td>
<td>5384 5386 5388</td>
<td>MOHAWK</td>
<td></td>
</tr>
<tr>
<td>DELMAR</td>
<td>0981</td>
<td>CAPITAL DISTRICT</td>
<td></td>
</tr>
</tbody>
</table>

Handout 44-4 (continued)
CHAPTER 44 ANSWER KEY

HANDOUT 44-1: Chapter 44 Quiz

HANDOUT 44-2: In the Field
1. This event, although not a disaster, met the definition of a multiple-casualty incident in that it placed excessive demands on the small fire department. Six patients involved in one collision may be routine in a large metropolitan area, but in this case overwhelmed a small department.
2. The engine company Captain (Schultz), being the senior EMS on the scene, assumed the responsibilities of the EMS incident commander.
3. The lieutenant, following standard procedures for his department, took responsibility for monitoring and directing ambulances at the scene.

HANDOUT 44-3: Chapter 44 Review
1. excessive demands
2. trauma
3. emergency medical care, follow-up care
4. EMS incident commander
5. unified command
6. incident commander
7. delegates
8. mobile command unit
9. supply unit
10. Triage, triage unit
11. second
12. transportation unit
13. transportation unit officer
14. communications
15. disaster
16. psychological, physically injured
17. accurate information
18. rescuers

HANDOUT 44-4: Analyzing an MCI
1. Emergency medical care and transportation.
2. Yes, multiple priority patients—obviously already stressing existing personnel and equipment resources.
3. At least six. Each Priority 1 patient needs one ambulance, while two Priority 2 and 3 patients can ride in one ambulance.
4. Student answers will vary, but the Priority 1 patients would go to the regional trauma center. Review completed worksheets.
CHAPTER 45 QUIZ

Write the letter of the best answer in the space provided.

_______ 1. A simple way to remember the types of WMD is to
   A. memorize the many types.
   B. use a mnemonic such as CBRNE.
   C. carry the CDC guide with you.
   D. call medical direction.

_______ 2. Responding to a WMD incident requires
   A. special response strategies.
   B. special protective equipment.
   C. the same strategy and tactics used on other calls.
   D. permission from law enforcement officials.

_______ 3. An example of a secondary injury from a WMD event would be
   A. being hit by flying debris.
   B. the blast from a bomb.
   C. hitting an object after being blown into the air.
   D. the psychological effect of the event.

_______ 4. When responding to a WMD event, which step is most important?
   A. removing the patient first
   B. putting on protective equipment
   C. calling dispatch
   D. identifying the type and cause of the event

_______ 5. What is the most acceptable method of protecting yourself from respiratory exposure?
   A. Stay away from the exposure.
   B. Put a mask on all patients.
   C. Use a HEPA or N-95 mask.
   D. Use SCBA.

_______ 6. Which action is not one of the three initial roles of an EMT at a WMD incident?
   A. Establish an EMS incident command.
   B. Assume a triage leader position.
   C. Take a unit position.
   D. Become the staging officer.

_______ 7. Nerve agents work by
   A. disrupting an enzyme at the nerve endings.
   B. killing the nerve cells.
   C. causing skin destruction.
   D. confusing the patient.

_______ 8. A vesicant is an agent that affects the
   A. nerves.
   B. gastrointestinal system.
   C. skin, lungs, and eyes.
   D. brain.
Handout 45-1 (continued)

9. Cyanide causes deadly effects by
   A. paralyzing the victim.
   B. hyperthermia.
   C. removing ACTH.
   D. disrupting cellular oxygen use.

10. A radiation-enhanced weapon is one that
    A. contains only gamma radiation.
    B. uses biological material.
    C. is known as a “dirty bomb.”
    D. poses no threat to the responder.
Review the following real-life situation. Then answer the questions that follow.

You are dispatched to an incoming aircraft at the airport that has been diverted to your community after declaring an in-flight emergency. The only information from the flight crew is “there are many people having difficulty breathing and vomiting.” Upon arrival you determine there are 123 passengers and 6 flight crew.

1. Your first actions (after protecting yourself) should include establishing a scene management system. How would you accomplish this?

2. You suspect a biological agent of some type. What public agencies could help you identify the causative agent?

3. This is an international flight and you gain information on a pandemic flu virus raging in the country where the flight originated. What action might you consider in isolating the plane and passengers?

4. What personal protective measures could you employ in this event?
CHAPTER 45 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. As always your personal safety is your ______________________________
   when responding to a WMD incident.
2. A thorough knowledge of the ______________________________
   system will assist a responder with organizing the scene of a WMD event.
3. The effects from an explosion include primary, ______________________________, and tertiary injuries.
4. Agents such as sulfur and nitrogen mustards, lewisite, and phosgene oxime are examples of
   ______________________________.
5. Pulmonary agents act primarily to cause ______________________________ injury and are commonly
   referred to as “choking” agents.
6. Anthrax is an example of a ______________________________-like agent.
7. Botulinum toxin exposure leads to progressive paralysis, eventually leading to
   ______________________________ failure and death.
8. The three primary mechanisms of death associated with nuclear detonation are
   ______________________________, ______________________________, and
   ______________________________.
9. Alpha radiation can be stopped by ______________________________ and the outer layer of skin.
10. When approaching a WMD incident always approach from ______________________________.
EMS Response to Terrorism Involving Weapons of Mass Destruction: Listing

1. List the types of WMD events in the mnemonic CBRNE.

2. List the three possible roles of the EMT at a WMD incident.

3. List six types of chemical WMD agents.

4. List the five types of nuclear radiation.
CHAPTER 45 ANSWER KEY

HANDOUT 45-1: Chapter 45 Quiz

3. A  6. D

HANDOUT 45-2: In the Field

1. First-in crews establish the incident command system (ICS) by declaring the event, setting up a command post, and directing resources to accomplish the mission. Additional training in ICS is recommended, and you should check with your local response agencies to determine response procedures established under mutual aid.
2. The local health department, law enforcement, fire rescue, and the local hospital will assist initially and bring in other more regional groups such as the CDC, the Coast Guard, FEMA, and the FBI.
3. Isolate the aircraft and passengers by creating a “hot zone” with marking tape. Use law enforcement to assist in crowd control and wait until public health can evaluate the situation. If you were to allow the passengers to disperse or be transported to ill-equipped facilities, spread of the disease could be catastrophic.
4. Use of standard protective equipment such as gloves, masks, and distance from the victims will be the most effective. Do not expose yourself or other response personnel needlessly to this situation. Distance and shielding is the most effective way to manage this event.

HANDOUT 45-3: Chapter 45 Review

1. primary responsibility
2. incident command
3. secondary
4. vesicants
5. lung
6. pneumonia
7. respiratory
8. radiation, blast, thermal
9. clothing
10. upwind

HANDOUT 45-4: EMS Response to Terrorism Involving Weapons of Mass Destruction: Listing

1. Biological, nuclear, incendiary, chemical, and explosive.
2. Establish incident command, unit leader, care provider.
4. X-ray, neutron, gamma, beta, alpha.