

EMT-169

Class & Textbook Notes

by Sam 'teer' Neal-Blim

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Chapter 1: EMS Systems

Abbreviations

ADA	Americans With Disabilities Act
AED	automated external defibrillator
AEMT	advanced EMT
ALS	advanced life support
BLS	basic life support
EMD	emergency medical dispatch
EMR	emergency medical responder
EMS	emergency medical services
EMT	emergency medical technician
HIPAA	Health Insurance Portability and Accountability Act
IV	intravenous therapy
MIH	mobile integrated healthcare
NHTSA	National Highway Traffic Safety Administration
PSA	primary service area
QA	quality assurance
QC	quality control

Definitions

advanced EMT (AEMT) an individual who has training in specific aspects of advanced life support, such as intravenous therapy (IV) therapy, and the administration of certain emergency medications

advanced life support (ALS) advanced lifesaving procedures, some of which are now being provided by the EMT

Americans With Disabilities Act (ADA) comprehensive legislation that is designed to protect people with disabilities against discrimination

automated external defibrillator (AED) a device that detects treatable life-threatening cardiac dysrhythmias (ventricular fibrillation and ventricular tachycardia) and delivers the appropriate electrical shock to the patient

certification a process in which a person, an institution, or a program is evaluated and recognized as meeting certain predetermined standards to provide safe and ethical care

community paramedicine a health care model in which experienced paramedics receive advanced training to equip them to provide additional services in the pre-hospital environment, such as health evaluations, monitoring of chronic illnesses or conditions, and patient advocacy

continuous quality improvement (CQI) system of internal and external reviews and audits of all aspects of an EMS system

emergency medical dispatch (EMD) a system that assists dispatchers in selecting appropriate units to respond to a particular call for assistance and provides callers with vital instructions until the arrival of EMS crews

emergency medical responder (EMR) the first trained professional, such as police officers, firefighters, lifeguards, or other rescuer, to arrive at the scene of an emergency to provide initial medical assistance

emergency medical services (EMS) a multidisciplinary system that represents the combined efforts of several professionals and agencies to provide prehospital emergency care to the sick and injured

emergency medical technician (EMT) an individual who has training in basic life support, including automated external defibrillation, use of a definitive airway adjunct, and assisting patients with certain medications

Health Insurance Portability and Accountability Act (HIPAA) federal legislation passed in 1996; its main effect in EMS is in limiting the availability of patients' healthcare information and penalizing violations of patient privacy

intravenous therapy (IV) the delivery of a medication directly into a vein

licensure the process whereby a competent authority, usually the state, allows people to perform a regulated act

medical control physician instructions given directly by radio or cell phone (on-line/direct) or indirectly by protocol/guidelines (off-line, indirect), as authorized by the medical director of the service program

medical director the physician who authorizes or delegates to the EMT the authority to provide medical care in the field

mobile integrated healthcare a method of delivering health care which involves providing health care within the community rather than at a physician's office or hospital

National EMS Scope of Practice Model a document created by the National Highway Traffic Safety Administration (NHTSA) that outlines the skills performed by various EMS providers

paramedic an individual who has extensive training in advanced life support, including endotracheal intubation, emergency pharmacology cardiac monitoring, and other advanced assessment and treatment skills

primary prevention efforts to prevent an injury or illness from ever occurring

primary service area the designated area in which the EMS agency is responsible for the provision prehospital emergency care and transportation to the hospital

public health focused on examining the health needs of entire populations with the goal of preventing health problems

public safety access point a call center, staffed by trained personnel, who are responsible for managing requests for police, fire, and ambulance services

quality assurance See: quality control

quality control the responsibility of the medical director to ensure the appropriate medical care standards are met the EMTs on each call

secondary prevention efforts to limit the effects of an injury or illness cannot be completely prevented

Potential Test Questions

1. What is the difference between
 - a) certification and licensure?
 - b) An EMT and an AEMT?

2. What is the difference between an AEMT and an AEMT?

Chapter 2: Workforce Safety and Wellness

Abbreviations

AIDS	acquired immunodeficiency syndrome
CDC	Center for Disease Control and Prevention
CISM	critical incident stress management system
HIV	human immunodeficiency virus
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
PTSD	posttraumatic stress disorder

Definitions

acute stress reactions reactions to stress that occur during a stressful situation

airborne transmission the spread of an organism via droplets or dust

blood-borne pathogens pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus (HIV)

Center for Disease Control and Prevention (CDC) the primary federal agency that conducts and supports public health activities in the United States. The CDC is part of the US Department of Health and Human Services

communicable disease a disease that can be spread from one person or species to another

concealment the use of objects to limit a person's visibility of you

contamination the presence of infectious organisms on or in objects such as dressings, water, food, needles, wounds, or patient's body

cover the tactical use of an impenetrable barrier for protection

critical incident stress management system (CISM) a process that confronts the responses to critical incidents and defuses them, directing the emergency services personnel toward physical and emotional equilibrium

cumulative stress reactions prolonged or excessive stress

delayed stress reactions reactions to stress that occur after a stressful situation

designated officer the individual in the department who is charged with the responsibility of managing exposures and infection control issues

direct contact exposure a transmission of a communicable disease from one person to another by physical contact

exposure a situation in which a person has contact with blood, body fluids, tissues, or airborne particles in a matter that suggest disease transmission may occur

foodborne transmission the contamination of food or water with an organism that can cause disease

general adaptation syndrome the body's response to stress that begins with alarm response, followed by a stage of reaction and resistance, then recovery or, if distress is prolonged, exhaustion

hepatitis inflammation of delivers, usually caused by viral infection, a causes fever, loss of appetite, jaundice, fatigue, and altered liver function

host the organism or individual is attacked by the infecting agent

human immunodeficiency virus (HIV) acquired immunodeficiency syndrome (AIDS) is caused by HIV, which damages the cells in the body's immune system so that the body is unable to fight infection or certain cancers

immune the body's ability to protect itself from acquiring a disease

indirect contact exposure or transmission of a disease from one person to another by contact with a contaminated object

infection the abnormal invasion of a host or host tissues by organisms such as bacteria, viruses, or parasites, with or without signs or symptoms of disease

infection control procedures to reduce transmission of infection among patients and healthcare personnel

infectious disease a medical condition caused by the growth and spread of small, harmful organisms within the body

Occupational Safety and Health Administration (OSHA) the federal regulatory compliance agency that develops, publishes, and enforces guidelines concerning safety in the workplace

pathogen a microorganism that is capable of causing disease in a susceptible host

personal protective equipment (PPE) protective equipment that blocks exposure to a pathogen or a hazardous material

posttraumatic stress disorder (PTSD) a delayed stress reaction to a prior incident. Often the result of one or more unresolved issues concerning the incident, and may relate to an incident that involved physical harm or the threat of physical harm

transmission the way in which an infectious disease is spread: contact, airborne, by vehicles, or by vectors

standard precautions protective measures that have traditionally been developed by the CDC for use in dealing with objects, blood, body fluids, and other potential exposure risks of communicable disease

vector-borne transmission the use of an animal to spread an organism from one person or place to another

Chapter 3: Medical, Legal, and Ethical Issues

Abbreviations

DNR do not resuscitate

PHI protected health information

Definitions

abandonment unilateral termination of care by the EMT without the patient's consent and without making provisions for transferring care to another medical professional with the skills and training necessary to meet the needs of the patient

advance directive written documentation that specifies medical treatment for a competent patient should the patient become unable to make decisions; also called a living will or health care directive

applied ethics the manner in which principles of ethics are incorporated into professional conduct

assault unlawfully placing a patient in fear of bodily harm

directive unlawfully touching a patient or providing emergency care without consent

bioethics the study of ethics related to issues that arise in health care

breach of confidentiality disclosure of information without proper authorization

certification a process in which a person, an institution, or a program is evaluated and recognized as meeting certain predetermined standards to provide safe and ethical care

compensatory damages damages awarded in a civil lawsuit that are intended to restore the plaintiff to the same condition that he or she was in prior to the incident

competent able to make rational decisions about personal well-being

consent permission to render care

contributory negligence a legal defense that may be raised when the defendant feels that the conduct of the plaintiff somehow contributed to any injuries or damages sustained by the plaintiff

credentialing an established process to determine the qualifications necessary to be allowed to practice a particular profession, or to function as an organization

decision-making capability ability to understand and process information and make a choice regarding appropriate medical care

defamation the communication of false information about a person that is damaging to that person's reputation or standing in the community

dependent lividity blood settling to the lowest point of the body, causing discoloration of the skin; a definite sign of death

depositions oral questions asked of parties and witnesses under oath

discovery the phase of a civil lawsuit where the plaintiff and the defense obtain information from each other that will enable the attorneys to have a better understanding of the case and which will assist in preparing for trial. Discovery includes depositions, interrogatories, and demands for production of records

do not resuscitate (DNR) orders your evaluation of the conditions in which you will be operating

durable power of attorney for health care a type of advance directive executed by a competent adult that appoints another individual to make medical treatment decisions on his or her behalf, in the event that the person making the appointment loses decision-making capability

duty to act a medicolegal term relating to certain personnel who either by statute or by function have a responsibility to provide care

emancipated minor a person who is under the legal age in a given state but, because of other circumstances, is legally considered an adult

emergency a serious situation, such as injury or illness, that threatens the life or welfare of a person or group of people and requires immediate intervention

emergency doctrine the principle of law that permits a health care provider to treat a patient in an emergency situation when the patient is incapable of granting consent because of an altered level of consciousness, disability, the effects of drugs or alcohol, or the patient's age

emergency medical care immediate care or treatment

ethics the philosophy of right and wrong, of moral duties, and of ideal professional behavior

expressed consent a type of consent in which a patient gives verbal or nonverbal authorization for provision of care or transport

false imprisonment the confinement of a person without legal authority or the person's consent

forcible constraint the act of physically preventing an individual from initiating any physical action

Good Samaritan law statutory provisions enacted by many states to protect citizens from liability for errors and omissions in giving good faith emergency medical care, unless there is wanton, gross, or willful negligence

government immunity legal doctrine that can protect an EMS provider from being sued or which may limit the amount of the monetary judgement that the plaintiff may recover; generally applies only to EMS systems that are operated by municipalities or other governmental entities

gross negligence conduct that constitutes a willful or reckless disregard for a duty or standard of care

health care directive See: advance directive

health care proxies a type of advance directive executed by a competent adult that appoints another individual to make medical decisions on his or her behalf in the event that the person making the appointment loses decision-making capacity. Also known as durable power of attorney for health care

implied consent type of consent in which a patient who is unable to give consent is given treatment under the legal assumption that he or she would want treatment

informed consent permission for treatment given by a competent patient after the potential risks, benefits, and alternatives to treatment have been explained

in loco parentis refers to the legal responsibility of a person or organization to take on some of the functions and responsibilities of a parent

interrogatories written questions that the defense and plaintiff send to one another

kidnapping the seizing, confining, abducting, or carrying away of a person by force, including transporting a competent adult for medical treatment without his or her consent

libel false and damaging information about a person that is communicated in writing

licensure the process whereby a competent authority, usually the state, allows people to perform a regulated act

living will See: advance directive

medicolegal a term relating to medical jurisprudence (law) or forensic medicine

morality a code of conduct that can be defined by society, religion, or a person, affecting character, conduct, and conscience

negligence failure to provide the same care that a person with similar training would provide

negligence per se a theory that may be used when the conduct of the person being sued is alleged to have occurred in clear violation of a statute

patient autonomy the right of a patient to make informed choices regarding his or her health care

protected health information (PHI) any information about health status, provision of health care, or payment for health care that can be linked to an individual. This is interpreted rather broadly and includes any part of a patient's medical record or payment history

proximate causation when a person who has a duty abuses it, and causes harm to another individual, the EMT, the agency, and/or the medical director may be sued for negligence

punitive damages damages that are sometimes awarded in a civil lawsuit when the conduct of the defendant was intentional or constituted a reckless disregard for the safety of the public

putrefaction decomposition of body tissues; a definitive sign of death

res ipsa loquiter when the EMT or an EMS system is held liable even the plaintiff is unable to clearly demonstrate how an injury occurred

rigor mortis stiffening of the body muscles; a definitive sign of death

scope of practice most commonly defined by state law; outlines the care that the EMT is able to provide for the patient

slander false and damaging information about a person that is communicated by the spoken word

standard of care written, accepted levels of emergency care expected by reason of training and profession; written by legal or professional organizations so that patients are not exposed to unreasonable risk or harm

statue of limitations the time within which a case must be commenced

tort a wrongful act that gives rise to a civil lawsuit

Chapter 4: Communication and Documentation

Abbreviations

FCC	Federal Communications Commission
MDT	mobile data terminal
PCR	patient care report
UHF	ultra-high frequency
VHF	very high frequency
VoIP	Voice over Internet Protocol

Definitions

base station any radio hardware containing a transmitter and receiver that is located in a fixed place

cellular telephone a low-power portable radio that communicates through an interconnected series of repeater stations called “cells”

channel an assigned frequency or frequencies that are used to carry voice and/or data communications

closed-ended questions questions that can be answered in short bursts single word responses

communication the transmission of information to another person— verbally or through body language

cultural imposition when one person poses his or her beliefs, values, and practices on another because he or she believe his or her ideals are superior

dedicated line a special telephone line that is used for a specific point-to-point communications; also known as a hotline

documentation the recorded portion of the EMTs patient interaction either written or electronic. This becomes part of the patient's permanent medical record

duplex the ability to transmit and receive simultaneously

ethnocentrism when a person considers his or her own cultural values is more important when interacting with people of different culture

Federal Communications Commission (FCC) the federal agency that is jurisdiction over interstate and international telephone and telegraph services and cyclic medications, all of which may involve EMS activity

hotline see: dedicated line

MED channels VHF and UHF channels that the Federal Communications Commission has designated exclusively for EMS use

multiplex the ability to transmit audio and data signals through the use of more than one communications channel

noise anything that dampens obscures the true meaning of a message

open-ended questions questions for which the patient must provide detail to give an answer

paging the use of a radio signal and a voice or digital message that is transmitted to pagers ("beepers") or desktop monitor radios

patient care report (PCR) the legal document used to record all patient care activities. This report has direct patient care functions but also administrative and quality control functions. PCRs are also known as prehospital care reports

prehospital care reports see: patient care report (PCR)

protocols see: standing orders

rapport a trusting relationship that you build with your patient

repeater a special base station radio that receives messages and signals on one frequency and then automatically re-transmits them on a second frequency

scanner a radio receiver that searches or "scans" across several frequencies until the message completed; the process is then repeated

simplex single-frequency radio; transmissions can occur in either direction but not simultaneously in both; when one party transmits the other can only receive, and the party that is transmitting is unable to receive

standing orders written documents, signed by the EMS systems adequate director, that outline specific directions, permissions, and sometimes prohibitions regarding patient care; also called protocols

telemetry a process in which electronic signals are converted into coded, audible signals; these signals can then be transmitted by radio or telephone to a receiver with a decoder at the hospital

therapeutic communication verbal and nonverbal indication techniques that encourage patients to express their feelings and to achieve a positive relationship

trunking telecommunication systems that allow computer to maximize utilization of a group of frequencies

ultra-high frequency (UHF) radio frequencies between 300 and 3,000 MHz

very high frequency (VHF) radio frequencies between 30 and 300 MHz; the VHF spectrum is further divided into “high” and “low” bands

Chapter 5: Medical Terminology

Greek-Latin equivalents

Table 5.1: Greek-Latin Direction Equivalents

Body Part	Greek	Latin
front	anterior	ventral
back	dorsal	posterior
above	hyper-	supra- super-
below	hypo-	infra- sub-
inside within	endo-	intra-
middle between	meso-	inter-
outside apart	ecto-	extra-
together/joined	sym-	syn-

Table 5.2: Greek-Latin Anatomy Equivalents

Body Part	Greek	Latin
bone	osteo	oss-
blood	hem(at)/o	sangui(n)o
blood vessel	angin/o	vas/o
brain	encephal/o	cerebr/o
cancer	carcin/o	-oma
chest	thorac(o)	pector(o)
ear	ot/o	aur/o
egg	oo-	ov/o
eye	ophthalm/o	ocul/o
foot	pod(i)	ped/o
fat	ather/o	adip/o
hair	trich/o	capill/o
kidney	nephr/o	ren/o
lungs	pneumo(n)/o	pulmon/o
mind	psych-	ment-
nose	rhin/o	nas/o
rib	pleur(o)-	cost(o)-
skin	derm(at)/o	cutane/o
sleep	hypn-	dorm-
weak	asthen/o	-asthenia

Table 5.3: Greek-Latin Numerical Equivalents

Term	Greek	Latin
all	pan-	omni-
few	olig-	pauc-
many	poly-	multi-
half	hemi-	semi-
one (1)	uni-	mono-
two (2)	di- / du- / dy-	bi-
three (3)	tri-	
four (4)	quadr/o; quar	tetra-
five (5)	pent-	quint-
six (6)	hex-	sexti-
seven (7)	hept-	sept-
eight (8)		oct-
nine (9)	ennea-	nov-
ten (10)	deca- deka-	dece- deci-
hunded (100)	cent/i	

Chapter 6: The Human Body

Abbreviations

ANS	autonomic nervous system
CO	cardiac output
cns	central nervous system
SNS	enteric nervous system
HR	heart rate
PNS	peripheral nervous system
PSNS	parasympathetic nervous system
SNS	sympathetic nervous system
SV	stroke volume

Definitions

abdomen the body cavity that contains the major organs of digestion and excretion. It is located below the diaphragm and above the pelvis

acetabulum depression on the lateral pelvis where the three component bones join, in which the femoral head fits snugly

Adam's apple a firm prominence of cartilage that forms the upper part of the larynx. It is more prominent in men than in women

adenosine triphosphate the nucleotide involved in energy metabolism; used to store energy

adrenal gland endocrine gland located on top of each kidney that releases adrenaline when stimulated by the sympathetic nervous system

adrenaline another name for epinephrine

adrenergic pertaining to nerves that release the neurotransmitter norepinephrine, or noradrenalin (such as adrenergic nerves, adrenergic response); also pertains to the receptors acted on by norepinephrine

aerobic metabolism metabolism that can proceed only in the presence of oxygen

agonal gasps abnormal breathing pattern characterized by slow, gasping breaths, sometimes seen in patients in cardiac arrest

alpha-adrenergic receptors portions of the nervous system that, when stimulated, can cause constriction of the blood vessels

alveoli air sacs of the lungs in which the exchange of oxygen and carbon dioxide takes place

anaerobic metabolism the metabolism that takes place in the absence of oxygen; the main byproduct is lactic acid

anatomic position the position of reference in which the patient stands facing forward, arms at the side, with the palms of the hands forward

aorta the main artery that receives blood from the left ventricle and delivers it to all the other arteries that carry blood to the tissues of the body

appendicular skeleton the portion of the skeletal system that comprises the arms, legs, pelvis, and shoulder girdle

appendix a small, tubular structure that is attached to the lower border of the cecum in the lower right quadrant of the abdomen

arteriole the smallest branch of arteries leading to the vast network of capillaries

artery a blood vessel, consisting of three layers of tissue and smooth muscle, that carries blood away from the heart

articular cartilage a pearly layer specialized cartilage covering the articular surfaces (contact surfaces on the ends) of bones in synovial joints

atrium one of the two upper chambers of the heart

autonomic nervous system division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food

axial skeleton the part of the skull to comprising the skull, spinal column, and rib cage

ball-and-socket joint a joint that allows internal and external rotation, as well as bending

beta-adrenergic receptors portions of the nervous system that, when stimulated, can cause an increase in the force of contraction of the heart, an increased heart rate, and bronchial dilation

biceps the large muscles that cover the front of the humerus

bile duct the duct that conveys bile between the liver and the intestine

blood pressure pressure that the blood exerts against the walls of the arteries as it passes through them

brachial artery the major blood vessel in the upper extremities that supplies blood to the arm

brain the controlling organ of the body and center of consciousness; functions include perception, control of reactions to the environment, emotional responses, and judgment

brainstem the area of the brain between the spinal cord and cerebrum, surrounded by the cerebellum; controls functions that are necessary for life, such as respiration

capillary a small blood vessel that connects arterials and venules; various substances pass through capillary walls, into and out of the interstitial fluid, and then on to the cells

capillary vessels tiny blood vessels between the arterials and venules that permit transfer of oxygen, carbon dioxide, nutrients, and waste between body tissues and the blood

cardiac muscle the heart muscle

cardiac output (CO) the measure of the volume of blood circulated by the heart in 1 minute; calculated by multiplying the stroke volume by the heart rate

carotid artery the major artery that supplies blood to the head and brain

cartilage the smooth connective tissue that forms the support structure of the skeletal system and provides cushioning between bones; also forms the nasal septum and portions of the outer ear

cecum the first part of the large intestine, into which the ileum opens

central nervous system (cns) division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food

cerebellum one of the three major subdivisions of the brain, sometimes called the 'little brain'; coordinates the various activities of the brain, particularly fine body movements

cerebrospinal fluid fluid produced in the ventricles of the brain that flows in the subarachnoid space and bathes the meninges

cerebrum the largest part of the three subdivisions of the brain, sometimes called the gray matter; made up of several lobes that control movement, hearing, balance, speech, visual perception, emotions, and personality

cervical spine the portion of the spinal column consisting of the first seven (7) vertebrae that lie in the neck

chordae tendineae thin bands of fibrous tissue that attach to the valves in the heart and prevent them from inverting

chyme the substance that leaves the stomach; it is a combination of all the eaten foods with added stomach acids

circulatory system the complex arrangement of connected tubes, including the arteries, arterioles, capillaries, venules, and veins, that moves blood, oxygen, nutrients, carbon dioxide, and cellular waste throughout the body

clavicle the collar bone; it is lateral to the sternum and anterior to the scapula

coccyx the last three or four (3-4) vertebrae of the spine; the 'tail bone'

coronal plane an imaginary plane where the body is divided into front and back parts

cranium the area of the head above the ears and eyes; the skull; the cranium contains the brain

crioid cartilage A tubular structure

cricothyroid membrane A tubular structure

dead space any portion of the airway that does not contain air and cannot participate in gas exchange, such as the trachea and bronchi

dermis the inner layer of the skin, containing hair follicles, sweat glands, nerve endings, and blood vessels

diaphragm muscular dome that forms the undersurface of the thorax, separating the chest from the abdominal cavity. Contraction of this (and the chest wall muscles) brings air into the lungs. Relaxation allows air to be expelled from the lungs

diastole relaxation, or period of relaxation, of the heart, especially of the ventricles

diffusion movement of gas from an area of higher concentration to an area of lower concentration

digestion processing of food that nourishes the individual cells of the body

dorsalis pedis artery artery on the anterior surface of the foot between the first and second metatarsals

endocrine system complex message and control system that integrates many of the body's functions, including the release of hormones

enzyme substance designed to speed up the rate of specific biochemical reactions; a biological catalyst

epidermis the outer layer of skin that acts as a watertight protective covering

epiglottis A tubular structure

epinephrine hormone produced by the adrenal medulla that has a vital role in the function of the sympathetic nervous system. Also called adrenaline

esophagus collapsible tube that extends from the pharynx to the stomach; muscle contractions propel food and liquids through it to the stomach

expiratory reserve volume amount of air that can be exhaled following a normal exhalation; average volume is about 1200 mL in the average adult male

extension the straightening of a joint

fallopian tubes long, slender tubes that extend from the uterus to the region of the ovary on the same side and through which the ova pass from the ovary to the uterus

femoral artery the major artery of the thigh, a continuation of the external iliac artery. It supplies blood to lower abdominal wall, external genitalia, and legs. It can be palpated to the groin area

femoral head proximal end of the femur, articulating with the acetabulum to form the hip joint

femur the longest and one of the strongest bones in the body. Also called the thighbone.

flexion bending of a joint

foramen magnum large opening at the base of the skull through which the brain connects to the spinal cord

frontal bone portion of the cranium that forms the forehead

gallbladder a sac on the under surface of the liver that collects bile from the liver and discharges it into the duodenum through the common bile duct

genital system reproductive system in men and women

germinal layer deepest layer of the epidermis where new skin cells are formed

greater trochanter bony prominence on the proximal lateral side of the thigh, just below the hip joint

hair follicles small organs that produce hair

heart hollow muscular organ that pumps blood throughout the body

heart rate number of heartbeats during a specific time (usually 1 minute)

hinge joint joint that can bend and straighten but cannot rotate; restricted to motion in one plane

hormone substance formed in specialized organs or glands and carried to another organ or group of cells in the same organism; they regulate many body functions, including metabolism, growth, and body temperature

humerus supporting bone of the upper arm

hydrostatic pressure pressure water against the walls of its container

hypoperfusion another term for shock

hypoxic drive A condition in which chronically low

ileum one of the three bones that fuse to form the pelvic ring

inferior vena cava one of the two largest veins in the body; carries blood from the lower extremities and the pelvic and the abdominal organs to the heart

inspiratory reserve volume amount of air that can be inhaled after normal inhalation; the amount of air that can be inhaled in addition to the normal tidal volume

intercostal muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles

interstitial space space in between the cells

involuntary muscle muscle over which a person has no conscious control. It is found in many automatic regulating systems of the body

ischium one of three bones that fuse to form the pelvic ring

joint (articulation) place where two bones come into contact

joint capsule fibrous sac that encloses a joint

kidneys two retroperitoneal organs that excrete the end products of metabolism as urine and regulate the body salt and water content

labored breathing use of muscles of the chest, back, and abdomen to assist in expanding the chest; occurs when air movement is impaired

lactic acid a metabolic byproduct of the breakdown of glucose that accumulates when metabolism proceeds in the absence of oxygen (anaerobic metabolism)

large intestine portion of the digestive tract that circles the abdomen around the small bowel, consisting of the cecum, the colon, and the rectum. It helps regulate water balance and eliminate solid waste

laryngopharynx the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles

lesser trochanter projection on the medial superior portion of the femur

ligament band of fibrous tissue that connects bones to bones. It supports and strengthens a joint

liver a large solid organ that lies in the right upper quadrant immediately below the diaphragm; it produces bile, stores glucose for immediate use by the body, and produces many substances that help regulate immune responses

lumbar spine lower part of the back formed by the lowest five nonfused vertebrae; also called the dorsal spine

lymph fainting, straw colored fluid that carries oxygen, nutrients, and hormones to the cells and carries waste products of metabolism away from the cells and back into the capillary so that they may be excreted

lymph nodes tiny, oval-shaped structures located in various places along the lymphatic vessels that filter lymph

mandible bone of the lower jaw

manubrium upper quarter of the sternum

maxillae upper jaw bones that assist in the formation of the orbit, the nasal cavity, and the palate and hold the upper teeth

medulla oblongata nerve tissue that is continuous inferior way with the spinal cord; serves as a conduction pathway for sending and descending nerve tracts; coordinates the heart rate blood vessel diameter, breathing, swallowing, vomiting, coughing, and sneezing

metabolism biochemical processes that result in production of energy from nutrients within cells

midbrain part of the brain that is responsible for helping to regulate the level of consciousness

midsagittal plane (midline) imaginary vertical line drawn from the middle of the forehead through the nose and the umbilicus (navel) to the floor, dividing the body and equal left and right halves

minute ventilation see: minute volume

minute volume volume of air that moved and out of the lungs per minute; calculated by multiplying the tidal volume and respiratory rate; also called minute ventilation

motor nerves nerves that carry information from the central nervous system to the muscles of the body

mucous membranes lining of body cavities and passages that communicate directly or indirectly with the environment outside of the body

mucus moderate secretion of the mucous membranes that lubricates the body openings

musculoskeletal system bones involuntary muscles of the body

myocardium heart muscle

nasopharynx part of the pharynx that lies above the level of the roof of the mouth, or palate

nervous system system that controls virtually all activities of the body, both voluntary and involuntary

norepinephrine neurotransmitter and drug sometimes used in the treatment of shock; produces vasoconstriction to its alpha-stimulator properties

occiput most posterior portion of the cranium

oncotic pressure pressure of water to move, typically into the capillary, as the result of the presence of plasma proteins

orbit eye socket, made up of maxilla and zygoma

ovaries female glands that produce sex hormones and (ova)

palate the "roof" of the mouth

pancreas a flat, solid organ that lies below the liver and the stomach; it is a major source of digestive enzymes that produces the hormone insulin

parasympathetic nervous system subdivision of the autonomic nervous system, involved in control of involuntary functions mediated largely by the vagus nerve to the chemical acetylcholine

parietal bones bones that lie between the temporal and occipital regions of the cranium

patella knee cap; a specialized bone that lies within the tendon of the quadriceps muscle

pathophysiology study of how normal physiologic processes are affected by disease

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs

peristalsis the wavelike contraction of the smooth muscle by which the ureters or other tubular organs propelled their contents

plasma a sticky, yellow fluid that carries the blood cells and nutrients and transport cellular waste material to the organs of excretion

pleura the Sarco membranes covering the lungs and lining the thorax completely enclosing a potential space known as the pleural space

pleural space potential space between the parietal pleura and of the visceral pleura; described as "potential" because under normal conditions, the spaces not exist

posterior tibial artery artery just behind the medial malleolus; supplies blood to the foot

prostate gland small gland that surrounds the male urethra where it emerges from the urinary bladder; it's increase the fluid that is part of the ejaculatory fluid

pubic symphysis hard, bony, and cartilaginous prominence found at the midline in the lowermost portion of the abdomen where the two halves of the pelvic ring are joined by cartilage at a joint with minimal motion

pubis one of the three bones that fuse to form the pelvic ring

pulmonary artery the major artery leading from the right ventricle of the heart to the lungs; carries oxygen-poor blood

pulmonary circulation flow of blood from the right ventricle through the pulmonary arteries and all of their branches and capillaries in the lungs and back to the left atrium through the venules and pulmonary veins; also called the lesser circulation

pulmonary veins four veins that return oxygenated blood from the lungs to the left atrium of the heart

pulse wave of pressure created as the heart contracts of forces blood out of the left ventricle and into the major arteries

radial artery major artery in the forearm; it is palpable at the wrist on the thumb side

radius the bone on the thumb side of the forearm

rectum the lowermost end of the:

red blood cell cell that carries oxygen to the body's tissues; also an called erythrocyte

Renal pelvis cone-shaped area that collects urine from the kidneys and funnels it through the ureter into the bladder

residual volume air that remains in the lungs after maximal expiration

respiration inhaling and exhaling of air; the physiologic process that exchanges carbon dioxide from fresh air

respiratory compromise inability of the body to move gas effectively

respiratory system all the structures of the body that contribute to the process of breathing, consisting of the upper and lower airways and their component parts

reticular activating system located in the upper brainstem; responsible for the maintenance of consciousness, specifically one's level of arousal

retroperitoneal behind the abdominal cavity

sacroiliac joint connection point between the pelvis and the vertebral column

sacrum one of the three bones (sacrum and two pelvic bones) that make up the pelvic ring; consists of five fused sacral vertebrae

sagittal (lateral) plane imaginary line where the body is divided into left and right parts

salivary glands glands that produce saliva to keep the mouth and pharynx moist

scalp thick skin covering the cranium which usually bears hair

scapula the shoulder blade

sebaceous glands glands that produce an oily substance called sebum, which discharges along the shafts of the hairs

semen fluid ejaculated from the penis and containing sperm

seminal vesicles storage sacs for sperm and seminal fluid which empty into the urethra at the prostate

sensory nerves nerves that carry sensations such as touch, taste, smell, heat, cold, and pain from the body to the central nervous system

shock abnormal state associated with the inadequate oxygen and nutrient delivery to the cells of the body, also known as hypoperfusion

shoulder girdle the proximal portion of the upper extremities, made up of the clavicle, the scapula, and the humerus

skeletal muscle muscle that is attached to bones and usually crosses at least one joint; striated, or voluntary, muscle

skeleton framework that gives the body its recognizable form; also designed to allow motion of the body and protection of vital organs

small intestine portion of the digestive tract between the stomach and the cecum, consisting of the duodenum, jejunum, and ileum

smooth muscle involuntary muscle; it constitutes the bulk of the gastrointestinal tract and is present in nearly every organ to regulate automatic activity

somatic nervous system part of the nervous system that regulates activities over which there is voluntary control

sphincter muscle arranged in a circle that is able to decrease the diameter of tubes. Examples are found within the rectum, bladder, and blood vessels

sphygmomanometer device used to measure blood pressure

spinal cord extension of the brain, composed of virtually all the nerves carry messages between the brain and the rest of the body. It lies inside of and is protected by the spinal canal

sternum breastbone

stratum corneal layer outermost dead layer of the skin

stroke volume volume of blood pumped forward with each ventricular contraction

subcutaneous tissue tissue, largely fat, that lies directly under the dermis and serves as an insulator of the body

superior vena cava one of the two largest veins in the body; carries blood from the upper extremities, head, neck, and chest into the heart

sweat glands glands that secrete sweat located in the dermal layer of the skin

symphysis type of joint that is grown together to form a very stable connection

synovial fluid small amount of liquid within a joint use as lubrication

synovial membrane lining of a joint that secrete synovial fluid into the joint space

systemic circulation portion of the circulatory system outside of the heart and lungs

systemic vascular resistance resistance that blood must overcome to be able to move within the blood vessels; related to the amount of dilation or constriction in the blood vessel

systole contraction, or period of contraction, of the heart, especially that of the ventricles

temporal bones lateral bones on each side of the cranium; the temples

tendons fibrous connective tissue that attaches muscle to bone

testicle it male genital land that contain specialized cells that produce hormones and sperm

thoracic cage chest or rib cage

thoracic spine 12 vertebrae that lie between the cervical vertebrae and the lumbar vertebrae. One pair of ribs is attached to each of these vertebrae

thorax chest cavity contains the heart, lungs, esophagus, and great vessels

thighbone another name for the femur

thyroid cartilage firm prominence of cartilage that forms the upper part of the larynx; the Adam's apple

tibia shinbone; larger of the two bones of the lower leg

tidal volume amount of air moved in and out of the lungs are one relaxed breath; about 500 mL for an adult

topographic anatomy the superficial landmarks of the body that serve as guides to the structures that lie beneath them

trachea the windpipe; main trunk for air passing to and from the lungs

transverse plane an imaginary line with the body is divided in the top and bottom parts. Also known as the axial plane

triceps muscle in the back of the upper arm

tunica media middle and thickest part of tissue of a blood vessel wall, composed of elastic tissue and smooth muscle cells that allow the vessel to expand or contract in response to changes in blood pressure and tissue demand

ulna enter bone of the forearm, on the side opposite the thumb

ureter small, hollow tube that carries urine from the kidneys to the bladder

urethra canal that conveys urine from the bladder to the outside of the body

urinary bladder a sac behind the pubic symphysis made of smooth muscle that collects and stores urine

urinary system organs that control the discharge of certain waste materials filtered from the blood and excreted as urine

vagina muscular, dispensable to that connects the uterus with the vulva (the external female genitalia); also called the birth canal

vas deferens see: vasa deferentia

ventilation movement of air between the lungs and the environment

ventricle one of two lower chambers of the heart

vertebrae the 33 bones that make up the spinal column

voluntary muscle muscle that is under direct voluntary control of the brain can be contracted or relax that will; skeletal, or striated, muscle

V/Q ratio measurement that examines how much gas is being moved effectively and how much blood is flowing around the alveoli or gas exchange (perfusion) occurs

white blood cell blood cell that has a role in the body's immune defense against infection; also called a leukocyte

xiphoid process narrow, cartilaginous lower tip of the sternum

zygomas the quadrangular bones of the cheek, articulating with the frontal bone, the maxillae, the zygomatic processes of the temporal bone, and the great wings of the sphenoid bone

Table 6.1: Anatomic planes

divides body into	name	also known as
left and right	sagittal	lateral
front and back	frontal	coronal
waist	transverse	axial

Correct Medical Terminology

Chapter 7: Life Span Development

Definitions

adolescent a young person between 12 and 18 years of age

fontanelles areas where the neonate's or infant's skull has not fused together; usually disappear at approximately 18 months of age

intercostal muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles

Potential Test Questions

1. Why do we need a template here?

Because LaTeX is stupid so we have to.

Chapter 8: Lifts & Carries

Abbreviations

Definitions

Chapter 9: Patient Assessment

Abbreviations

AVPU	Alert Verbal Pain Unresponsive
LOC	level of consciousness
MOI	mechanism of injury
PPE	personal protective equipment

Definitions

accessory muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles

altered mental status any deviation from alert and oriented to person, place, time, and event, or any deviation from a patient's normal baseline mental status

auscultate to listen to sounds within an organ with a stethoscope

AVPU scale a method of assessing the level of consciousness by determining whether the patient is awake and alert, responsive to verbal stimuli or pain, or unresponsive; used principally early in the assessment process

focused assessment a type of physical assessment typically performed on patients who have sustained nonsignificant mechanisms of injury or on responsive medical patients. This type of examination is based on the chief complaint and focuses on one body system or part

general impression your evaluation of the conditions in which you will be operating

hypothermia condition in which the internal body temperature falls below 95°F (35°C)

hypertension blood pressure that is higher than the normal range

mechanism of injury (MOI) the forces, or energy transmission, applied to the body that cause injury

nature of illness (NOI) the general type of illness a patient is experiencing

orientation your evaluation of the conditions in which you will be operating

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs

primary assessment your evaluation of the conditions in which you will be operating

responsiveness The way in which a patient responds to external stimuli, including verbal stimuli (sound), tactile stimuli (touch) and painful stimuli

SAMPLE history a brief history of a patient's condition to determine signs and symptoms, allergies, medications, pertinent past history, last oral intake, and events leading to the injury or illness

secondary assessment your evaluation of the conditions in which you will be operating

scene size-up A step within the patient assessment process that involves a quick assessment of the scene and the surroundings to provide information about scene safety and that mechanism of injury (MOI) or nature of illness (NOI)

secondary assessment your evaluation of the conditions in which you will be operating

spontaneous respiration respirations characterized by little movement of the chest wall (reduced tidal volume) or poor chest excursion

sign objective findings that can be seen, heard, felt, smelled, or measured

situational awareness your evaluation of the conditions in which you will be operating

sniffing position an upright position in which the patient's head and chin are thrust forward slightly forward to keep the airway open

spontaneous respiration breathing that occurs without assistance

standard precautions protective measures that have traditionally been developed by the CDC for use in dealing with objects, blood, body fluids, and other potential exposure risks of communicable disease

stridor high-pitched noise heard primarily on inspiration

tachypnea increased respiratory rate

triage the process of establishing treatment and transportation priorities according to severity of injury and medical need

vasoconstriction the narrowing of a blood vessel, such as with hypoperfusion or cold extremities

vital signs the key signs used to evaluate the patients overall condition, including respirations, pulse, blood pressure, level of consciousness (LOC), and skin characteristics

Introduction

Patient assessment is divided into five (5) main parts:

Potential Test Questions

1. What is the difference between unconcious and unresponsive?
2. What is the difference between unconcious and unresponsive?

Chapter 10: Airway Management

Definitions

accessory muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles

intrapulmonary shunting a condition where blood bypassing of oxygen-poor blood past nonfunctional alveoli to the left side of the heart

mediastinum space within the chest that contains the heart, major blood vessels, vagus nerve, trachea, major bronchi, and esophagus; located between the two lungs

pulmonary edema A buildup of fluid in the lungs, usually as a result of congestive heart failure

sacrum one of the three bones (sacrum and two pelvic bones) that make up the pelvic ring; consists of five fused sacral vertebrae

rhonchi Coarse, low-pitched breath sounds heard in patients with chronic mucus in the upper airways

Chapter 11: Principles of Pharmacology

Abbreviations

IM	intramuscular
IN	intranasal
IO	intraosseous
IV	intravenous therapy
MDI	metered-dose inhaler
MI	myocardial infarction
OTC	over-the-counter
PO	per oral
PR	per rectum
SC	subcutaneous
SL	sublingual

Definitions

absorption the process by which medications travel through body tissues to the bloodstream

action the therapeutic effect that a medication is expected to have on the body

agonist medication that causes stimulation of receptors

antagonist medication that binds to a receptor and blocks other medications or chemicals from attaching there

capsule gelatin shells filled with powdered or liquid medication

contraindication when a medication would either harm the patient or have no positive effect

diaphoretic characterized by light or profuse sweating

dose the amount of the medication that is given

enteral absorbed via the digestive system

generic name the original chemical name of a medication (in contrast with one of its proprietary, or trade name); the name is not capitalized

hypoglycemia extremely low blood sugar

indications reasons or conditions for which a particular medication is given

inhalation administered via inhalation into the lungs

intramuscular (IM) administered via the muscle

intranasal (IN) administered into the nostril (usually via mucosal atomizer device)

intraosseous (IO) administered into the bone

intravenous therapy (IV) the delivery of a medication directly into a vein

medication substance used to treat or prevent disease or relieve pain

metered-dose inhaler (MDI) a device that delivers a consistent amount of medication using a short burst of aerosolized medicine via inhalation

myocardial infarction (MI) heart attack

parenteral absorbed via means other than the digestive system

per oral (PO) administered by the mouth

per rectum (PR) administered by the rectum

pharmacodynamics the process by which medication works on the body

pharmacology the science of drugs, including their ingredients, preparation, uses, and actions on the body

proprietary name the brand name that a manufacturer gives a medication; the name is capitalized

side effect any action of a medication other than the desired ones

solution liquid mixture of one or more substances that cannot be separated simply

sublingual (SL) under the tongue; a medication route

subcutaneous (SC) administered under the skin

suspension substance that does not dissolve well in liquids

sympathomimetic simulating sympathetic nervous action in physiological effect

systemic effect whole-body

tablet contain other materials that are mixed with the medication and compressed

trade name the brand name that a manufacturer gives a medication; the name is capitalized.

Also called proprietary name

transdermal administered via the skin (alt. transcutaneous)

transcutaneous administered via the skin (alt. transdermal)

unintended effect effects that are undesirable but pose little risk to the patient

untoward effect effects that can be harmful to the patient

Medication Routes of Administration

As an EMT, you will

1. Administer medications.
2. Help patients self-administer medications.

Routes of Administration

absorption: via tissues to the blood stream

enteral medications enter the body through the digestive system.

parenteral medications enter the body through means other than the digestive system.

Table 11.1: Routes of Medication Administration

name	abbrev.	entry point	rate of absorption
enteral			
[per] oral	PO	by mouth	slow
[per] rectal	PR	by rectum	rapid
sublingual	SL	under the tongue	rapid
parenteral			
inhalation		inhaled into the lungs	rapid
intramuscular	IM	into the muscle	moderate
intranasal	IN	into the nostril (via mucosal atomizer device)	rapid
intraosseous	IO	into the bone	immediate
intravenous	IV	into the vein	immediate
subcutaneous	SC	beneath the skin	slow
transcutaneous (transdermal)		through the skin	slow

Medication Form

Medication form is chosen by the manufacturer to ensure ~~maximum profits~~ the following:

1. Proper route of administration
2. Timing of the medication's release into the bloodstream
3. Effects on the target organs or body systems

Tablets, Capsules

Capsules are gelatin shells filled with powdered or liquid medication.

Tablets are contain other materials that are mixed with the medication and compressed.

Solutions, Suspensions

Solutions are liquid mixtures of one or more substances that cannot be separated simply.

Does not need to be shaken. Can be given as an IV, IM, or SC injection

Example:

epinephrine using an auto-injected (i.e. an Epi-Pen)

Suspensions substances that do not dissolve well in liquids; will separate if undisturbed/filtered.

Very important to shake before using!

Injectable suspensions only via IM or SC

Examples:

activated charcoal (PO)

some hormone shots and vaccinations (IM or SC)

calamine lotion (topical)

Metered-dose inhaler (MDI)

Metered-dose inhalers (MDI) direct aerosolizable liquids and fine powders through the mouth and into the lungs via inhalation.

Delivers the same consistent dosage every time

Very important to shake before using!

Example:

asthma inhalers

Topical medications

Applied to skin surface

affects only that area

includes lotions, creams, and ointments

Examples:

Calamine lotion (lotion)

hydrocortisone cream (cream)

Neosporin ointment (ointment)

Transcutaneous medications

transcutaneous/transdermal medications are absorbed through the skin.

May have systematic effects (compare with **topical medications** whose effects are limited to applied area.)

Touching will absorb medication same as patient!

Examples:

nitroglycerin paste

adhesive patch

Gels

Semi-liquid

Administered in capsules or plastic tubes

Example:

oral glucose

Gases for Inhalation

Outside of OR, most commonly used is oxygen

Usually delivered through a nonrebreathing mask or nasal cannula

Example:

oxygen

Administering Medication

The 6 "Rights" of Medication Administration

Right patient : Patient who needs medication = patient who receives medication.

Right medication : Verify that it is the correct medication and prescription.

Right dose : Verify the form and dose of the medication.

Right route : Verify the route of the medication.

Right time : Check the expiration date and condition of the medication.

Right documentation : Document your actions and the patient's response.

Unit may carry:

- Oxygen
- Oral glucose
- Activated charcoal
- Aspirin
- Epinephrine

Circumstances in which medications may be administered:

1. Peer-assisted administration
2. Patient-assisted administration
3. EMT-administered medications

Determined by state and local protocols, medical control

The state, department, and medical director will define which medications are carried on your ambulance.

Table 11.2: Advantages & Disadvantages of Medication Administration Routes

Advantages	Route of Administration	Disadvantages
ease of access comfort level	PO	digestive tract can be easily affected by foods, stress, and illness speed of movement of food through the tract dramatically changes the speed of absorption
easy to advise patients quick absorption	SL	Constant evaluation of the airway Possible choking Not for uncooperative or unconscious patients
quick, easy access without using vein stable blood flow to muscle	IM	Use of a needle (and subsequent pain) Patients may fear pain or injury

Table 11.3: Drugs that can be Administered by EMTs

Drug	Routes of Admin.	Forms	Uses	Contraindications
activated charcoal	PO	suspension	Reduces the amount of medication being absorbed	Do not give to patients with altered level of consciousness.
oral glucose	PO	gel, tablet	Treats hypoglycemia	Do not give to an unconscious patients, or one who cannot protect the airway.
aspirin	PO	tablet	Useful during heart attack	Hypersensitivity to aspirin Liver damage, bleeding disorder, asthma Should not be given to children
nitroglycerin	SL, inhalation (1 spray = 1 tablet)	SL tablet, metered-dose spray	Relieves angina pain Increases blood flow Relaxes veins	Possibility of MI, if no relief Should <u>not</u> be used with erectile dysfunction medications
epinephrine	IM	auto-injector	Treats life-threatening anaphylaxis	Do not give to patients with hypertension, hypothermia, MI, or wheezing.
Naloxone	IN	atomizer	Reverses the effects of opioid overdose	The effects of naloxone may not last as long as those of opioids; repeat doses may be necessary. Can cause severe withdrawal symptoms; patients may become violent
oxygen	inhalation	gas: nonre-breathing mask (preferred) nasal cannula	When a patient is not breathing, having trouble getting air	Ensure no open flames in vicinity

Potential Test Questions

enumerate

- What are enteral medication routes?
Per oral, per rectal, sublingual
- What are parenteral medication routes?
intramuscular, intranasal, intraosseous, intravenous, subcutaneous, transcutaneous (transdermal)
- What are the differences between capsules and tablets?
Capsules are gelatin shells filled with powder or liquid. Tablets having their ingredients compressed under high pressure; may contain other materials mixed with the medication.
- What are the differences between solutions and suspensions?
A solution contains substances that *cannot be separated by standing or filtering*, whereas a solution will separate if undisturbed or filtered.
- What should you do before administering a suspension?
Shake or swirl
Why?
To ensure that the patient gets receives the right amount of medication.
Why?
Suspensions contain substances that do not dissolve well; they will separate if they stand or are filtered.
- What is an example of a solution?
epinephrine administered via auto-injector (i.e. an EpiPen)
- What is an example of a suspension?
Activated charcoal
- What is the difference between a metered-dose inhaler and a nebulizer?
Nebulizer has electric components and must be recharged
- What is the difference between transdermal medications and topical medications?
topical medications affect only the intended site, transdermal medications can have systemic effects.

Chapter 12: Shock

Abbreviations

ANS	autonomic nervous system
CO	cardiac output
cns	central nervous system
PNS	peripheral nervous system
PSNS	parasympathetic nervous system
SNS	sympathetic nervous system

Definitions

afterload force a resistance against which the heart pumps

anaphylactic shock severe shock caused by an allergic reaction

anaphylaxis in extreme life-threatening systemic allergic reaction that may include shock and respiratory failure

aneurysm a swelling or enlargement of a part of an artery resulting from weakening of the arterial wall

cardiac output (CO) the measure of the volume of blood circulated by the heart in 1 minute; calculated by multiplying the stroke volume by the heart rate

cardiogenic shock a state in which not enough oxygen is delivered to the tissues of the body caused by low output of blood from the heart it may be a severe complication of an large acute myocardial infection as well as other conditions

cardiac tamponade compression of the heart is a result of the buildup of blood or other fluid in the pericardial sac leading to decreased cardiac output

compensated shock the early stage of shock in which the body could still compensate for blood loss

cyanosis a blue-gray skin color that is caused by reduced level of oxygen in the blood

decompensated shock the late stage of shock when blood pressure is falling

dehydration loss of water from the tissues of the body

distributive shock a condition that occurs when there is widespread dilation of the small arterioles small venules or both

edema the presence of abnormally large amounts of fluid between cells in body tissues, causing swelling of the affected area

homeostasis a balance of all systems of the body

hypoperfusion another term for shock

hypothermia condition in which the internal body temperature falls below 95°F (35°C)

hypovolemic shock shock caused by fluid or blood loss

mediastinum space within the chest that contains the heart, major blood vessels, vagus nerve, trachea, major bronchi, and esophagus; located between the two lungs

myocardial contractility the ability of the heart muscle to contract

neurogenic shock circulatory failure caused by the paralysis of the nerves that control the size of the blood vessels, leading to widespread dilation; seen in patients with spinal cord injuries

obstructive shock shock that occurs when there is a block to the blood flow in the heart or great vessels, causing an insufficient blood supply to the body's tissues

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs

pericardial effusion a collection of fluid between the pericardial sac and the myocardium

preload the pre-contraction pressure in the heart as the volume of blood builds up

pulse pressure the difference between the systolic and diastolic pressures. Sensitization developing a sensitivity to a substance that initially caused no allergic reaction

septic shock shock caused by a severe infection usually a bacterial infection

shock abnormal state associated with the inadequate oxygen and nutrient delivery to the cells of the body, also known as hypoperfusion

sphincter muscle arranged in a circle that is able to decrease the diameter of tubes.
Examples are found within the rectum, bladder, and blood vessels

syncope a fainting spell or transient loss of consciousness

Introduction

Shock = hypoperfusion

Pathophysiology

Perfusion

perfusion is the circulation of blood within tissue/organ/organ system to meet cells' needs.

perfusion Requirements

intact cardiovascular system

functioning respiratory system

”Perfusion Triangle”

intact cardiovascular system

functioning respiratory system

Causes of Shock

Table 12.1: Types of Shock

Examples of potential causes	Signs and symptoms	Treatment
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Cardiogenic

<p>Inadequate heart function Disease of muscular tissue Impaired electrical system Disease or injury</p>	<p>Includes:</p> <ul style="list-style-type: none"> • irregular pulse • weak pulse • low blood pressure • cyanosis (lips, under nails) • cool clammy skin • anxiety • crackles (rales) • pulmonary edema 	<ul style="list-style-type: none"> • Position comfortably • Administer high-flow oxygen • Assist relations • Transport promptly • Consider ALS
---	--	---

Obstructive

<p>mechanical obstruction of the cardiac muscle, causing a decrease in cardiac output</p> <ol style="list-style-type: none"> 1. tension pneumothorax 2. cardiac tamponade 3. pulmonary embolism 	<p>Dependent on cause:</p> <ul style="list-style-type: none"> • dyspnea • rapid, weak pulse • rapid, shallow breaths • decreased lung compliance • unilateral, decreased, or absent breath sounds • decreased blood pressure • jugular vein distention • subcutaneous emphysema • cyanosis • tracheal deviation towards unaffected side <p>• Beck's Triad (cardiac tamponade):</p> <ol style="list-style-type: none"> 1. jugular vein distention 2. narrowing pulse pressure 3. muffled heart tones 	<p>Depending on cause:</p> <ul style="list-style-type: none"> • ALS assist and/or rapid transport • Administer high-flow oxygen
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Septic

<p>Severe bacterial infection</p>	<ul style="list-style-type: none"> • warm skin or fever • tachycardia • low blood pressure 	<ul style="list-style-type: none"> • Transport promptly • Administer high-flow oxygen • Assist ventilations • Transport promptly
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Chapter 13: BLS Resuscitation

Abbreviations

ABC	airway (obstruction) breathing (respiratory arrest) circulation (cardiac arrest)
AED	automated external defibrillator
AHA	American Heart Association
AICD	automated implanted cardioverter-defibrillator
ALS	advanced life support
BLS	basic life support
BVM	bag-valve mask
CPR	cardiopulmonary resuscitation
ITD	impedance threshold device
IV	intravenous therapy
LDB	load-distributing band
ROSC	return of spontaneous circulation
SCA	sudden cardiac arrest
v-fib	ventricular fibrillation
v-tac	ventricular tachycardia

Definitions

active compression decompression CPR technique that involves compressing the chest and then actively pulling it back up to its neutral position and beyond

atrial fibrillation (a-fib) upper heart chambers contract irregularly

automated external defibrillator (AED) a device that detects treatable life-threatening cardiac dysrhythmias (ventricular fibrillation and ventricular tachycardia) and delivers the appropriate electrical shock to the patient

anoxia absence of oxygen

aortocaval compression relating to the aorta and the vena cava

apneic absence of spontaneous breathing

automated implanted cardioverter-defibrillator (AICD) the technical term for *pacemaker*

basic life support (BLS) noninvasive, emergency lifesaving care that is used to treat medical conditions, including airway obstruction, respiratory arrest, and cardiac arrest

cardiopulmonary resuscitation (CPR) the combination of chest compressions and rescue breathing used to establish adequate ventilation and circulation in a patient who is not breathing and has no pulse

cyanosis a blue-gray skin color that is caused by reduced level of oxygen in the blood

diaphoretic characterized by light or profuse sweating

dyspnea difficulty or trouble breathing

fundus part of a hollow organ that is farthest from the opening

gastric distention a condition in which air fills the stomach, often as a result of high volume and pressure during artificial ventilation

head tilt-chin lift maneuver a combination of two movements to open the airway by tilting the forehead back and lifting the chin; not used for trauma patients

hypercarbia increased level of carbon dioxide (CO₂) in the bloodstream

hyperventilation Rapid or deep breathing that lowers the blood carbon dioxide (CO₂) level below normal

hypotension blood pressure that is lower than the normal range

hypoxia a dangerous condition in which the body's tissues and cells do not have enough oxygen

impedance threshold device (ITD) a valve device placed between the endotracheal tube and a bag-valve mask that limits the amount of air entering the lungs during the recoil phase between chest compressions

intrathoracic within the chest (thoracic) cavity

ischemia decreased oxygen supply

jaw-thrust maneuver technique to open the airway by placing the fingers behind the angle of the jaw and bringing the jaw forward; use for patients who may have a cervical spine injury

load-distributing band (LDB) circumferential chest compression device composed of a constricting band and backboard that is either electrically or pneumatically driven to compress the heart by putting inward pressure on the thorax

opiate A subset of the opioid family, referring to natural, non-synthetic opioids

opioid A synthetically-produced narcotic medication, drug, or agent similar to the opiate morphine, but not derived from opium. Used to relieve pain

pacemaker a medical device that delivers shocks directly to the heart if necessary. Also called an automated implanted cardioverter-defibrillator (AICD)

stoma an opening through the skin and into an organ or other structure

tachycardia rapid heart rate (> 100 beats/minute)

ventricular fibrillation (v-fib) disorganized, ineffective quivering of the ventricles, resulting in no blood flow and a state of cardiac arrest

ventricular tachycardia (v-tac) rapid heart rhythm in which the electrical impulse begins in the ventricle (instead of the atrium), which may result in inadequate blood flow and eventually deteriorate into cardiac arrest

xiphoid process narrow, cartilaginous lower tip of the sternum

Heart terms

atrial fibrillation (a-fib) upper heart chambers contract irregularly

bradycardia a slow heart rate, less than 60 beats/min

tachycardia rapid heart rate (> 100 beats/minute)

ventricular fibrillation (v-fib) disorganized, ineffective quivering of the ventricles, resulting in no blood flow and a state of cardiac arrest

ventricular tachycardia (v-tac) rapid heart rhythm in which the electrical impulse begins in the ventricle (instead of the atrium), which may result in inadequate blood flow and eventually deteriorate into cardiac arrest

basic life support (BLS)

BLS is noninvasive, emergency lifesaving care that is used to treat medical conditions, including airway obstruction, respiratory arrest, and cardiac arrest.

BLS sequence (use ABC mnemonic):

airway (obstruction)

breathing (respiratory arrest)

circulation (cardiac arrest)

Difference between ALS and BLS ALS involves advanced lifesaving procedures such as cardiac monitoring, administration of IV fluids and medications, and the use of advanced airway adjuncts.

Permanent brain damage is possible after only 4-6 minutes without oxygen. To survive cardiac arrest, effective CPR at an adequate rate and depth with minimal interruptions is essential until defibrillation can be administered.

BLS Procedures

According to the AHA 88% of sudden cardiac arrests occur in the home

The 'Chain of Survival'

enumerate

- Recognition and activation of the emergency response system
 - Laypeople must recognize the early warning signs of cardiac emergency to call 9-1-1
 - Requires public education and awareness
- Immediate high-quality CPR
- Rapid defibrillation
 - AED must be used as soon as it is available *without stopping chest compressions*
- basic and advanced emergency medical services
 - ALS: high-quality CPR, early defibrillation, and use of devices and/or drugs.
- Advanced life support and post arrest care
 - comprehensive, multidisciplinary system of care including mild therapeutic hypothermia and other treatments

CPR steps

1. Restore circulation by performing chest compressions to circulate blood.
2. 100-120 chest compressions per minute for 2 minutes
 - Depth of 2 inches to 2.4 inches (5 - 6cm)
 - Open airway with the jaw-thrust or head tilt-chin lift maneuver
3. Restore breathing by providing rescue breaths via mouth-to-mask ventilation, or bag-valve mask (BVM) minister
 - 2 breaths over 1 second while watching for chest rise.

Differences in providing CPR for infants, children and adults

1. CPR emergencies for infants and children require CPR usually have different underlying causes
2. Anatomical differences: children and infants have smaller airways than adults

Adults: usu. cardiac arrest →respiratory arrest

Children & infants: usu. respiratory arrest →respiratory arrest

Complications from chest compressions are rare but can include fractured ribs lacerated liver and a fractured sternum.

Assessing the Need for BLS

When not to start CPR

1. If the scene is unsafe
2. If the patient has obvious signs of death (obv. mortal damage, dependent lividity, rigor mortis, putrefaction)
3. If the patient/their physician has DNR or no CPR order

Special AED situations

automated implanted cardioverter-defibrillator (AICD)

Automated implanted cardioverter-defibrillators (AICD), commonly known as **pacemakers**, deliver shocks directly to the heart if necessary

Identifying AICDs AICDs create a hard lump beneath the skin on the upper-left side of the chest (just below the clavicle)

AED usage with AICDs

Do not pads directly over the device: this reduces effectiveness of AED shock.

- Place AED pads at least 1 inch (2.5 cm) away from the device.
- Occasionally, implanted device will deliver shocks to the patient
 - If you observe the patient's **muscles twitching**:
continue CPR and wait 30 – 60 seconds before delivering the shock from the AED.

Patient's chest is wet

If patient's chest is wet, the electrical current may move across the skin rather than between the pads.

Patient is submerged in water

1. Pull patient out of the water
2. Quickly dry skin before attaching AED pads
3. Do **not** delay CPR to dry the patient thoroughly
 - instead, quickly wipe off as much moisture as possible from the chest

Patient lying in small puddle of water or snow

- AED can be used but again the patient's chest should be quickly dried as much as possible

transdermal medication

patches you may encounter patient who is receiving medication through transdermal medication patch such as nitroglycerin if the medication patch interferes with AED pad placement then remove the patch with your gloved hands and wipe the skin to remove any residue prior to attaching the AED pad

Devices and Techniques to Assist Circulation

active compression-decompression CPR

Technique that involves compressing the chest and then actively pulling it back up to its neutral position and beyond. May increase the amount of blood that returns to the heart and thus the amount of blood ejected from the heart during the compression phase

impedance threshold device (IPD)

Valve device placed between the ET tube and it BVM may also be placed between the bag and mask if an ET tube is not in place limits air entering the lungs during the *recoil phase* between chest compressions Results in *negative* intrathoracic pressure that may draw more blood towards the heart ultimately resulting in improved cardiac filling and circulation. it is not currently recommended for use with conventional CPR if our OSC occurs than the IPD should be removed

mechanical piston device

device that depresses the sternum via plunger mounted on a backboard.

Positioning supine on backboard

plunger centered over the patient's thorax (same place hands would go).

LVAD

The effectiveness of CPR depends on the amount of blood circulated throughout the body as a result of chest compressions before you consider the use of mechanical devices to assist circulation ensure that your manual chest compressions her concerns distantly high quality

Special resuscitation circumstances

Opioid overdose

Narcotic that when taken in excess depresses the central nervous system causes respiratory arrest followed by cardiac arrest.

Naloxone Chest compressions ventilation defibrillation take priority over naloxone administration do not delay other interventions while awaiting the patient's response to naloxone therapy May have a **pulse** but **not breathing**: BVM ventilation *is the most critical treatment*, followed by naloxone (if available).

Pregnancy & cardiac arrest

Priority provide high-quality CPR. Relieve pressure off the *aorta* and *vena cava*. When patient lies supine, the pregnant uterus can *compress the aorta and vena cava (aortocaval compression)*

If pregnant patient is **not** in cardiac arrest: position her on the **left side** to relieve pressure on the vessels aorta and vena cava.

If she is in cardiac arrest, this is impractical. because she must remain in the supine position to maximize effectiveness of compressions therefore if the top the patient's uterus (fundus) can be felt at or above the level of the umbilicus perform manual displacement of the uterus to the patient's left to relieve aorta painful compression while CPR is being performed

Whenever you assist the patient remember that his or in some patient apps that in some cases family members may experience a psychological crisis that turns to medical crisis and may become patients themselves

Table 13.1: Review of BLS procedures

Procedure	Adult	Child Age 1 month – 1 year	Infant Age 1 year – onset of puberty
Circulation			
pulse check	carotid artery	carotid or femoral artery	brachial artery
compression area	center of the chest, in between the nipples	center of the chest, in between the nipples	just below the nipple line
compression width	heel of both hands	heel of one or both hands	Two-finger technique, or two-thumb encircling -hands technique
compression depth	2 – 2.4 in. (5 – 6 cm)	at least $\frac{1}{3}$ anterior- posterior diameter (~2 in. or 5cm)	At least $\frac{1}{3}$ anterior- posterior diameter (~1.5 in. or 4 cm)
compression rate	100 to 120/min		
compression-to- ventilation ratio*	10:1		
Foreign body obstruction	Responsive: abdominal thrusts (Heimlich); chest thrust if the patient is pregnant or has obesity Unresponsive: CPR	Responsive: abdominal thrusts (Heimlich) Unresponsive: CPR	Responsive: back slaps, chest thrusts Unresponsive: CPR
Airway			
airway positioning	head tilt-chin lift ;jaw-thrust if spinal injury suspected		
Breathing			
ventilations	1 breath every 5 – 6 sec. (10 – 12 breaths/min); ~1 second per breath; visible chest rise	1 breath every 3–5 sec- onds (12 to 20) breaths/min; ~1 second per breath; visible chest rise	1 breath every 3–5 sec- onds (12 to 20) breaths/min; ~1 second per breath; visible chest rise
ventilations (with advanced airway placed)	1 breath every 6 seconds (rate of 10 breaths/min)	1 breath every 6 seconds (rate of 10 breaths/min)	1 breath every 6 seconds (rate of 10 breaths/min)

Potential Test Questions

1. How does BLS differ from ALS?
ALS involves advanced lifesaving procedures such as cardiac monitoring, administration of IV fluids and medications, and the use of advanced airway adjuncts.
2. What is the difference between hypoxia and ischemia?
Hypoxia is when oxygen saturation is below 90%, while ischemia is when blood supply to tissue is interrupted.
ischemia leads to hypoxia.
3. What conditions must be present for a patient to be placed into the recovery position? Unconscious, no traumatic injuries, breathing on their own.
4. Under what circumstances does an EMT **not** start CPR?
 - If the scene is unsafe
 - If the patient has obvious signs of death (obv. mortal damage, dependent lividity, rigor mortis, putrefaction)
 - If the patient/their physician has DNR or no CPR order

Chapter 14: Medical Overview

Definitions

Introduction

Chapter 15: Respiratory Emergencies

Definitions

bronchodilator

bronchospasm

carbon dioxide retention a condition characterized by a chronically high blood level of carbon dioxide

dependent edema

diuretic

dyspnea difficulty or trouble breathing

bronchodilator

hypertension blood pressure that is higher than the normal range

lower airway includes the trachea bronchi bronchioles and alveoli surrounded by the pulmonary capillaries

pulmonary edema A buildup of fluid in the lungs, usually as a result of congestive heart failure

pulmonary embolism a blood clot that breaks out from the large vein and travels to the blood vessels of the lung, causing obstruction of blood flow

respiration inhaling and exhaling of air; the physiologic process that exchanges carbon dioxide from fresh air

upper airway

Introduction

Chapter 16: Cardiovascular Emergencies

Definitions

Introduction

Potential Test Questions

enumerate

- Why do we need a template here?
Because LaTeX is stupid so we have to.

Chapter 17: Neurologic Emergencies

Definitions

Introduction

stroke test = priority 1 xport immediately TPA = brain blockage in stroke thins out blood, breaks up clot ("clotbuster")

hemorrhagic stroke = usually SOL

ischemic stroke = blockage identify it = if, can give TPA (hospital) cant tell which is which in the field

most important things to remember: Cincinnati stroke scale if pos priority 1, rapid xport cant get medic, go to hospital paramedic cant do anything (unconscious, arrest) better to xport rendezvous time is brain/tissue

longer untreated = brain damage, paralysis, speech, motor, etc ID afap focus: last know time normal 20 hours = window TPA used to 3.5/4... more aggressive thins out blood to almost water

if went to bed at 2000 at 0600, woke up with deficits = 2000 2 days, by themselves, no one seen = 2 days I.e. whenever can be ascertained

NEED GLUCOSE to make sure hypoglycemia not manifesting as stroke

mini stroke usu. resolve on own if they have history maybe possible to have stroke if they dont manage it

seizures apoclyptic stage = staring off generalized seizures = resolve status seizure = on/off for 30 mins or something doesn't break - keeps starting seizures = bad bc burn up glucose+oxygen

if it doesnt break problem, lasting effects persed break seizures

lip smacking

febrile seizure = almost always seen in kids acetomeniphen = breaks fever spike from not managing it can cause seizure

2 tests = lams, Cincinnati Cincinnati = pass/fail lams = severity

priority = 1 all the time 90% wont get TPA

facial droop = 2

2 drubs aspirin and nitro HAVE to memorize contraindications RPMDDD = common fail point

contraindicated for children under 13 requires consult

Chapter 18: Gastrointestinal And Urologic Emergencies

Definitions

Introduction

Chapter 19: Endocrine and Hematologic Emergencies

Definitions

Introduction

Chapter 20: Immunologic Emergencies

Definitions

Introduction

Chapter 21: Toxicology

Definitions

Introduction

Chapter 22: Psychiatric Emergencies

Definitions

Introduction

contraindications

activated charcoal don't give to patient with altered mental status - damage already done

have to consult with hospital, with poison control conjunction orders must come from doctor

pounds / 2 - 10% 200 lbs = $200 / 2 = 100 - 10\% = 90$ kg

narcane binds to opioid receptor = negates its efficiency calculate RR = 14, sp 98%
HR 78

excited delirium

gynecological ems duty officer when in doubt

aspirin medical hist.: need to know Right Patient: not hypersensitive, didn't take it already 1 dose of 324mg/325mg, no second dose aspirin not for pain: for treating underlying symptoms

Chapter 23: Gynecologic Emergencies

Definitions

Introduction

Chapter 24: Trauma Overview

Abbreviations

- GCS** Glasgow Coma Scale
MOI mechanism of injury
RTS revised trauma score

Definitions

arterial air embolism air bubbles in the arterial blood vessels

blunt trauma an impact on the body by objects that cause injury without penetrating soft tissues or internal organs and cavities

cavitation a phenomenon in which speed causes a bullet to generate pressure waves which cause damage distant from the bullet's path

coup-contrecoup brain injury a brain injury that occurs when force is applied to the head and energy transmission through brain tissue causes injury on the opposite side of the original impact

deceleration the slowing of an object

drag resistance that slows a projectile, such as air

Glasgow Coma Scale an evaluation tool used to determine level of consciousness, which evaluates and the signs point values (scores) for eye opening, verbal response, and motor response, which are then totaled; effective in helping predict patient outcomes

index of suspicion awareness that unseen life-threatening injuries may exist when determining the mechanism of injury

kinetic energy the energy of a moving object

mechanism of injury (MOI) the forces, or energy transmission, applied to the body that cause injury

medical emergencies emergencies that require EMS attention because of illnesses or conditions not caused by an outside force

multisystem trauma trauma that affects more than one body system

penetrating trauma injury caused by objects, such as knives and bullets, that pierce the surface of the body and damage internal tissues and organs

potential energy the product of mass, gravity, and height, which is converted into kinetic energy and results in injury, such as from a fall

projectile any object propelled by force, such as a bullet by a weapon

pulmonary blast injuries pulmonary trauma resulting from short-range exposure to the detonation of explosives

revised trauma score (RTS) a scoring system used for patients with head trauma

trajectory the path a projectile takes once it is propelled

trauma emergencies emergencies that are the result of physical force is applied to a patient's body

trauma score A score calculated from 1 to 16, with 16 being the best possible score. It relates to the likelihood of a patient survival with the exception of a severe head injury. It takes into account the Glasgow Coma Scale (GCS) score, respiratory rate, respiratory expansion, systolic blood pressure, and capillary refill

tympanic membrane the eardrum; then, semi transparent membrane in the middle ear that transmit sound vibrations to the internal ear by means of auditory ossicles

work the measure of force over distance

Introduction

Chapter 25: Bleeding

Abbreviations

GCS Glasgow Coma Scale

RTS revised trauma score

Definitions

aorta the main artery that receives blood from the left ventricle and delivers it to all the other arteries that carry blood to the tissues of the body

arteriole the smallest branch of arteries leading to the vast network of capillaries

artery a blood vessel, consisting of three layers of tissue and smooth muscle, that carries blood away from the heart

capillary a small blood vessel that connects arterials and venules; various substances pass through capillary walls, into and out of the interstitial fluid, and then on to the cells

coagulation the formation of clots of plug openings in injured blood vessels and stop blood flow

contusion a bruise from an injury that causes bleeding beneath the skin without breaking the skin; see also ecchymosis

ecchymosis a buildup of blood beneath the skin that produces a characteristic blue or black discoloration as the result of an injury; also see contusion

epistaxis a nosebleed

hematemesis vomited blood

hematoma a mass of blood that has collected within damaged tissue beneath the skin or in a body cavity

hematuria blood in the urine

hemophilia a hereditary condition in which the patient lacks one or more of the blood's normal clotting factors

hemoptysis the coughing up of blood

hemorrhage bleeding

hemostatic agent a chemical compound that slows or stops bleeding by assisting with clot formation

hypoperfusion another term for shock

hypovolemic shock shock caused by fluid or blood loss

melena black, foul-smelling, tarry stool containing digested blood

open-book pelvic fracture a life-threatening fracture of the pelvis caused by force that displaces one or both sides of the pelvis laterally and posteriorly

pelvic binder a device to split the bony pelvis to reduce hemorrhagic from bone ends, venous disruption, and pain

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs

shock abnormal state associated with the inadequate oxygen and nutrient delivery to the cells of the body, also known as hypoperfusion

tourniquet the bleeding control method used when a wound continues to bleed despite the use of direct pressure; use with the patient is bleeding severely from a partial or complete amputation

vasoconstriction the narrowing of a blood vessel, such as with hypoperfusion or cold extremities

vein the blood vessels that carry blood from the tissues to the heart

venule very small, thin-walled blood vessels

Introduction

Chapter 26: Soft-Tissue Injuries

Definitions

abrasion loss or damage of the superficial layer of skin as a result of a body part rubbing or scraping across a rough or hard surface

amputation an injury in which part of the body is completely severed

avulsion an injury in which soft tissue is torn completely loose or is hanging as a flap

burn injury in which soft tissue damage occurs as a result of thermal heat, frictional heat, toxic chemicals, electricity, or nuclear radiation

closed injury injury in which damage occurs beneath the skin or mucous membrane but the surface of the skin remains intact

compartment syndrome swelling in a confined space that produces dangerous pressure; may cut off blood flow or damage sensitive tissue

contamination the presence of infectious organisms on or in objects such as dressings, water, food, needles, wounds, or patient's body

contusion a bruise from an injury that causes bleeding beneath the skin without breaking the skin; see also ecchymosis

crush syndrome significant metabolic derangement that develops with crushed extremities or body parts remain trapped for prolonged periods. This can lead to renal failure and death

crushing injury an injury that occurs when a great amount of force is applied to the body

dermis the inner layer of the skin, containing hair follicles, sweat glands, nerve endings, and blood vessels

ecchymosis a buildup of blood beneath the skin that produces a characteristic blue or black discoloration as the result of an injury; also see contusion

epidermis the outer layer of skin that acts as a watertight protective covering

evisceration the displacement of organs outside the body

excited delirium a serious behavior condition in which a person exhibits agitated behavior combined with disorientation, hallucinations, or delusions; also called agitated delirium or exhaustive mania

fascia fiberlike connective tissue that covers arteries, veins, tendons, and ligaments

flame burn a burn caused by an open flame

flash burn a burn caused by exposure to very intense heat such as in an explosion

full thickness burns that affect all skin layers and may affect the subcutaneous layers, muscle, bone, and internal organs, leaving the area dry, leathery, and white, dark brown, or charred

Also called a *third-degree burn*

hematoma a mass of blood that has collected within damaged tissue beneath the skin or in a body cavity

excited delirium a serious behavior condition in which a person exhibits agitated behavior combined with disorientation, hallucinations, or delusions; also called agitated delirium or exhaustive mania

fascia fiberlike connective tissue that covers arteries, veins, tendons, and ligaments

flame burn a burn caused by an open flame

flash burn a burn caused by exposure to very intense heat such as in an explosion

full thickness burns that affect all skin layers and may affect the subcutaneous layers, muscle, bone, and internal organs, leaving the area dry, leathery, and white, dark brown, or charred

Also called a *third-degree burn*

third-degree burn See *full thickness burn*

Introduction

Chapter 27: Face and Neck Injuries

Definitions

air embolism the presence of air in the veins, which can lead to cardiac arrest if it enters the heart

blunt trauma an impact on the body by objects that cause injury without penetrating soft tissues or internal organs and cavities

anisocoria naturally occurring uneven pupil size

blow-out fracture a fracture of the orbit or of the bones that support the floor of the orbit

conjunctiva the delicate membrane that lines the eyelids and covers the exposed surface of the eye

conjunctivitis inflammation of the conjunctiva

cornea the transparent tissue layer in front of the pupil and iris of the eye

eustachian tube a branch of the internal auditory canal that connects the middle ear to the oropharynx

external auditory canal the ear canal; leads to the tympanic membrane

globe the eyeball

iris the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color

lacrimal glands the glands that produce fluids to keep the eye moist; also called tear glands

lens the transparent part of the eye through which images are focused on the retina

mastoid process the prominent bony mass at the base of the skull about 1" posterior to the external opening of the ear

optic nerve a cranial nerve that transmits visual information to the brain

pinna the external, visible part of the ear

pupil the circular opening in the middle of the iris that admits light to the back of the eye

retina the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain

retinal detachment separation of the retina from its attachments at the back of the eye

sclera the tough, fibrous, white portion of the eye that protects the more delicate inner structures

sternocleidomastoid muscles the muscles on either side of the neck that allow movement of the head

subcutaneous emphysema the measure of force over distance

temporomandibular joint the joint form for the mandible and the and cranium meet, just in front of the ear

tragus the small, rounded, fleshy bulge that lies immediately anterior to the ear canal

tympenic membrane the eardrum; then, semi transparent membrane in the middle ear that transmit sound vibrations to the internal ear by means of auditory ossicles

Introduction

Chapter 28: Head and Spine Injuries

Abbreviations

PNS	peripheral nervous system
ICP	intracranial pressure
PNS	peripheral nervous system
TBI	traumatic brain injury

Definitions

anterograde amnesia inability to remember events after an injury

axial loading injury injuries in which load is applied along the vertical or longitudinal axis of the spine, which results in [the] load being transmitted along the entire length of the vertebral column; for example, falling from a height and landing on the feet in an upright position

basilar skull fracture usually occur following diffuse impact to the head (such as falls, motor vehicle crashes); generally result from extension of a linear fracture to the base of the skull and could be difficult to diagnose with a radiograph

Battle sign bruising behind an ear over the mastoid process that may indicate a skull fracture

cerebral edema swelling of the brain

closed head injury injury in which the brain has been injured but the skin has not been broken and there is no obvious bleeding

concussion a temporary loss or alteration of part or all of the brain's abilities to function without actual physical damage to the brain

coup-contrecoup brain injury dual impacting of the brain into the skull; coup injury occurs at the point of impact; contrecoup injury occurs on the opposite side of the impact as the brain rebounds

epidural hematoma an accumulation of blood between the skull and the dura mater

eyes forward position a head position in which the patient's eyes are looking straight ahead and the head and torso are in line

four-person log roll the recommended procedure for moving a patient with a suspected spinal injury from the ground to a long backboard or other spinal immobilization device

intervertebral disc the cushion that lies between two vertebrae

intracerebral hematoma bleeding within the brain (parenchyma) itself; also referred to as an intraparenchymal hematoma

intracranial pressure the pressure within the cranial vault

involuntary activity actions of the body that are not under a person's conscious control

linear skull fracture account for 80% of skull fractures; also referred to as nondisplaced skull fractures; commonly occur in the temporal/parietal region of the skull; not associated with deformities to the skull

meninges three distinct layers of tissue that surround and protect the brain and the spinal cord within the skull and the spinal canal

open head injury injury to the head often caused by penetrating object in which there may be bleeding and exposed brain tissue

posttraumatic amnesia See anterograde amnesia

primary injury an injury to the brain and its associated structures that is a direct result of impact to the head

raccoon eyes bruising under the eyes that may indicate a skull fracture

retrograde amnesia the inability to remember events leading up to head injury

secondary injury the after effects of the primary injury; includes abnormal processes such as cerebral edema increased intracranial pressure, cerebral ischemia and hypoxia, and infection; onset is often delayed following the primary brain injury

subcutaneous emphysema the measure of force over distance

subdural hematoma an accumulation of blood beneath the dura mater but outside the brain

traumatic brain injury a traumatic injury to the brain capable of producing physical, intellectual, emotional, social, and vocational changes

voluntary activity actions that are consciously performed, in which sensory input or conscious thought determines a specific muscular activity

Introduction

Chapter 29: Chest Injuries

Definitions

cardiac tamponade compression of the heart is a result of the buildup of blood or other fluid in the pericardial sac leading to decreased cardiac output

closed chest injury an injury to the chest in which the skin is not broken usually caused by blunt trauma

commotio cordis a blunt chest injury caused by a sudden, direct blow to the chest that occurs only during the critical portion of a person's heartbeat

crepitus a grating or grinding sensation caused by fractured bone ends or joints rubbing together; also air bubbles under the skin that produce a crackling sound or crinkly feeling

flail chest a condition which three or more ribs are fractured into are more places or in association with the fracture of the sternum so that a segment of the chest wall is effectively detached from the rest of the thoracic cage

flutter valve a one-way valve that allows air to leave the chest cavity but not return; formed by keeping three sides of an occlusive dressing to the chest wall, leaving the fourth site open is a valve; may also be part of a commercial vented occlusive dressing

hemopneumothorax the accumulation of blood and air in the pleural space of the chest

hemothorax the collection of blood in the pleural cavity

myocardial contusion bruising of the heart muscle

occlusive dressing an airtight dressing that protects a wound from air and bacteria; a commercial vented version allows air to passively escape from the chest, while in unvented dressing may be made of petroleum jelly based (Vaseline) gauze, aluminum foil, or plastic

open chest injury an injury to the chest in which the chest wall itself is penetrated by a fractured rib or, more frequently, by an external object such as a bullet or knife

open pneumothorax an open or penetrating chest wall wound through which air passes during inspiration and expiration, creating a sucking chest sound; also referred to as a sucking chest wound

paradoxical motion the motion of the portion of the chest wall that is attached in a flail chest; the motion—enduring inhalation, out during exhalation—is exactly the opposite of normal chest wall motion during breathing

pericardium the fibrous sac that surrounds the heart

pericardial tamponade See *cardiac tamponade*

pneumothorax an accumulation of Airgas in the pleural cavity

pulmonary contusion separation of the retina from its attachments at the back of the eye

simple pneumothorax any pneumothorax that is free from significant physiological changes and does not cause drastic changes in the vital signs of the patient

spontaneous pneumothorax a pneumothorax occurs when a weak area on the lung ruptures in the absence of major injury, allowing air to leak into the pleural space

sucking chest wound an open or penetrating chest wall wound through which air passes during inspiration expiration creating a sucking sound

tachypnea increased respiratory rate

tension pneumothorax accumulation of air or gas in the pleural cavity that progressively increases pressure in the chest that interferes with cardiac function with potentially fatal results

traumatic asphyxia a pattern of injury scene after severe force is applied to the chest, forcing blood from the great vessels back into the head and neck

Introduction

Chapter 30: Abdominal and Genitourinary Injuries

Definitions

closed abdominal injury an injury in which there is soft tissue damage inside the body but the skin remains intact

evisceration the displacement of organs outside the body

flank the region below the rib cage above the hip

guarding involuntary muscle contractions of the abdominal wall to minimize the pain of abdominal movement; a sign of peritonitis

hematuria blood in the urine

hollow organs structures through which materials pass, such as the stomach, small intestines, large intestines, ureters, and urinary bladder

melena black, foul-smelling, tarry stool containing digested blood

open abdominal injury an injury in which there is a break in the surface of the skin or mucous membrane, exposing deeper tissue to potential contamination

peritoneum the membrane lining the abdominal cavity (per radial peritoneum) and covering the abdominal organs (visceral peritoneum)

peritoneal cavity the abdominal cavity

solid organs solid masses of tissue where much of the chemical work of the body takes place (e.g., the liver, spleen, pancreas, and kidneys)

Introduction

Hollow organs

Chapter 31: Face and Neck Injuries

Definitions

air embolism the presence of air in the veins, which can lead to cardiac arrest if it enters the heart

ambient temperature the temperature of the surrounding environment

antivenin a serum that counteracts the effect of venom from an animal or insect

bends See decompression sickness

breath holding syncope loss of consciousness caused by a

conduction the transparent tissue layer in front of the pupil and iris of the eye

convection a branch of the internal auditory canal that connects the middle ear to the oropharynx

core temperature the ear canal; leads to the tympanic membrane

decompression sickness the eyeball

diving reflex the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color

drowning the glands that produce fluids to keep the eye moist; also called tear glands

lacrimal glands the glands that produce fluids to keep the eye moist; also called tear glands

lens the transparent part of the eye through which images are focused on the retina

mastoid process the prominent bony mass at the base of the skull about 1" posterior to the external opening of the ear

optic nerve a cranial nerve that transmits visual information to the brain

pinna the external, visible part of the ear

pupil the circular opening in the middle of the iris that admits light to the back of the eye

retina the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain

retinal detachment separation of the retina from its attachments at the back of the eye

sclera the tough, fibrous, white portion of the eye that protects the more delicate inner structures

sternocleidomastoid muscles the muscles on either side of the neck that allow movement of the head

subcutaneous emphysema the measure of force over distance

temporomandibular joint the joint form for the mandible and the and cranium meet, just in front of the ear

tragus the small, rounded, fleshy bulge that lies immediately anterior to the ear canal

tympanic membrane the eardrum; then, semi transparent membrane in the middle ear that transmit sound vibrations to the internal ear by means of auditory ossicles

Introduction

When PT says X hurts, partner should immediately stabilize.

Chapter 32: Face and Neck Injuries

Definitions

air embolism the presence of air in the veins, which can lead to cardiac arrest if it enters the heart

ambient temperature the temperature of the surrounding environment

antivenin a serum that counteracts the effect of venom from an animal or insect

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diving reflex the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color

drowning the glands that produce fluids to keep the eye moist; also called tear glands

evaporation the prominent bony mass at the base of the skull about 1 inch posterior to the external opening of the ear

frostbite damage to tissues as the result of exposure to cold; frozen or partially frozen body parts are frostbitten

heat cramps the external, visible part of the ear

heat exhaustion the circular opening in the middle of the iris that admits light to the back of the eye

heat stroke the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain

homeostasis a balance of all systems of the body

retina the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain

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Introduction

When PT says X hurts, partner should immediately stabilize.

Chapter 33: Obstetrics and Neonatal Care

Definitions

abruptio placenta premature separation of the placenta from the wall of the uterus

amniotic sac the fluid-filled, baglike membrane in which the fetus develops

anemic describes a condition in which the patient has too few red blood cells, resulting in a decreased ability to transport oxygen throughout the body via the bloodstream

Apgar score a scoring system for assessing the status of a newborn that assigns a number value to each of five areas

birth canal the vagina and cervix

bloody show a small amount of blood in the vagina that appears at the beginning of labor and may include a plug of pink-tinged mucus that is discharged when the cervix begins to dilate

breech presentation a delivery in which the buttocks come out first

cervix narrowest portion of the uterus that opens into the vagina

crowning the appearance of the fetus's head at the vaginal opening during labor

eclampsia severe hypertension in a pregnant woman, resulting in seizures (convulsions)

ectopic pregnancy a pregnancy that develops outside the uterus, typically in a fallopian tube

embryo the early stage of development after the fertilization of the egg (first 10 weeks)

endometrium the lining of the inside of the uterus

fetal alcohol syndrome a condition caused by the consumption of alcohol by a pregnant woman; characterized by growth and physical problems, mental retardation, and a variety of congenital abnormalities

fetus the developing, unborn infant inside the uterus, from 10 weeks after fertilization until birth

fundus part of a hollow organ that is farthest from the opening

gestational diabetes diabetes that develops during pregnancy in women who did not have diabetes before pregnancy

lightening the movement of the fetus down into the pelvis late in pregnancy

limb presentation a delivery in which the presenting part is a single arm or leg

meconium fetal stool; appears as a dark green material in the amniotic fluid, in can indicate distress or disease in the newborn. Problematic as it can be aspirated into the fetus's lungs during delivery

miscarriage the spontaneous passage of the fetus and placenta before 20 weeks; also called spontaneous abortion

multigravida a woman who has had previous pregnancies

nuchal cord an umbilical cord that is wrapped around the fetus's neck]

perineum in a woman, the area between the vagina and anus]

placenta the tissue attached to the uterine wall that nourishes the fetus through the umbilical cord]

placenta previa a condition in which the placenta develops over and covers the cervix]

preeclampsia see: pregnancy-induced hypertension]

pregnancy-induced hypertension a condition of late pregnancy that is characterized by headache, visual changes, and swelling of the hands and feet; also called preclampsia or toxemia of pregnancy]

presentation the position in which an infant is born; defined by the part of the body that appears first]

primigravida a woman who is experiencing her first birth]

prolapse of the umbilical cord a situation in which the umbilical cord comes out of the vagina before the fetus]

spina bifida a developmental defect in which a portion of the spinal cord or meninges may protrude outside of the vertebrae and possibly even outside of the body, usually at the lower third of the spine in the lumbar area]

spontaneous abortion see miscarriage]

supine hypotensive syndrome low blood pressure resulting from compression of the inferior vena cava by the weight of the pregnant uterus when the woman is supine]

term gestation a pregnancy that has reached full term, between 39 weeks 0 days and 40 weeks 6 days]

toxemia of pregnancy see: pregnancy-induced hypertension]

umbilical cord the structure that connects the pregnant woman to the fetus via the placenta; contains two arteries and one vein]

vernix caseosa a white, cheesy substance that covers the body of the fetus]

vertex presentation a delivery in which the head of the newborn comes out first]

Introduction

Hypertension alone is not preeclampsia

SHS left lateral recumbent side

Ectopic pregnancy: symptoms (ab. pain) TASUPO

30% sep. = surgical intervention placenta praevia=in front of the baby severe ab pain

meconium: fetal stool only suction when present in airway babies are nose breathers

limb presentation = surgical emergency encourage mother not to push as best you can butt "" = can still deliver prolapsed cord: tell the mother to stop pushing. working against contract uterus. have to stick whole hand in vagina to push head 1.

resuscitation ventilate first OB ward is happy if HR \geq 100 deliver the baby if not resuss keep even with mother vagina do not raise above or below above: inhibit mother circulation below:

wait for cord to stop pulsating 5-7" from thumb to pink "hang 10" baby's belly button clamp

technology = cord blood

Transport delivered baby in car seat. Otherwise obstetrics ward will "lose their shit"

cant treat children like little adults! excellent compensatory mechanisms, so they're great until they crash

Chapter 34: Pediatric Emergencies

Abbreviations

ALTE apparent life-threatening event

PAT pediatric assessment triangle

SIDS sudden infant death syndrome

Definitions

adolescent a young person between 12 and 18 years of age

apparent life-threatening event event that causes unresponsiveness, cyanosis, and apnea in an infant, who then resumes breathing with stimulation

bradypnea slow respiratory rate; ominous sign in a child that indicates impending respiratory arrest

blanch to turn white

bronchiolitis inflammation of the bronchioles that usually occurs in children younger than 2 years and is often caused by the respiratory syncytial virus

central pulses pulses that are closest to the core (central) part of the body where the vital organs are located; include the carotid, femoral, and apical pulses

child abuse a general term applying to all forms of abuse and neglect of children

croup an inflammatory disease of the upper respiratory system that may cause a partial airway obstruction and is characterized by a barking cough; usually seen in children

epiglottitis a disease in which the epiglottis becomes inflamed and enlarged and may cause an upper airway obstruction

fontanelles areas where the neonate's or infant's skull has not fused together; usually disappear at approximately 18 months of age

generalized tonic clonic seizure a seizure that features rhythmic back-and-forth motion of an extremity and body stiffness

grunting an "uh" sound heard during exhalation; reflects the child's attempt to keep the alveoli open; a sign of increased work of breathing

infancy the first year of life

length-based resuscitation tape a tape used to estimate an infant or child's weight on the basis of length; appropriate drug doses and equipment sizes are listed on the tape

meningitis an inflammation of the meningeal coverings of the brain and spinal cord; it is usually caused by a virus or bacterium

nares the external openings of the nostrils. A single nostril opening is called a naris

naris singular form of nares

neglect refusal or failure on the part of the parent or caregiver to provide life necessities

Neisseria meningitides a form of bacterial meningitis characterized by rapid onset of symptoms; often leading to shock and death

pediatric assessment triangle a structured assessment tool used to rapidly form a general impression of the infant or child without touching him or her; consists of assessing appearance, work of breathing, and circulation to the skin

pediatrics a specialized branch of medical practice devoted to the care of the young

pertussis an airborne bacterial infection that affects mostly children younger than 6 years of age, in which the patient is feverish and exhibits a "whoop" sound on inspiration after a coughing attack; highly contagious through droplet infection. Also called whooping cough.

preschool-age child between 3 and 6 years of age

school age child between 6 and 12 years of age

shaken baby syndrome a syndrome seen in abused infants and children; the patient has been subjected to violent, whiplash-type shaking injuries inflicted by the abusing individual that may cause coma, seizures, and increased intracranial pressure due to tearing of the cerebral veins with consequent bleeding into the brain

sniffing position an upright position in which the patient's head and chin are thrust forward slightly forward to keep the airway open

sudden infant death syndrome death of an infant or young child that remains unexplained after a complete autopsy

tachypnea increased respiratory rate

toddler child between 1 and 3 years of age

tracheitis inflammation of the trachea

tripod position an upright position in which the patient leans forward onto outstretched arms with the head and chin thrust slightly forward

whooping cough another name for pertussis; see pertussis

work of breathing an indicator of oxygenation and ventilation; reflects the child's attempt to compensate for hypoxia

Introduction

Chapter 35: Geriatric Emergencies

Abbreviations

- AAA** abdominal aortic aneurysm
- JVD** jugular vein distention
- MRSA** methicillin-resistant *Staphylococcus aureus*

Definitions

abdominal aortic aneurysm a rapidly fatal condition in which the walls of the aorta in the abdomen weaken and blood leaks into the layers of the vessel, causing it to bulge

advance directive written documentation that specifies medical treatment for a competent patient should the patient become unable to make decisions; also called a living will or health care directive

aorta the main artery that receives blood from the left ventricle and delivers it to all the other arteries that carry blood to the tissues of the body

aneurysm a swelling or enlargement of a part of an artery resulting from weakening of the arterial wall

arteriosclerosis a disease that causes the arteries to thicken, harden, and calcify

ascites fluid in the abdomen

atherosclerosis an accumulation of fat and cholesterol in the arteries

bedsore another name for a decubitus ulcer

cataracts clouding of the lens of the eye or its surrounding transparent membranes

decubitus ulcer a sore caused by the pressure of skin against a surface for long periods; can range from a pink discoloration of the skin to a deep wound that may invade into bone or organs; also known as a bedsore

deep venous thrombosis the formation of a blood clot within the larger veins of an extremity, typically following a period of prolonged immobilization

delirium a sudden change in mental status marked by the inability to focus, think logically, and maintain attention; this condition is generally acute and reversible

dementia the slow onset of progressive disorientation, shorten attention span, and loss of cognitive function; this condition is generally chronic and irreversible

dyspnea difficulty or trouble breathing

elder abuse any action on the part of an older person's family member, caregiver, or other associated person that takes advantage of the older person's person, property, or emotional state

geriatrics the assessment and treatment of disease in someone who is 65 years or older

health care directive See: advance directive

hemoptysis the coughing up of blood

jugular vein distention a visual bulging of the jugular veins in the neck that can be caused by fluid overload, pressure in the chest, cardiac tamponade, or tension pneumothorax

kyphosis a forward curling of the back caused by an abnormal increase in the curvature of the spine

living will See: advance directive

melena black, foul-smelling, tarry stool containing digested blood

methicillin-resistant Staphylococcus aureus a bacterium that causes infections in different parts of the body and is often resistant to commonly used antibiotics; can be found on the skin and in surgical wounds, the bloodstream, lungs, and urinary tract

neuropathy a group of conditions in which the nerves leaving the spinal cord are damaged, resulting in distortion of signals to or from the brain

osteoporosis generalized bone disease, commonly associated with postmenopausal women, in which there is a reduction in the amount of bone mass leading to fractures after minimal trauma in either sex

peptic ulcer disease abrasion of the stomach or small intestine

pneumonia inflammation of the lung from a bacterial, viral, or fungal cause

polypharmacy use of multiple medications on a regular basis

presbycusis age-related condition of the ear that produces progressive bilateral hearing loss that is most noted at higher frequencies

pulmonary embolism a blood clot that breaks out from the large vein and travels to the blood vessels of the lung, causing obstruction of blood flow

respiratory syncytial virus a rapidly fatal condition in which the walls of the aorta in the abdomen weaken and blood leaks into the layers of the vessel, causing it to bulge

syncope a fainting spell or transient loss of consciousness

urinary tract infection a bacterial infection that affects the urinary tract

vancomycin-resistant enterococci bacterium that is normally present in the human intestines and the female reproductive tract, but which can cause infection and which is resistant to the antibiotic vancomycin

Introduction

Chapter 36: Patients With Special Challenges

Abbreviations

ASD autism spectrum disorder

CSF cerebrospinal fluid

Definitions

autism spectrum disorder group of complex disorders of brain development, characterized by difficulties in social interaction, repetitive behaviors, and verbal and nonverbal communication

cerebral palsy group of disorders characterized by poorly controlled body movements

colostomy surgical procedure to create an opening (stoma) between the colon and the surface of the body

conductive hearing loss hearing loss caused by a faulty transmission of sound waves

developmental disability insufficient development of the brain, resulting in some level of dysfunction or impairment

Down syndrome genetic chromosomal defect that can occur during fetal development and that results in intellectual impairment as well as certain physical characteristics, such as a round head with flat occiput and slanted, wide-set eyes

ileostomy surgical procedure to create an opening (stoma) between the small intestine and the surface of the body

obesity complex condition in which a person has an excessive amount of fat

sensorineural deafness permanent lack of hearing caused by a lesion or damage of the inner ear

shunt tube that drains excess cerebrospinal fluid (CSF) from the brain to another part of the body outside of the brain, such as the abdomen; lowers pressure in the brain

spina bifida a developmental defect in which a portion of the spinal cord or meninges may protrude outside of the vertebrae and possibly even outside of the body, usually at the lower third of the spine in the lumbar area

stoma an opening through the skin and into an organ or other structure

tracheostomy surgical procedure to create an opening (stoma) into the trachea; a stoma in the neck connects the trachea directly to the skin

tracheostomy tube plastic tube placed within the tracheostomy site (stoma)

urostomy surgical procedure to create an opening (stoma) which connects the urinary system to the surface of the skin and allows urine to drain through the abdominal wall

Introduction

Chapter 37: Transport Operations

Abbreviations

Definitions

Introduction

Chapter 38: Vehicle Extrication and Special Rescue

Abbreviations

Definitions

Introduction

Chapter 39: Incident Management

Abbreviations

Definitions

Introduction

Chapter 40: Terrorism Response and Disaster Management

Abbreviations

Definitions

Introduction

Chapter 41: A Team Approach To Health Care

Abbreviations

CRM crew resource management

ems

group in the context of EMS a collection of individual healthcare providers working to health the patient

team in the context of EMS a collection of health care providers who have been assigned specific roles, working interdependently in a coordinated manner under a designated leader

team leader the team member who provides a combination of role-assignment, coordination, oversight, centralized decision making, and support for the team to accomplish its goals and achieve desired results

Potential Test Questions

1. Why do we need a template here?

Because LaTeX is stupid so we have to.

Appendix A: **RPMDDD** for Maryland BLS drugs (2021)

acetaminophen						Tylenol®	
Route	Patient		Med.	Dosage	Date	Doc.	
	<i>is</i>	<i>is not</i>					
PO (oral)	1. >2 years old 2. mild-to-moderate pain*	1. head injury 2. hypotensive 3. taken acetaminophen within the previous 4 hours [†] 4. unable to swallow or take medications by mouth 5. respiratory distress 6. persistent vomiting 7. known or suspected liver disease (including patients suspected of current alcohol ingestion) 8. allergic to acetaminophen 9. ≤ 2 years old	↙	2 – 4 years: 1 x 160 mg 5 – 12 years: 2 x 160 mg >13 years: 4 x 160 mg			
Notes:							
Each unit does is 160 mg							
† This includes many common cold medications							

activated charcoal						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
PO (oral)	1. poisoned via mouth	1. altered mental status 2. [has not] had emetic 3. ingested strong acids or alkalis	↙	1 g / kg		
Notes: Should consult with poison control AND medical consult simultaneously ○ but only <i>physician</i> can prescribe it; <i>poison control</i> may only advise						

Albuterol Proventil® , Ventolin®						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
PO (oral)	1. signs and symptoms of respiratory distress 2. bronchospasm / wheezing associated with: ○ asthma ○ chronic bronchitis ○ emphysema ○ allergic reactions (anaphylaxis)	1. known hypersensitivity	↙	inhaler: adult/child: Max. 2 doses (4 puffs) over 30-mins nebulizer:† (≥2 years): 2.5 mg (<2 years): 1.25 mg		
Notes: Additional doses (all patients) may be administered with medical consultation † I.e. via nebulized aerosol connected to 6-8 lpm of oxygen; may repeat one (1) time						

aspirin						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
PO (oral)	1. suspected acute coronary syndrome (ACS) <i>and / or</i> 2. STEMI	1. a child 2. known hypersensitivity 3. [has not] already received a full dose (324 mg) of aspirin prior to EMS arrival	↙	adult: 324 mg or 325 mg		
Notes: Aspirin treats <i>root cause</i> of ACS/STEMI, whereas nitroglycerin only treats <i>pain</i> * 324 mg = 4 x 81 mg (baby aspirin)						

epinephrine						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
IM (deltoid)	1. Moderate to severe allergic reaction with respiratory distress <i>or</i> mild allergic reaction with history of life-threatening allergic reaction 2. Patients with severe asthma		↙	adult: (≥5 years) 0.5 mg/mL child: (<5 years) 0.15 mg/mL		
IM (lateral thigh)			↘	adult: (≥5 years) 0.3 mg/mL child: (<5 years) 0.15 mg/mL		
	<i>is</i>	<i>is not</i>				
Route	Patient		Med.	Dosage	Date	Doc.
epinephrine (auto-injector)						EpiPen®

Naloxone						Narcan®	
Route	Patient		Med.	Dosage	Date	Doc.	
	<i>is</i>	<i>is not</i>					
IN (intra-nasal)	1. \geq 28 days old 2. in depressed respiratory state induced by opioid/narcotic	1. <28 days old	↙	adult/child: 2 mg IN (1 mg/nare) <i>or</i> 4 mg/0.1 mL dose IN for just 1 nare Repeat as necessary			
Notes: Administer until spontaneous respiration returns, but <i>not</i> to full consciousness Naloxone has a duration of action of <u>40 minutes</u> ; effect of opioid may outlast it. ○ As such, encourage transport. Patient may be aggressive upon regaining conscious							

nitroglycerin						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
SL (sublingual)	1. prescribed nitroglycerin 2. an adult (≥ 13 years old) 3. complaining of angina (chest pain)	1. unprescribed nitroglycerin 2. a child (<13 years old) 3. hypotensive (≤ 90 mmHg <u>systolic</u>) 4. bradycardic (≤ 60 bpm) 5. tachycardic (≥ 150 bpm) 6. [has not] taken <ul style="list-style-type: none"> ○ Adcirca[®] ○ Revatio[®] ○ Viagra[®] ○ Levitra[®] ○ Cialis[®] within last 48 hours 7. [has not] taken 3 doses prior to EMS arrival	↙	SL: 1 tablet <i>or</i> 1 spray Repeat* in 3–5 minutes if chest pain persists Maximum of 3 doses [†]		
Notes: * Must take blood pressure in between doses (although you should be doing that anyway) † Medical consultation is required for: <ul style="list-style-type: none"> ○ <u>systolic</u> blood pressure drops more than 20 mmHg between doses ○ additional doses after the maximum of 3 have been administered Treatment for pulmonary artery hypertension: Adcirca [®] , Revatio [®] Treatment for erectile dysfunction: Viagra [®] , Levitra [®] , Cialis [®]						

oral glucose						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				
buccal	1. altered mental status with history of diabetes 2. unconscious for an unknown reason 3. measured blood glucose <70 mg/dL		↙	adult/child: 10 – 15 g bucally (between gum and cheek)		
Notes: Patients without gag reflex may aspirate Consider single additional dose of oral glucose if not improved after <i>10 minutes</i>						

oxygen						
Route	Patient		Med.	Dosage	Date	Doc.
	<i>is</i>	<i>is not</i>				

inhale	1. hypoxic (<94% SpO ₂) 2. in respiratory distress 3. in cardiopulmonary arrest 4. suspected CO exposure 5. trauma 6. dyspnea	is wearing a MAGA hat	↖	<i>See table below</i>		
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Notes:

% SPO ₂	Indicates		Treatment	
			Oxygenation	Ventilation
94% – 100%	normal		if necessary	no
91% – 93%	mild	hypoxia	nasal cannula 2 – 6 L/min	no
86% – 90%	moderate		100% high-flow O ₂ NRB: 12 – 15 L/min BVM: 15 – 25 L/min <i>(if assisting ventilations)</i>	if necessary
<86%	severe		100% high-flow O ₂ BVM: 15 – 25 L/min	yes

CO exposure: Administer 100% oxygen via NRB mask. Maintain SPO₂ at 100%

Never withhold oxygen from those who need it

High concentrations of oxygen will reduce the respiratory drive in some COPD patients

- give them oxygen and *monitor them carefully*

Procedures

Rapid Trauma Assessment

or

"Is That A Priapism, Or Are You Happy To See Me?"

6: SS BSI MOI/NOI C-Spine POT

Tracheal deviation JVD stoma medical jewelry

cushings triad increased bp decreased bp

Equipment

Appendix A: Drills

Burns

When head displays, suction immediately

Obstetrics

When head displays, suction immediately

Appendix A: Equipment

Glossary

Americans With Disabilities Act (ADA) comprehensive legislation that is designed to protect people with disabilities against discrimination. 2

automated external defibrillator (AED) a device that detects treatable life-threatening cardiac dysrhythmias (ventricular fibrillation and ventricular tachycardia) and delivers the appropriate electrical shock to the patient. 2, 55

advanced EMT (AEMT) an individual who has training in specific aspects of advanced life support, such as intravenous therapy (IV) therapy, and the administration of certain emergency medications. 2

atrial fibrillation (a-fib) upper heart chambers contract irregularly. 55, 57

automated implanted cardioverter-defibrillator (AICD) the technical term for *pacemaker*. 55

advanced life support (ALS) advanced lifesaving procedures, some of which are now being provided by the EMT. 2

basic life support (BLS) noninvasive, emergency lifesaving care that is used to treat medical conditions, including airway obstruction, respiratory arrest, and cardiac arrest. 55

Center for Disease Control and Prevention (CDC) the primary federal agency that conducts and supports public health activities in the United States. The CDC is part of the US Department of Health and Human Services. 5

critical incident stress management system (CISM) a process that confronts the responses to critical incidents and defuses them, directing the emergency services personnel toward physical and emotional equilibrium. 6

central nervous system (cns) division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food. 21

cardiac output (CO) the measure of the volume of blood circulated by the heart in 1 minute; calculated by multiplying the stroke volume by the heart rate. 21, 50

cardiopulmonary resuscitation (CPR) the combination of chest compressions and rescue breathing used to establish adequate ventilation and circulation in a patient who is not breathing and has no pulse. 55

continuous quality improvement (CQI) system of internal and external reviews and audits of all aspects of an EMS system. 2

do not resuscitate (DNR) orders your evaluation of the conditions in which you will be operating. 9

emergency medical dispatch (EMD) a system that assists dispatchers in selecting appropriate units to respond to a particular call for assistance and provides callers with vital instructions until the arrival of EMS crews. 2

emergency medical responder (EMR) the first trained professional, such as police officers, firefighters, lifeguards, or other rescuer, to arrive at the scene of an emergency to provide initial medical assistance. 2

emergency medical services (EMS) a multidisciplinary system that represents the combined efforts of several professionals and agencies to provide prehospital emergency care to the sick and injured. 2

emergency medical technician (EMT) an individual who has training in basic life support, including automated external defibrillation, use of a definitive airway adjunct, and assisting patients with certain medications. 2

Federal Communications Commission (FCC) the federal agency that is jurisdiction over interstate and international telephone and telegraph services and cyclic medications, all of which may involve EMS activity. 14

Health Insurance Portability and Accountability Act (HIPAA) federal legislation passed in 1996; its main effect in EMS is in limiting the availability of patients' healthcare information and penalizing violations of patient privacy. 2

human immunodeficiency virus (HIV) acquired immunodeficiency syndrome (AIDS) is caused by HIV, which damages the cells in the body's immune system so that the body is unable to fight infection or certain cancers. 6

intramuscular (IM) administered via the muscle. 42

intranasal (IN) administered into the nostril (usually via mucosal atomizer device). 42

intraosseous (IO) administered into the bone. 42

impedance threshold device (ITD) a valve device placed between the endotracheal tube and a bag-valve mask that limits the amount of air entering the lungs during the recoil phase between chest compressions. 56

intravenous therapy (IV) the delivery of a medication directly into a vein. 3, 42

load-distributing band (LDB) circumferential chest compression device composed of a constricting band and backboard that is either electrically or pneumatically driven to compress the heart by putting inward pressure on the thorax. 56

metered-dose inhaler (MDI) a device that delivers a consistent amount of medication using a short burst of aerosolized medicine via inhalation. 42

myocardial infarction (MI) heart attack. 42

mechanism of injury (MOI) the forces, or energy transmission, applied to the body that cause injury. 37, 75

nature of illness (NOI) the general type of illness a patient is experiencing. 37

Occupational Safety and Health Administration (OSHA) the federal regulatory compliance agency that develops, publishes, and enforces guidelines concerning safety in the workplace. 7

patient care report (PCR) the legal document used to record all patient care activities. This report has direct patient care functions but also administrative and quality control functions. PCRs are also known as prehospital care reports. 14

protected health information (PHI) any information about health status, provision of health care, or payment for health care that can be linked to an individual. This is interpreted rather broadly and includes any part of a patient's medical record or payment history. 11

per oral (PO) administered by the mouth. 42

personal protective equipment (PPE) protective equipment that blocks exposure to a pathogen or a hazardous material. 7

per rectum (PR) administered by the rectum. 42

posttraumatic stress disorder (PTSD) a delayed stress reaction to a prior incident. Often the result of one or more unresolved issues concerning the incident, and may relate to an incident that involved physical harm or the threat of physical harm. 7

revised trauma score (RTS) a scoring system used for patients with head trauma. 76

subcutaneous (SC) administered under the skin. 42

sublingual (SL) under the tongue; a medication route. 42

ultra-high frequency (UHF) radio frequencies between 300 and 3,000 MHz. 15

ventricular fibrillation (v-fib) disorganized, ineffective quivering of the ventricles, resulting in no blood flow and a state of cardiac arrest. 56, 57

very high frequency (VHF) radio frequencies between 30 and 300 MHz; the VHF spectrum is further divided into “high” and “low” bands. 15

ventricular tachycardia (v-tac) rapid heart rhythm in which the electrical impulse begins in the ventricle (instead of the atrium), which may result in inadequate blood flow and eventually deteriorate into cardiac arrest. 56, 57

apparent life-threatening event event that causes unresponsiveness, cyanosis, and apnea in an infant, who then resumes breathing with stimulation. 105

autonomic nervous system division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food. 20

autism spectrum disorder group of complex disorders of brain development, characterized by difficulties in social interaction, repetitive behaviors, and verbal and nonverbal communication. 111

adenosine triphosphate the nucleotide involved in energy metabolism; used to store energy. 19

blood pressure pressure that the blood exerts against the walls of the arteries as it passes through them. 21

cerebrospinal fluid fluid produced in the ventricles of the brain that flows in the subarachnoid space and bathes the meninges. 22

Glasgow Coma Scale an evaluation tool used to determine level of consciousness, which evaluates and the signs point values (scores) for eye opening, verbal response, and motor response, which are then totaled; effective in helping predict patient outcomes. 75

heart rate number of heartbeats during a specific time (usually 1 minute). 24

intracranial pressure the pressure within the cranial vault. 88

jugular vein distention a visual bulging of the jugular veins in the neck that can be caused by fluid overload, pressure in the chest, cardiac tamponade, or tension pneumothorax. 109

mobile integrated healthcare a method of delivering health care which involves providing health care within the community rather than at a physician’s office or hospital. 3

methicillin-resistant *Staphylococcus aureus* a bacterium that causes infections in different parts of the body and is often resistant to commonly used antibiotics; can be found on the skin and in surgical wounds, the bloodstream, lungs, and urinary tract. 109

pediatric assessment triangle a structured assessment tool used to rapidly form a general impression of the infant or child without touching him or her; consists of assessing appearance, work of breathing, and circulation to the skin. 106

primary service area the designated area in which the EMS agency is responsible for the provision prehospital emergency care and transportation to the hospital. 3

respiratory syncytial virus highly contagious virus that causes an infection of the upper and lower respiratory system. 110

sudden infant death syndrome death of an infant or young child that remains unexplained after a complete autopsy. 107

systemic vascular resistance resistance that blood must overcome to be able to move within the blood vessels; related to the amount of dilation or constriction in the blood vessel. 30

stroke volume volume of blood pumped forward with each ventricular contraction. 29

traumatic brain injury a traumatic injury to the brain capable of producing physical, intellectual, emotional, social, and vocational changes. 88

urinary tract infection a bacterial infection that affects the urinary tract. 110

vancomycin-resistant enterococci bacterium that is normally present in the human intestines and the female reproductive tract, but which can cause infection and which is resistant to the antibiotic vancomycin. 110

AVPU scale a method of assessing the level of consciousness by determining whether the patient is awake and alert, responsive to verbal stimuli or pain, or unresponsive; used principally early in the assessment process. 36

a-fib atrial fibrillation. 55, 57, 133, 181

AAA abdominal aortic aneurysm. 108

abandonment unilateral termination of care by the EMT without the patient's consent and without making provisions for transferring care to another medical professional with the skills and training necessary to meet the needs of the patient. 8

ABC airway (obstruction)
breathing (respiratory arrest)
circulation (cardiac arrest). 54

abdomen the body cavity that contains the major organs of digestion and excretion. It is located below the diaphragm and above the pelvis. 19

abdominal aortic aneurysm a rapidly fatal condition in which the walls of the aorta in the abdomen weaken and blood leaks into the layers of the vessel, causing it to bulge. 108, 110

abrasion loss or damage of the superficial layer of skin as a result of a body part rubbing or scraping across a rough or hard surface. 81

abruptio placenta premature separation of the placenta from the wall of the uterus. 102

absorption the process by which medications travel through body tissues to the bloodstream. 41

accessory muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 36, 40

acetabulum depression on the lateral pelvis where the three component bones join, in which the femoral head fits snugly. 19

action the therapeutic effect that a medication is expected to have on the body. 41

active compression decompression CPR technique that involves compressing the chest and then actively pulling it back up to its neutral position and beyond. 55

acute stress reactions reactions to stress that occur during a stressful situation. 5

ADA Americans With Disabilities Act. 1, 2, 133, 181

Adam's apple a firm prominence of cartilage that forms the upper part of the larynx. It is more prominent in men than in women. 19

adolescent a young person between 12 and 18 years of age. 33, 105

adrenal gland endocrine gland located on top of each kidney that releases adrenaline when stimulated by the sympathetic nervous system. 19

adrenaline another name for epinephrine. 20

adrenergic pertaining to nerves that release the neurotransmitter norepinephrine, or noradrenalin (such as adrenergic nerves, adrenergic response); also pertains to the receptors acted on by norepinephrine. 20

advance directive written documentation that specifies medical treatment for a competent patient should the patient become unable to make decisions; also called a living will or health care directive. 8, 10, 11, 108, 109, 155, 160, 203, 208

AED automated external defibrillator. ii, 1, 2, 54, 55, 58–60, 133, 181

AEMT advanced EMT. 1, 2, 133, 181

aerobic metabolism metabolism that can proceed only in the presence of oxygen. 20

afterload force a resistance against which the heart pumps. 50

agonal gasps abnormal breathing pattern characterized by slow, gasping breaths, sometimes seen in patients in cardiac arrest. 20

agonist medication that causes stimulation of receptors. 41

AHA American Heart Association. 54, 57

AICD automated implanted cardioverter-defibrillator. 54–56, 59, 133, 165, 181, 213

AIDS acquired immunodeficiency syndrome. 5, 6, 134, 182

air embolism the presence of air in the veins, which can lead to cardiac arrest if it enters the heart. 84, 96, 99

airborne transmission the spread of an organism via droplets or dust. 5

alpha-adrenergic receptors portions of the nervous system that, when stimulated, can cause constriction of the blood vessels. 20

ALS advanced life support. 1–3, 54, 57, 58, 63, 133, 165, 181, 213

ALTE apparent life-threatening event. 105, 136, 184

altered mental status any deviation from alert and oriented to person, place, time, and event, or any deviation from a patient's normal baseline mental status. 36

alveoli air sacs of the lungs in which the exchange of oxygen and carbon dioxide takes place. 20

ambient temperature the temperature of the surrounding environment. 96, 99

amniotic sac the fluid-filled, baglike membrane in which the fetus develops. 102

amputation an injury in which part of the body is completely severed. 81

anaerobic metabolism the metabolism that takes place in the absence of oxygen; the main byproduct is lactic acid. 20

anaphylactic shock severe shock caused by an allergic reaction. 50

anaphylaxis in extreme life-threatening systemic allergic reaction that may include shock and respiratory failure. 50

anatomic position the position of reference in which the patient stands facing forward, arms at the side, with the palms of the hands forward. 20

anemic describes a condition in which the patient has too few red blood cells, resulting a decreased ability to transport oxygen throughout the body via the bloodstream. 102

aneurysm a swelling or enlargement of a part of an artery resulting from weakening of the arterial wall. 50, 108

anisocoria naturally occurring uneven pupil size. 84

anoxia absence of oxygen. 55

ANS autonomic nervous system. 19, 20, 50, 136, 184

antagonist medication that binds to a receptor and blocks other medications or chemicals from attaching there. 41

anterograde amnesia inability to remember events after an injury. 87, 88, 167, 215

antivenin a serum that counteracts the effect of venom from an animal or insect. 96, 99

aorta the main artery that receives blood from the left ventricle and delivers it to all the other arteries that carry blood to the tissues of the body. 20, 78, 108

aortocaval compression relating to the aorta and the vena cava. 55

Apgar score a scoring system for assessing the status of a newborn that assigns a number value to each of five areas. 102

apneic absence of spontaneous breathing. 55

appendicular skeleton the portion of the skeletal system that comprises the arms, legs, pelvis, and shoulder girdle. 20

appendix a small, tubular structure that is attached to the lower border of the cecum in the lower right quadrant of the abdomen. 20

applied ethics the manner in which principles of ethics are incorporated into professional conduct. 8

arterial air embolism air bubbles in the arterial blood vessels. 75

arteriole the smallest branch of arteries leading to the vast network of capillaries. 20, 78

arteriosclerosis a disease that causes the arteries to thicken, harden, and calcify. 108

artery a blood vessel, consisting of three layers of tissue and smooth muscle, that carries blood away from the heart. 20, 78

articular cartilage a pearly layer specialized cartilage covering the articular surfaces (contact surfaces on the ends) of bones in synovial joints. 20

ascites fluid in the abdomen. 108

ASD autism spectrum disorder. 111, 136, 184

assault unlawfully placing a patient in fear of bodily harm. 8

atherosclerosis an accumulation of fat and cholesterol in the arteries. 108

ATP adenosine triphosphate. 19, 136, 184

atrium one of the two upper chambers of the heart. 20

auscultate to listen to sounds within an organ with a stethoscope. 36

AVPU Alert Verbal Pain Unresponsive. 36, 137, 185

avulsion an injury in which soft tissue is torn completely loose or is hanging as a flap. 81

axial loading injury injuries in which load is applied along the vertical or longitudinal axis of the spine, which results in [the] load being transmitted along the entire length of the vertebral column; for example, falling from a height and landing on the feet in an upright position. 87

axial plane see: transverse plane. 31, 177, 225

axial skeleton the part of the skull to comprising the skull, spinal column, and rib cage. 20

ball-and-socket joint a joint that allows internal and external rotation, as well as bending. 21

base station any radio hardware containing a transmitter and receiver that is located in a fixed place. 13

basilar skull fracture usually occur following diffuse impact to the head (such as falls, motor vehicle crashes); generally result from extension of a linear fracture to the base of the skull and could be difficult to diagnose with a radiograph. 87

Battle sign bruising behind an ear over the mastoid process that may indicate a skull fracture. 87

bedsore another name for a decubitus ulcer. 108

bends See decompression sickness. 96, 99

beta-adrenergic receptors portions of the nervous system that, when stimulated, can cause an increase in the force of contraction of the heart, an increased heart rate, and bronchial dilation. 21

biceps the large muscles that cover the front of the humerus. 21

bile duct the duct that conveys bile between the liver and the intestine. 21

bioethics the study of ethics related to issues that arise in health care. 8

birth canal the vagina and cervix. 102

blanch to turn white. 105

blood-borne pathogens pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus (HIV). 5

bloody show a small amount of blood in the vagina that appears at the beginning of labor and may include a plug of pink-tinged mucus that is discharged when the cervix begins to dilate. 102

blow-out fracture a fracture of the orbit or of the bones that support the floor of the orbit. 84

BLS basic life support. ii, 1, 54, 55, 57, 133, 181

blunt trauma an impact on the body by objects that cause injury without penetrating soft tissues or internal organs and cavities. 75, 84

BP blood pressure. 21, 136, 184

brachial artery the major blood vessel in the upper extremities that supplies blood to the arm. 21

bradycardia a slow heart rate, less than 60 beats/min. 57

bradypnea slow respiratory rate; ominous sign in a child that indicates impending respiratory arrest. 105

brain the controlling organ of the body and center of consciousness; functions include perception, control of reactions to the environment, emotional responses, and judgment. 21

brainstem the area of the brain between the spinal cord and cerebrum, surrounded by the cerebellum; controls functions that are necessary for life, such as respiration. 21

breach of confidentiality disclosure of information without proper authorization. 8

breath holding syncope loss of consciousness caused by a. 96, 99

breech presentation a delivery in which the buttocks come out first. 102

bronchiolitis inflammation of the bronchioles that usually occurs in children younger than 2 years and is often caused by the respiratory syncytial virus. 105

bronchodilator . 65

bronchodilator . 65

bronchospasm . 65

burn injury in which soft tissue damage occurs as a result of thermal heat, frictional heat, toxic chemicals, electricity, or nuclear radiation. 81

BVM bag-valve mask. 54

capillary a small blood vessel that connects arterials and venules; various substances pass through capillary walls, into and out of the interstitial fluid, and then on to the cells. 21, 78

capillary vessels tiny blood vessels between the arterials and venules that permit transfer of oxygen, carbon dioxide, nutrients, and waste between body tissues and the blood. 21

capsule gelatin shells filled with powdered or liquid medication. 41

carbon dioxide retention a condition characterized by a chronically high blood level of carbon dioxide. 65

cardiac muscle the heart muscle. 21

cardiac tamponade compression of the heart is a result of the buildup of blood or other fluid in the pericardial sac leading to decreased cardiac output. 50, 91

cardiogenic shock a state in which not enough oxygen is delivered to the tissues of the body caused by low output of blood from the heart it may be a severe complication of an large acute myocardial infection as well as other conditions. 50

carotid artery the major artery that supplies blood to the head and brain. 21

cartilage the smooth connective tissue that forms the support structure of the skeletal system and provides cushioning between bones; also forms the nasal septum and portions of the outer ear. 21

cataracts clouding of the lens of the eye or its surrounding transparent membranes. 108

cavitation a phenomenon in which speed causes a bullet to generate pressure waves which cause damage distant from the bullets path. 75

CDC Center for Disease Control and Prevention. 5, 7, 37, 133, 174, 181, 222

cecum the first part of the large intestine, into which the ileum opens. 21

cellular telephone a low-power portable radio that communicates through an interconnected series of repeater stations called “cells”. 13

central pulses pulses that are closest to the core (central) part of the body where the vital organs are located; include the carotid, femoral, and apical pulses. 105

cerebellum one of the three major subdivisions of the brain, sometimes called the ‘little brain’; coordinates the various activities of the brain, particularly fine body movements. 22

cerebral edema swelling of the brain. 87

cerebral palsy group of disorders characterized by poorly controlled body movements. 111

cerebrum the largest part of the three subdivisions of the brain, sometimes called the gray matter; made up of several lobes that control movement, hearing, balance, speech, visual perception, emotions, and personality. 22

certification a process in which a person, an institution, or a program is evaluated and recognized as meeting certain predetermined standards to provide safe and ethical care. 2, 8

cervical spine the portion of the spinal column consisting of the first seven (7) vertebrae that lie in the neck. 22

cervix narrowest portion of the uterus that opens into the vagina. 102

channel an assigned frequency or frequencies that are used to carry voice and/or data communications. 13

child abuse a general term applying to all forms of abuse and neglect of children. 105

chordae tendineae thin bands of fibrous tissue that attach to the valves in the heart and prevent them from inverting. 22

chyme the substance that leaves the stomach; it is a combination of all the eaten foods with added stomach acids. 22

circulatory system the complex arrangement of connected tubes, including the arteries, arterioles, capillaries, venules, and veins, that moves blood, oxygen, nutrients, carbon dioxide, and cellular waste throughout the body. 22

CISM critical incident stress management system. 5, 6, 133, 181

clavicle the collar bone; it is lateral to the sternum and anterior to the scapula. 22

closed abdominal injury an injury in which there is soft tissue damage inside the body but the skin remains intact. 94

closed chest injury an injury to the chest in which the skin is not broken usually caused by blunt trauma. 91

closed head injury injury in which the brain has been injured but the skin has not been broken and there is no obvious bleeding. 87

closed injury injury in which damage occurs beneath the skin or mucous membrane but the surface of the skin remains intact. 81

closed-ended questions questions that can be answered in short bursts single word responses. 13

cns central nervous system. 19, 21, 50, 133, 181

CO cardiac output. 19, 21, 50, 133, 181

coagulation the formation of clots of plug openings in injured blood vessels and stop blood flow. 78

coccyx the last three or four (3-4) vertebrae of the spine; the 'tail bone'. 22

colostomy surgical procedure to create an opening (stoma) between the colon and the surface of the body. 111

commotio cordis a blunt chest injury caused by a sudden, direct blow to the chest that occurs only during the critical portion of a person's heartbeat. 91

communicable disease a disease that can be spread from one person or species to another. 5

communication the transmission of information to another person— verbally or through body language. 13

community paramedicine a health care model in which experienced paramedics receive advanced training to equip them to provide additional services in the pre-hospital environment, such as health evaluations, monitoring of chronic illnesses or conditions, and patient advocacy. 2

compartment syndrome swelling in a confined space that produces dangerous pressure; may cut off blood flow or damage sensitive tissue. 81

compensated shock the early stage of shock in which the body could still compensate for blood loss. 50

compensatory damages damages awarded in a civil lawsuit that are intended to restore the plaintiff to the same condition that he or she was in prior to the incident. 8

competent able to make rational decisions about personal well-being. 8

concealment the use of objects to limit a person's visibility of you. 5

concussion a temporary loss or alteration of part or all of the brain's abilities to function without actual physical damage to the brain. 87

conduction the transparent tissue layer in front of the pupil and iris of the eye. 96, 99

conductive hearing loss hearing loss caused by a faulty transmission of sound waves. 111

conjunctiva the delicate membrane that lines the eyelids and covers the exposed surface of the eye. 84

conjunctivitis inflammation of the conjunctiva. 84

consent permission to render care. 9

contamination the presence of infectious organisms on or in objects such as dressings, water, food, needles, wounds, or patient's body. 5, 81

contraindication when a medication would either harm the patient or have no positive effect. 41

contributory negligence a legal defense that may be raised when the defendant feels that the conduct of the plaintiff somehow contributed to any injuries or damages sustained by the plaintiff. 9

contusion a bruise from an injury that causes bleeding beneath the skin without breaking the skin; see also ecchymosis. 78, 81

convection a branch of the internal auditory canal that connects the middle ear to the oropharynx. 96, 99

core temperature the ear canal; leads to the tympanic membrane. 96, 99

cornea the transparent tissue layer in front of the pupil and iris of the eye. 84

coronal plane an imaginary plane where the body is divided into front and back parts. 22

coup-contrecoup brain injury a brain injury that occurs when force is applied to the head and energy transmission through brain tissue causes injury on the opposite side of the original impact. 75

coup-contrecoup brain injury dual impacting of the brain into the skull; coup injury occurs at the point of impact; contrecoup injury occurs on the opposite side of the impact as the brain rebounds. 87

cover the tactical use of an impenetrable barrier for protection. 6

CPR cardiopulmonary resuscitation. ii, 54, 55, 57–63, 134, 138, 182, 186

CQI continuous quality improvement. 2, 134, 182

cranium the area of the head above the ears and eyes; the skull; the cranium contains the brain. 22

credentialing an established process to determine the qualifications necessary to be allowed to practice a particular profession, or to function as an organization. 9

crepitus a grating or grinding sensation caused by fractured bone ends or joints rubbing together; also air bubbles under the skin that produce a crackling sound or crinkly feeling. 91

cricothyroid membrane A tubular structure. 22

crioid cartilage A tubular structure. 22

CRM crew resource management. 118

croup an inflammatory disease of the upper respiratory system that may cause a partial airway obstruction and is characterized by a barking cough; usually seen in children. 105

crowning the appearance of the fetus's head at the vaginal opening during labor. 102

crush syndrome significant metabolic derangement that develops with crushed extremities or body parts remain trapped for prolonged periods. This can lead to renal failure and death. 81

crushing injury an injury that occurs when a great amount of force is applied to the body. 81

CSF cerebrospinal fluid. 22, 111, 112, 136, 172, 184, 220

cultural imposition when one person poses his or her beliefs, values, and practices on another because he or she believe his or her ideals are superior. 13

cumulative stress reactions prolonged or excessive stress. 6

cyanosis a blue-gray skin color that is caused by reduced level of oxygen in the blood. 51, 55

dead space any portion of the airway that does not contain air and cannot participate in gas exchange, such as the trachea and bronchi. 22

deceleration the slowing of an object. 75

decision-making capability ability to understand and process information and make a choice regarding appropriate medical care. 9

decompensated shock the late stage of shock when blood pressure is falling. 51

decompression sickness the eyeball. 96, 99, 142, 190

decubitus ulcer a sore caused by the pressure of skin against a surface for long periods; can range from a pink discoloration of the skin to a deep wound that may invade into bone or organs; also known as a bedsore. 108

dedicated line a special telephone line that is used for a specific point-to-point communications; also known as a hotline. 13

deep venous thrombosis the formation of a blood clot within the larger veins of an extremity, typically following a period of prolonged immobilization. 109

defamation the communication of false information about a person that is damaging to that person's reputation or standing in the community. 9

dehydration loss of water from the tissues of the body. 51

delayed stress reactions reactions to stress that occur after a stressful situation. 6

delirium a sudden change in mental status marked by the inability to focus, think logically, and maintain attention; this condition is generally acute and reversible. 109

dementia the slow onset of progressive disorientation, shorten attention span, and loss of cognitive function; this condition is generally chronic and irreversible. 109

dependent edema . 65

dependent lividity blood settling to the lowest point of the body, causing discoloration of the skin; a definite sign of death. 9

depositions oral questions asked of parties and witnesses under oath. 9

dermis the inner layer of the skin, containing hair follicles, sweat glands, nerve endings, and blood vessels. 22, 81

designated officer the individual in the department who is charged with the responsibility of managing exposures and infection control issues. 6

developmental disability insufficient development of the brain, resulting in some level of dysfunction or impairment. 111

diaphoretic characterized by light or profuse sweating. 42, 55

diaphragm muscular dome that forms the undersurface of the thorax, separating the chest from the abdominal cavity. Contraction of this (and the chest wall muscles) brings air into the lungs. Relaxation allows air to be expelled from the lungs. 22

diastole relaxation, or period of relaxation, of the heart, especially of the ventricles. 22

diffusion movement of gas from an area of higher concentration to an area of lower concentration. 23

digestion processing of food that nourishes the individual cells of the body. 23

direct contact exposure a transmission of a communicable disease from one person to another by physical contact. 6

directive unlawfully touching a patient or providing emergency care without consent. 8

discovery the phase of a civil lawsuit where the plaintiff and the defense obtain information from each other that will enable the attorneys to have a better understanding of the case and which will assist in preparing for trial. Discovery includes depositions, interrogatories, and demands for production of records. 9

distributive shock a condition that occurs when there is widespread dilation of the small arterioles small venules or both. 51

diuretic . 65

diving reflex the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color. 96, 99

DNR do not resuscitate. 8, 9, 134, 182

documentation the recorded portion of the EMT's patient interaction either written or electronic. This becomes part of the patient's permanent medical record. 14

dorsalis pedis artery artery on the anterior surface of the foot between the first and second metatarsals. 23

dose the amount of the medication that is given. 42

Down syndrome genetic chromosomal defect that can occur during fetal development and that results in intellectual impairment as well as certain physical characteristics, such as a round head with flat occiput and slanted, wide-set eyes. 111

drag resistance that slows a projectile, such as air. 75

drowning the glands that produce fluids to keep the eye moist; also called tear glands. 96, 99

duplex the ability to transmit and receive simultaneously. 14

durable power of attorney for health care a type of advance directive executed by a competent adult that appoints another individual to make medical treatment decisions on his or her behalf, in the event that the person making the appointment loses decision-making capability. 9, 10, 155, 203

duty to act a medicolegal term relating to certain personnel who either by statute or by function have a responsibility to provide care. 9

dyspnea difficulty or trouble breathing. 55, 65, 109

ecchymosis a buildup of blood beneath the skin that produces a characteristic blue or black discoloration as the result of an injury; also see contusion. 78, 81

eclampsia severe hypertension in a pregnant woman, resulting in seizures (convulsions). 102

ectopic pregnancy a pregnancy that develops outside the uterus, typically in a fallopian tube. 102

edema the presence of abnormally large amounts of fluid between cells in body tissues, causing swelling of the affected area. 51

elder abuse any action on the part of an older person's family member, caregiver, or other associated person that takes advantage of the older person's person, property, or emotional state. 109

emancipated minor a person who is under the legal age in a given state but, because of other circumstances, is legally considered an adult. 9

embryo the early stage of development after the fertilization of the egg (first 10 weeks). 102

EMD emergency medical dispatch. 1, 2, 134, 182

emergency a serious situation, such as injury or illness, that threatens the life or welfare of a person or group of people and requires immediate intervention. 9

emergency doctrine the principle of law that permits a health care provider to treat a patient in an emergency situation when the patient is incapable of granting consent because of an altered level of consciousness, disability, the effects of drugs or alcohol, or the patient's age. 9

emergency medical care immediate care or treatment. 9

EMR emergency medical responder. 1, 2, 134, 182

EMS emergency medical services. 1–3, 10, 14, 118, 134, 137, 155, 161, 163, 176, 182, 185, 203, 209, 211, 224

EMT emergency medical technician. v, 1–3, 8, 44, 47, 48, 63, 134, 137, 161, 170, 182, 185, 209, 218

endocrine system complex message and control system that integrates many of the body's functions, including the release of hormones. 23

endometrium the lining of the inside of the uterus. 102

enteral absorbed via the digestive system. 42

enzyme substance designed to speed up the rate of specific biochemical reactions; a biological catalyst. 23

epidermis the outer layer of skin that acts as a watertight protective covering. 23, 82

epidural hematoma an accumulation of blood between the skull and the dura mater. 88

epiglottis A tubular structure. 23

epiglottitis a disease in which the epiglottis becomes inflamed and enlarged and may cause an upper airway obstruction. 105

epinephrine hormone produced by the adrenal medulla that has a vital role in the function of the sympathetic nervous system. Also called adrenaline. 23

epistaxis a nosebleed. 78

esophagus collapsible tube that extends from the pharynx to the stomach; muscle contractions propel food and liquids through it to the stomach. 23

ethics the philosophy of right and wrong, of moral duties, and of ideal professional behavior. 10

ethnocentrism when a person considers his or her own cultural values is more important when interacting with people of different culture. 14

eustachian tube a branch of the internal auditory canal that connects the middle ear to the oropharynx. 84

evaporation the prominent bony mass at the base of the skull about 1 inch posterior to the external opening of the ear. 99

evisceration the displacement of organs outside the body. 82, 94

excited delirium a serious behavior condition in which a person exhibits agitated behavior combined with disorientation, hallucinations, or delusions; also called agitated delirium or exhaustive mania. 82

expiratory reserve volume amount of air that can be exhaled following a normal exhalation; average volume is about 1200 mL in the average adult male. 23

exposure a situation in which a person has contact with blood, body fluids, tissues, or airborne particles in a matter that suggest disease transmission may occur. 6

expressed consent a type of consent in which a patient gives verbal or nonverbal authorization for provision of care or transport. 10

extension the straightening of a joint. 23

external auditory canal the ear canal; leads to the tympanic membrane. 84

eyes forward position a head position in which the patient's eyes are looking straight ahead and the head and torso are in line. 88

fallopian tubes long, slender tubes that extend from the uterus to the region of the ovary on the same side and through which the ova pass from the ovary to the uterus. 23

false imprisonment the confinement of a person without legal authority or the person's consent. 10

fascia fiberlike connective tissue that covers arteries, veins, tendons, and ligaments. 82

FCC Federal Communications Commission. 13, 14, 134, 182

femoral artery the major artery of the thigh, a continuation of the external iliac artery. It supplies blood to lower abdominal wall, external genitalia, and legs. It can be palpated to the groin area. 23

femoral head proximal end of the femur, articulating with the acetabulum to form the hip joint. 23

femur the longest and one of the strongest bones in the body. Also called the thighbone.. 23

fetal alcohol syndrome a condition caused by the consumption of alcohol by a pregnant woman; characterized by growth and physical problems, mental retardation, and a variety of congenital abnormalities. 102

fetus the developing, unborn infant inside the uterus, from 10 weeks after fertilization until birth. 103

flail chest a condition which three or more ribs are fractured into two or more places or in association with the fracture of the sternum so that a segment of the chest wall is effectively detached from the rest of the thoracic cage. 91

flame burn a burn caused by an open flame. 82

flank the region below the rib cage above the hip. 94

flash burn a burn caused by exposure to very intense heat such as in an explosion. 82

flexion bending of a joint. 23

flutter valve a one-way valve that allows air to leave the chest cavity but not return; formed by keeping three sides of an occlusive dressing to the chest wall, leaving the fourth site open as a valve; may also be part of a commercial vented occlusive dressing. 91

focused assessment a type of physical assessment typically performed on patients who have sustained nonsignificant mechanisms of injury or on responsive medical patients. This type of examination is based on the chief complaint and focuses on one body system or part. 36

fontanelles areas where the neonate's or infant's skull has not fused together; usually disappear at approximately 18 months of age. 33, 105

foodborne transmission the contamination of food or water with an organism that can cause disease. 6

foramen magnum large opening at the base of the skull through which the brain connects to the spinal cord. 23

forcible constraint the act of physically preventing an individual from initiating any physical action. 10

four-person log roll the recommended procedure for moving a patient with a suspected spinal injury from the ground to a long backboard or other spinal immobilization device. 88

frontal bone portion of the cranium that forms the forehead. 23

frostbite damage to tissues as the result of exposure to cold; frozen or partially frozen body parts are frostbitten. 99

full thickness burns that affect all skin layers and may affect the subcutaneous layers, muscle, bone, and internal organs, leaving the area dry, leathery, and white, dark brown, or charred
Also called a *third-degree burn*. 82

fundus part of a hollow organ that is farthest from the opening. 55, 103

gallbladder a sac on the under surface of the liver that collects bile from the liver and discharges it into the duodenum through the common bile duct. 24

gastric distention a condition in which air fills the stomach, often as a result of high volume and pressure during artificial ventilation. 55

GCS Glasgow Coma Scale. 75, 78, 136, 184

general adaptation syndrome the body's response to stress that begins with alarm response, followed by a stage of reaction and resistance, then recovery or, if distress is prolonged, exhaustion. 6

general impression the overall initial impression that determines the priority for patient care; based on the patient's surroundings, the mechanism of injury (MOI), signs and symptoms, and the chief complaint. 36

generalized tonic clonic seizure a seizure that features rhythmic back-and-forth motion of an extremity and body stiffness. 106

generic name the original chemical name of a medication (in contrast with one of its proprietary, or trade name); the name is not capitalized. 42

genital system reproductive system in men and women. 24

geriatrics the assessment and treatment of disease in someone who is 65 years or older. 109

germinal layer deepest layer of the epidermis where new skin cells are formed. 24

gestational diabetes diabetes that develops during pregnancy in women who did not have diabetes before pregnancy. 103

globe the eyeball. 84

Good Samaritan law statutory provisions enacted by many states to protect citizens from liability for errors and omissions in giving good faith emergency medical care, unless there is wanton, gross, or willful negligence. 10

government immunity legal doctrine that can protect an EMS provider from being sued or which may limit the amount of the monetary judgement that the plaintiff may recover; generally applies only to EMS systems that are operated by municipalities or other governmental entities. 10

greater trochanter bony prominence on the proximal lateral side of the thigh, just below the hip joint. 24

gross negligence conduct that constitutes a willful or reckless disregard for a duty or standard of care. 10

group in the context of EMS a collection of individual healthcare providers working to health the patient. 118

grunting an "uh" sound heard during exhalation; reflects the child's attempt to keep the alveoli open; a sign of increased work of breathing. 106

guarding involuntary muscle contractions of the abdominal wall to minimize the pain of abdominal movement; a sign of peritonitis. 94

hair follicles small organs that produce hair. 24

head tilt-chin lift maneuver a combination of two movements to open the airway by tilting the forehead back and lifting the chin; not used for trauma patients. 55

health care directive See: advance directive. 10, 109

health care proxies a type of advance directive executed by a competent adult that appoints another individual to make medical decisions on his or her behalf in the event that the person making the appointment loses decision-making capacity. Also known as durable power of attorney for health care. 10

heart hollow muscular organ that pumps blood throughout the body. 24

heat cramps the external, visible part of the ear. 99

heat exhaustion the circular opening in the middle of the iris that admits light to the back of the eye. 99

heat stroke the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain. 100

hematemesis vomited blood. 78

hematoma a mass of blood that has collected within damaged tissue beneath the skin or in a body cavity. 78, 82

hematuria blood in the urine. 78, 94

hemophilia a hereditary condition in which the patient lacks one or more of the blood's normal clotting factors. 79

hemopneumothorax the accumulation of blood and air in the pleural space of the chest. 91

hemoptysis the coughing up of blood. 79, 109

hemorrhage bleeding. 79

hemostatic agent a chemical compound that slows or stops bleeding by assisting with clot formation. 79

hemothorax the collection of blood in the pleural cavity. 91

hepatitis inflammation of the liver, usually caused by viral infection, it causes fever, loss of appetite, jaundice, fatigue, and altered liver function. 6

hinge joint joint that can bend and straighten but cannot rotate; restricted to motion in one plane. 24

HIPAA Health Insurance Portability and Accountability Act. 1, 2, 134, 182

HIV human immunodeficiency virus. 5, 6, 134, 182

hollow organs structures through which materials pass, such as the stomach, small intestines, large intestines, ureters, and urinary bladder. 94

homeostasis a balance of all systems of the body. 51, 100

hormone substance formed in specialized organs or glands and carried to another organ or group of cells in the same organism; they regulate many body functions, including metabolism, growth, and body temperature. 24

host the organism or individual is attacked by the infecting agent. 6

hotline see: dedicated line. 14

HR heart rate. 19, 24, 136, 184

humerus supporting bone of the upper arm. 24

hydrostatic pressure pressure water against the walls of its container. 24

hypercarbia increased level of carbon dioxide (CO₂) in the bloodstream. 55

hypertension blood pressure that is higher than the normal range. 37, 65

hyperventilation Rapid or deep breathing that lowers the blood carbon dioxide (CO₂) level below normal. 55

hypoglycemia extremely low blood sugar. 42

hypoperfusion another term for shock. 24, 51, 79

hypotension blood pressure that is lower than the normal range. 55

hypothermia condition in which the internal body temperature falls below 95°F (35°C). 36, 51

hypovolemic shock shock caused by fluid or blood loss. 51, 79

hypoxia a dangerous condition in which the body's tissues and cells do not have enough oxygen. 56

hypoxic drive A condition in which chronically low. 24

ICP intracranial pressure. 87, 88, 136, 184

ileostomy surgical procedure to create an opening (stoma) between the small intestine and the surface of the body. 111

ileum one of the three bones the fuse to form the pelvic ring. 24

IM intramuscular. 41, 42, 134, 182

immune the body's ability to protect itself from acquiring a disease. 6

implied consent type of consent in which a patient who is unable to give consent is given treatment under the legal assumption that he or she would want treatment. 10

IN intranasal. 41, 42, 134, 182

in loco parentis refers to the legal responsibility of a person or organization to take on some of the functions and responsibilities of a parent. 10

index of suspicion awareness that unseen life-threatening injuries may exist when determining the mechanism of injury. 75

indications reasons or conditions for which a particular medication is given. 42

indirect contact exposure or transmission of a disease from one person to another by contact with a contaminated object. 6

infancy the first year of life. 106

infection the abnormal invasion of a host or host tissues by organisms such as bacteria, viruses, or parasites, with or without signs or symptoms of disease. 6

infection control procedures to reduce transmission of infection among patients and healthcare personnel. 6

infectious disease a medical condition caused by the growth and spread of small, harmful organisms within the body. 6

inferior vena cava one of the two largest veins in the body; carries blood from the lower extremities and the pelvic and the abdominal organs to the heart. 24

informed consent permission for treatment given by a competent patient after the potential risks, benefits, and alternatives to treatment have been explained. 10

inhalation administered via inhalation into the lungs. 42

inspiratory reserve volume amount of air that can be inhaled after normal inhalation; the amount of air that can be inhaled in addition to the normal tidal volume. 24

intercostal muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 24, 33

interrogatories written questions that the defense and plaintiff send to one another. 10

interstitial space space in between the cells. 24

intervertebral disc the cushion that lies between two vertebrae. 88

intracerebral hematoma bleeding within the brain (parenchyma) itself; also referred to as an intraparenchymal hematoma. 88

intrapulmonary shunting a condition where blood bypassing of oxygen-poor blood past nonfunctional alveoli to the left side of the heart. 40

intrathoracic within the chest (thoracic) cavity. 56

involuntary activity actions of the body that are not under a person's conscious control. 88

involuntary muscle muscle over which a person has no conscious control. It is found in many automatic regulating systems of the body. 24

IO intraosseous. 41, 42, 134, 182

iris the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color. 84

ischemia decreased oxygen supply. 56

ischium one of three bones that fuse to form the pelvic ring. 24

ITD impedance threshold device. 54, 56, 134, 182

IV intravenous therapy. 1-3, 41, 42, 54, 57, 133, 135, 181, 183

jaw-thrust maneuver technique to open the airway by placing the fingers behind the angle of the jaw and bringing the jaw forward; use for patients who may have a cervical spine injury. 56

joint (articulation) place where two bones come into contact. 25

joint capsule fibrous sac that encloses a joint. 25

JVD jugular vein distention. 108, 109, 136, 184

kidnapping the seizing, confining, abducting, or carrying away of a person by force, including transporting a competent adult for medical treatment without his or her consent. 10

kidneys two retroperitoneal organs that excrete the end products of metabolism as urine and regulate the body salt and water content. 25

kinetic energy the energy of a moving object. 75

kyphosis a forward curling of the back caused by an abnormal increase in the curvature of the spine. 109

labored breathing use of muscles of the chest, back, and abdomen to assist in expanding the chest; occurs when air movement is impaired. 25

lacrimal glands the glands that produce fluids to keep the eye moist; also called tear glands. 84, 96

lactic acid a metabolic byproduct of the breakdown of glucose that accumulates when Metabolism proceeds in the absence of oxygen (anaerobic metabolism). 25

large intestine portion of the digestive to betting circles the abdomen around the small bowel, consisting of the cecum, the colon, and the rectum. It helps regulate water balance and eliminate solid waste. 25

laryngopharynx the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 25

LDB load-distributing band. 54, 56, 135, 183

length-based resuscitation tape a tape used to estimate an infant or child's weight on the basis of length; appropriate drug doses and equipment sizes are listed on the tape. 106

lens the transparent part of the eye through which images are focused on the retina. 84, 96

lesser trochanter projection on the medial superior portion of the femur. 25

libel false and damaging information about a person that is communicated in writing. 10

licensure the process whereby a competent authority, usually the state, allows people to perform a regulated act. 3, 11

ligament band of fibrous tissue that connects bones to the bones. It supports and strengthens a joint. 25

lightening the movement of the fetus down into the pelvis late in pregnancy. 103

limb presentation a delivery in which the presenting part is a single arm or leg. 103

linear skull fracture account for 80% of skull fractures; also referred to as nondisplaced skull fractures; commonly occur in the temporal/parietal region of the skull; not associated with deformities to the skull. 88

liver a large solid organ that lies in the right upper quadrant immediately below the diaphragm; it produces bile, stores glucose for immediate use by the body, and produces many substances that help regulate immune responses. 25

living will See: advance directive. 11, 109

LOC level of consciousness. 36, 38, 179, 227

lower airway includes the trachea bronchi bronchioles and alveoli surrounded by the pulmonary capillaries. 65

lumbar spine lower part of the back formed by the lowest five nonfused vertebrae; also called the dorsal spine. 25

lymph fainting, straw colored fluid that carries oxygen, nutrients, and hormones to the cells and carries waste products of metabolism away from the cells and back into the capillary so that they may be excreted. 25

lymph nodes tiny, oval-shaped structures located in various places along the length vessels that filter lymph. 25

mandible bone of the lower jaw. 25

mastoid process the prominent bony mass at the base of the skull about 1" posterior to the external opening of the ear. 84, 96

maxillae upper jaw bones that assist in the formation of the orbit, the nasal cavity, and the pallet and hold the upper teeth. 25

MDI metered-dose inhaler. 41, 42, 135, 183

MDT mobile data terminal. 13

meconium fetal stool; appears as a dark green material in the amniotic fluid, in can indicate distress or disease in the newborn. Problematic as it can be aspirated into the fetus's lungs during delivery. 103

MED channels VHF and UHF channels that the Federal Communications Commission has designated exclusively for EMS use. 14

mediastinum space within the chest that contains the heart, major blood vessels, vagus nerve, trachea, major bronchi, and esophagus; located between the two lungs. 40, 51

medical control physician instructions given directly by radio or cell phone (online/direct) or indirectly by protocol/guidelines (off-line, indirect), as authorized by the medical director of the service program. 3

medical director the physician who authorizes or delegates to the EMT the authority to provide medical care in the field. 3

medical emergencies emergencies that require EMS attention because of illnesses or conditions not caused by an outside force. 76

medication substance used to treat or prevent disease or relieve pain. 42

medicolegal a term relating to medical jurisprudence (law) or forensic medicine. 11

medulla oblongata nerve tissue that is continuous inferior way with the spinal cord; serves as a conduction pathway for sending and descending nerve tracts; coordinates the heart rate blood vessel diameter, breathing, swallowing, vomiting, coughing, and sneezing. 26

melena black, foul-smelling, tarry stool containing digested blood. 79, 94, 109

meninges three distinct layers of tissue that surround and protect the brain and the spinal cord within the skull and the spinal canal. 88

meningitis an inflammation of the meningeal coverings of the brain and spinal cord; it is usually caused by a virus or bacterium. 106

menubrium upper quarter of the sternum. 25

metabolism biochemical processes that result in production of energy from nutrients within cells. 26

MI myocardial infarction. 41, 42, 135, 183

midbrain part of the brain that is responsible for helping to regulate the level of consciousness. 26

midsagittal plane (midline) imaginary vertical line drawn from the middle of the forehead through the nose and the umbilicus (navel) to the floor, dividing the body and equal left and right halves. 26

MIH mobile integrated healthcare. 1, 3, 136, 184

minute ventilation see: minute volume. 26

minute volume volume of air that moved and out of the lungs per minute; calculated by multiplying the tidal volume and respiratory rate; also called minute ventilation. 26

miscarriage the spontaneous passage of the fetus and placenta before 20 weeks; also called spontaneous abortion. 103

MOI mechanism of injury. 36, 37, 75, 135, 154, 171, 183, 202, 219

morality a code of conduct that can be defined by society, religion, or a person, affecting character, conduct, and conscience. 11

motor nerves nerves that carry information from the central nervous system to the muscles of the body. 26

MRSA methicillin-resistant *Staphylococcus aureus*. 108, 109, 137, 185

mucous membranes lining of body cavities and passages that communicate directly or indirectly with the environment outside of the body. 26

mucus moderate secretion of the mucous membranes that lubricates the body openings. 26

multiplex the ability to transmit audio and data signals through the use of more than one communications channel. 14

multisystem trauma trauma that affects more than one body system. 76

musculoskeletal system bones involuntary muscles of the body. 26

multigravida a woman who has had previous pregnancies. 103

myocardial contractility the ability of the heart muscle to contract. 51

myocardial contusion bruising of the heart muscle. 91

myocardium heart muscle. 26

nares the external openings of the nostrils. A single nostril opening is called a naris. 106

naris singular form of nares. 106

nasopharynx part of the pharynx that lies above the level of the roof of the mouth, or palate. 26

National EMS Scope of Practice Model a document created by the National Highway Traffic Safety Administration (NHTSA) that outlines the skills performed by various EMS providers. 3

neglect refusal or failure on the part of the parent or caregiver to provide life necessities. 106

negligence failure to provide the same care that a person with similar training would provide. 11

negligence per se a theory that may be used when the conduct of the person being sued is alleged to have occurred in clear violation of a statute. 11

Neisseria meningitides a form of bacterial meningitis characterized by rapid onset of symptoms; often leading to shock and death. 106

nervous system system that controls virtually all activities of the body, both voluntary and involuntary. 26

neurogenic shock circulatory failure caused by the paralysis of the nerves that control the size of the blood vessels, leading to widespread dilation; seen in patients with spinal cord injuries. 51

neuropathy a group of conditions in which the nerves leaving the spinal cord are damaged, resulting in distortion of signals to or from the brain. 109

NHTSA National Highway Traffic Safety Administration. 1, 3, 163, 211

NOI nature of illness. 37, 135, 171, 183, 219

noise anything that dampens obscures the true meaning of a message. 14

norepinephrine neurotransmitter and drug sometimes used in the treatment of shock; produces vasoconstriction to its alpha-stimulator properties. 26

nuchal cord an umbilical cord that is wrapped around the fetus's neck. 103

obesity complex condition in which a person has an excessive amount of fat. 111

obstructive shock shock that occurs when there is a block to the blood flow in the heart or great vessels, causing an insufficient blood supply to the body's tissues. 51

occiput most posterior portion of the cranium. 26

occlusive dressing an airtight dressing that protects a wound from air and bacteria; a commercial vented version allows air to passively escape from the chest, while in unvented dressing may be made of petroleum jelly based (Vaseline) gauze, aluminum foil, or plastic. 91

oncotic pressure pressure of water to move, typically into the capillary, as the result of the presence of plasma proteins. 26

open abdominal injury an injury in which there is a break in the surface of the skin or mucous membrane, exposing deeper tissue to potential contamination. 94

open chest injury an injury to the chest in which the chest wall itself is penetrated by a fractured rib or, more frequently, by an external object such as a bullet or knife. 91

open head injury injury to the head often caused by penetrating object in which there may be bleeding and exposed brain tissue. 88

open pneumothorax an open or penetrating chest wall wound through which air passes during inspiration and expiration, creating a sucking chest sound; also referred to as a sucking chest wound. 92

open-book pelvic fracture a life-threatening fracture of the pelvis caused by force that displaces one or both sides of the pelvis laterally and posteriorly. 79

open-ended questions questions for which the patient must provide detail to give an answer. 14

opiate A subset of the opioid family, referring to natural, non-synthetic opioids. 56

opioid A synthetically-produced narcotic medication, drug, or agent similar to the opiate morphine, but not derived from opium. Used to relieve pain. 56

optic nerve a cranial nerve that transmits visual information to the brain. 85, 96

orbit eye socket, made up of maxilla and zygoma. 26

orientation your evaluation of the conditions in which you will be operating. 37

OSHA Occupational Safety and Health Administration. 5, 7, 135, 183

osteoporosis generalized bone disease, commonly associated with postmenopausal women, in which there is a reduction in the amount of bone mass leading to fractures after minimal trauma in either sex. 109

OTC over-the-counter. 41

ovaries female glands that produce sex hormones and (ova). 27

pacemaker a medical device that delivers shocks directly to the heart if necessary. Also called an automated implanted cardioverter-defibrillator (AICD). 56

paging the use of a radio signal and a voice or digital message that is transmitted to pagers ("beepers") or desktop monitor radios. 14

palate the "roof" of the mouth. 27

pancreas a flat, solid organ that lies below the liver and the stomach; it is a major source of digestive enzymes that produces the hormone insulin. 27

paradoxical motion the motion of the portion of the chest wall that is attached in a flail chest; the motion—enduring inhalation, out during exhalation—is exactly the opposite of normal chest wall motion during breathing. 92

paramedic an individual who has extensive training in advanced life support, including endotracheal intubation, emergency pharmacology cardiac monitoring, and other advanced assessment and treatment skills. 3

parasympathetic nervous system subdivision of the autonomic nervous system, involved in control of involuntary functions mediated largely by the vagus nerve to the chemical acetylcholine. 27

parenteral absorbed via means other than the digestive system. 42

parietal bones bones that lie between the temporal and occipital regions of the cranium. 27

PAT pediatric assessment triangle. 105, 106, 137, 185

patella knee cap; a specialized bone that lies within the tendon of the quadriceps muscle. 27

pathogen a microorganism that is capable of causing disease in a susceptible host. 7

pathophysiology study of how normal physiologic processes are affected by disease. 27

patient autonomy the right of a patient to make informed choices regarding his or her health care. 11

PCR patient care report. 13, 14, 135, 168, 183, 216

pediatrics a specialized branch of medical practice devoted to the care of the young. 106

pelvic binder a device to split the bony pelvis to reduce hemorrhagic from bone ends, venous disruption, and pain. 79

penetrating trauma injury caused by objects, such as knives and bullets, that pierce the surface of the body and damage internal tissues and organs. 76

peptic ulcer disease abrasion of the stomach or small intestine. 109

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs. 27, 37, 51, 79

pericardial effusion a collection of fluid between the pericardial sac and the myocardium. 51

pericardial tamponade See *cardiac tamponade*. 92

pericardium the fibrous sac that surrounds the heart. 92

perineum in a woman, the area between the vagina and anus. 103

peristalsis the wavelike contraction of the smooth muscle by which the ureters or other tubular organs propelled their contents. 27

peritoneal cavity the abdominal cavity. 94

peritoneum the membrane lining the abdominal cavity (per radial peritoneum) and covering the abdominal organs (visceral peritoneum). 94

pertussis an airborne bacterial infection that affects mostly children younger than 6 years of age, in which the patient is feverish and exhibits a "whoop" sound on inspiration after a coughing attack; highly contagious through droplet infection. Also called whooping cough.. 106

pharmacodynamics the process by which medication works on the body. 42

pharmacology the science of drugs, including their ingredients, preparation, uses, and actions on the body. 42

PHI protected health information. 8, 11, 135, 183

pinna the external, visible part of the ear. 85, 97

placenta the tissue attached to the uterine wall that nourishes the fetus through the umbilical cord. 103

placenta previa a condition in which the placenta develops over and covers the cervix. 103

plasma a sticky, yellow fluid that carries the blood cells and nutrients and transport cellular waste material to the organs of excretion. 27

pleura the Sarco membranes covering the lungs and lining the thorax completely enclosing a potential space known as the pleural space. 27

pleural space potential space between the parietal pleura and of the visceral pleura; described as "potential" because under normal conditions, the spaces not exist. 27

pneumonia inflammation of the lung from a bacterial, viral, or fungal cause. 109

pneumothorax an accumulation of Airgas in the pleural cavity. 92

PNS peripheral nervous system. 19–21, 50, 87, 133, 136, 181, 184

PO per oral. 41, 42, 135, 183

polypharmacy use of multiple medications on a regular basis. 110

posterior tibial artery artery just behind the medial malleolus; supplies blood to the foot. 27

posttraumatic amnesia See anterograde amnesia. 88

potential energy the product of mass, gravity, and height, which is converted into kinetic energy and results in injury, such as from a fall. 76

PPE personal protective equipment. 5, 7, 36, 135, 183

PR per rectum. 41, 42, 135, 183

preeclampsia see: pregnancy-induced hypertension. 103

pregnancy-induced hypertension a condition of late pregnancy that is characterized by headache, visual changes, and swelling of the hands and feet; also called preclampsia or toxemia of pregnancy. 103

prehospital care reports see: patient care report (PCR). 14

preload the pre-contraction pressure in the heart as the volume of blood builds up. 51

presbycusis age-related condition of the ear that produces progressive bilateral hearing loss that is most noted at higher frequencies. 110

preschool-age child between 3 and 6 years of age. 106

presentation the position in which an infant is born; defined by the part of the body that appears first. 103

primary assessment your evaluation of the conditions in which you will be operating. 36, 37

primary injury an injury to the brain and its associated structures that is a direct result of impact to the head. 88

primary prevention efforts to prevent an injury or illness from ever occurring. 3

primigravida a woman who is experiencing her first birth. 103

projectile any object propelled by force, such as a bullet by a weapon. 76

prolapse of the umbilical cord a situation in which the umbilical cord comes out of the vagina before the fetus. 103

proprietary name the brand name that a manufacturer gives a medication; the name is capitalized. 42

prostate gland small gland that surrounds the male urethra where it emerges from the urinary bladder; it's increase the fluid that is part of the ejaculatory fluid. 27

protocols see: standing orders. 14

proximate causation when a person who has a duty abuses it, and causes harm to another individual, the EMT, the agency, and/or the medical director may be sued for negligence. 11

PSA primary service area. 1, 3, 137, 185

PSNS parasympathetic nervous system. 19, 50

PTSD posttraumatic stress disorder. 5, 7, 135, 183

pubic symphysis hard, bony, and cartilaginous prominence found at the midline in the lowermost portion of the abdomen where the two halves of the pelvic ring are joined by cartilage at a joint with minimal motion. 27

pubis one of the three bones that fuse to form the pelvic ring. 27

public health focused on examining the health needs of entire populations with the goal of preventing health problems. 3

public safety access point a call center, staffed by trained personnel, who are responsible for managing requests for police, fire, and ambulance services. 3

pulmonary artery the major artery leading from the right ventricle of the heart to the lungs; carries oxygen-poor blood. 27

pulmonary blast injuries pulmonary trauma resulting from short-range exposure to the detonation of explosives. 76

pulmonary circulation flow of blood from the right ventricle through the pulmonary arteries and all of their branches and capillaries in the lungs and back to the left atrium through the venules and pulmonary veins; also called the lesser circulation. 28

pulmonary contusion separation of the retina from its attachments at the back of the eye. 92

pulmonary edema A buildup of fluid in the lungs, usually as a result of congestive heart failure. 40, 65

pulmonary embolism a blood clot that breaks out from the large vein and travels to the blood vessels of the lung, causing obstruction of blood flow. 65, 110

pulmonary veins four veins that return oxygenated blood from the lungs to the left atrium of the heart. 28

pulse wave of pressure created as the heart contracts of hoses blood out of the left ventricle and into the major arteries. 28

pulse pressure the difference between the systolic and diastolic pressures. Sensitization developing a sensitivity to a substance that initially caused no allergic reaction. 51

punitive damages damages that are sometimes awarded in a civil lawsuit when the conduct of the defendant was intentional or constituted a reckless disregard for the safety of the public. 11

pupil the circular opening in the middle of the iris that admits light to the back of the eye. 85, 97

putrefaction decomposition of body tissues; a definitive sign of death. 11

QA quality assurance. 1

QC quality control. 1

quality assurance See: quality control. 3

quality control the responsibility of the medical director to ensure the appropriate medical care standards are met the EMTs on each call. 3, 170, 218

raccoon eyes bruising under the eyes that may indicate a skull fracture. 88

radial artery major artery in the forearm; it is palpable at the wrist on the thumb side. 28

radius the bone on the thumb side of the forearm. 28

rapport a trusting relationship that you build with your patient. 14

rectum the lowermost end of the:. 28

red blood cell cell that carries oxygen to the body's tissues; also an called erythrocyte. 28

Renal pelvis cone-shaped area that collects urine from the kidneys and funnels it through the ureter into the bladder. 28

repeater a special base station radio that receives messages and signals on one frequency and then automatically re-transmits them on a second frequency. 14

res ipsa loquiter when the EMT or an EMS system is held liable even the plaintiff is unable to clearly demonstrate how an injury occurred. 11

residual volume air that remains in the lungs after maximal expiration. 28

respiration inhaling and exhaling of air; the physiologic process that exchanges carbon dioxide from fresh air. 28, 65

respiratory compromise inability of the body to move gas effectively. 28

respiratory system all the structures of the body that contribute to the process of breathing, consisting of the upper and lower airways and their component parts. 28

responsiveness The way in which a patient responds to external stimuli, including verbal stimuli (sound), tactile stimuli (touch) and painful stimuli. 37

reticular activating system located in the upper brainstem; responsible for the maintenance of consciousness, specifically one's level of arousal. 28

retina the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain. 85, 97, 100

retinal detachment separation of the retina from its attachments at the back of the eye. 85, 97, 100

retrograde amnesia the inability to remember events leading up to head injury. 88

retroperitoneal behind the abdominal cavity. 28

rhonchi Coarse, low-pitched breath sounds heard in patients with chronic mucus in the upper airways. 40

rigor mortis stiffening of the body muscles; a definitive sign of death. 11

ROSC return of spontaneous circulation. 54

RSV respiratory syncytial virus. 110, 137, 185

RTS revised trauma score. 75, 76, 78, 135, 183

sacroiliac joint connection point between the pelvis and the vertebral column. 28

sacrum one of the three bones (sacrum and two pelvic bones) that make up the pelvic ring; consists of five fused sacral vertebrae. 28, 40

sagittal (lateral) plane imaginary line where the body is divided into left and right parts. 28

salivary glands glands that produce saliva to keep the mouth and pharynx moist. 28

SAMPLE history a brief history of a patient's condition to determine signs and symptoms, allergies, medications, pertinent past history, last oral intake, and events leading to the injury or illness. 37

SC subcutaneous. 41, 42, 135, 183

SCA sudden cardiac arrest. 54

scalp thick skin covering the cranium which usually bears hair. 28

scanner a radio receiver that searches or "scans" across several frequencies until the message completed; the process is then repeated. 14

scapula the shoulder blade. 29

scene size-up A step within the patient assessment process that involves a quick assessment of the scene and the surroundings to provide information about scene safety and that mechanism of injury (MOI) or nature of illness (NOI). 37

school age child between 6 and 12 years of age. 106

sclera the tough, fibrous, white portion of the eye that protects the more delicate inner structures. 85, 97, 100

scope of practice most commonly defined by state law; outlines the care that the EMT is able to provide for the patient. 11

sebaceous glands glands that produce an oily substance called sebum, which discharges along the shafts of the hairs. 29

secondary assessment A step within the patient assessment process in which a systematic physical examination of the patient is performed. The examination may be a systematic exam or an assessment that focuses on a certain area or region of the body, often determined through the chief complaint. 37

secondary injury the after effects of the primary injury; includes abnormal processes such as cerebral edema increased intracranial pressure, cerebral ischemia and hypoxia, and infection; onset is often delayed following the primary brain injury. 88

secondary prevention efforts to limit the effects of an injury or illness cannot be completely prevented. 3

semen fluid ejaculated from the penis and containing sperm. 29

seminal vesicles storage sacs for sperm and seminal fluid which empty into the urethra at the prostate. 29

sensorineural deafness permanent lack of hearing caused by a lesion or damage of the inner ear. 111

sensory nerves nerves that carry sensations such as touch, taste, smell, heat, cold, and pain from the body to the central nervous system. 29

septic shock shock caused by a severe infection usually a bacterial infection. 51

shaken baby syndrome a syndrome seen in abused infants and children; the patient has been subjected to violent, whiplash-type shaking injuries inflicted by the abusing individual that may cause coma, seizures, and increased intracranial pressure due to tearing of the cerebral veins with consequent bleeding into the brain. 106

shock abnormal state associated with the inadequate oxygen and nutrient delivery to the cells of the body, also known as hypoperfusion. 29, 51, 79

shoulder girdle the proximal portion of the upper extremities, made up of the clavicle, the scapula, and the humerus. 29

shunt tube that drains excess cerebrospinal fluid (CSF) from the brain to another part of the body outside of the brain, such as the abdomen; lowers pressure in the brain. 112

side effect any action of a medication other than the desired ones. 42

SIDS sudden infant death syndrome. 105, 107, 137, 185

sign objective findings that can be seen, heard, felt, smelled, or measured. 37

simple pneumothorax any pneumothorax that is free from significant physiological changes and does not cause drastic changes in the vital signs of the patient. 92

simplex single-frequency radio; transmissions can occur in either direction but not simultaneously in both; when one party transmits the other can only receive, and the party that is transmitting is unable to receive. 14

situational awareness your evaluation of the conditions in which you will be operating. 37

skeletal muscle muscle that is attached to bones and usually crosses at least one joint; striated, or voluntary, muscle. 29

skeleton framework that gives the body its recognizable form; also designed to allow motion of the body and protection of vital organs. 29

SL sublingual. 41, 42, 135, 183

slander false and damaging information about a person that is communicated by the spoken word. 11

small intestine portion of the digestive tract between the stomach and the cecum, consisting of the duodenum, jejunum, and ileum. 29

smooth muscle involuntary muscle; it constitutes the bulk of the gastrointestinal tract and is present in nearly every organ to regulate automatic activity. 29

sniffing position an upright position in which the patient's head and chin are thrust forward slightly forward to keep the airway open. 37, 106

SNS enteric nervous system. 19

SNS sympathetic nervous system. 19, 50, 138, 186

solid organs solid masses of tissue where much of the chemical work of the body takes place (e.g., the liver, spleen, pancreas, and kidneys). 94

solution liquid mixture of one or more substances that cannot be separated simply. 42

somatic nervous system part of the nervous system that regulates activities over which there is voluntary control. 29

sphincter muscle arranged in a circle that is able to decrease the diameter of tubes. Examples are found within the rectum, bladder, and blood vessels. 29, 52

sphygmomanometer device used to measure blood pressure. 29

spina bifida a developmental defect in which a portion of the spinal cord or meninges may protrude outside of the vertebrae and possibly even outside of the body, usually at the lower third of the spine in the lumbar area. 103, 112

spinal cord extension of the brain, composed of virtually all the nerves carry messages between the brain and the rest of the body. It lies inside of and is protected by the spinal canal. 29

spontaneous abortion see miscarriage. 103

spontaneous pneumothorax a pneumothorax occurs when a weak area on the lung ruptures in the absence of major injury, allowing air to leak into the pleural space. 92

spontaneous respiration respirations characterized by little movement of the chest wall (reduced tidal volume) or poor chest excursion. 37

spontaneous respiration breathing that occurs without assistance. 37

standard of care written, accepted levels of emergency care expected by reason of training and profession; written by legal or professional organizations so that patients are not exposed to unreasonable risk or harm. 11

standard precautions protective measures that have traditionally been developed by the CDC for use in dealing with objects, blood, body fluids, and other potential exposure risks of communicable disease. 7, 37

standing orders written documents, signed by the EMS systems adequate director, that outline specific directions, permissions, and sometimes prohibitions regarding patient care; also called protocols. 15

statue of limitations the time within which a case must be commenced. 12

sternocleidomastoid muscles the muscles on either side of the neck that allow movement of the head. 85, 97, 100

sternum breastbone. 29

stoma an opening through the skin and into an organ or other structure. 56, 112

stratum corneal layer outermost board dead layer of the skin. 29

stridor high-pitched noise heard primarily on inspiration. 38

subcutaneous emphysema the measure of force over distance. 88

subcutaneous emphysema the measure of force over distance. 85, 97, 100

subcutaneous tissue tissue, largely fat, that lies directly under the dermis and serves as an insulator of the body. 30

subdural hematoma an accumulation of blood beneath the dura mater but outside the brain. 88

sucking chest wound an open or penetrating chest wall wound through which air passes during inspiration expiration creating a sucking sound. 92

superior vena cava one of the two largest veins in the body; carries blood from the upper extremities, head, neck, and chest into the heart. 30

supine hypotensive syndrome low blood pressure resulting from compression of the inferior vena cava by the weight of the pregnant uterus when the woman is supine. 104

suspension substance that does not dissolve well in liquids. 43

SV stroke volume. 19, 29, 137, 185

SVR systemic vascular resistance. 30, 137, 185

sweat glands glands that secrete sweat located in the dermal layer of the skin. 30

sympathomimetic simulating sympathetic nervous action in physiological effect. 43

symphysis type of joint that is grown together to form a very stable connection. 30

syncope a fainting spell or transient loss of consciousness. 52, 110

synovial fluid small amount of liquid within a joint use as lubrication. 30

synovial membrane lining of a joint that secrete synovial fluid into the joint space. 30

systemic circulation portion of the circulatory system outside of the heart and lungs. 30

systemic effect whole-body. 43

systole contraction, or period of contraction, of the heart, especially that of the ventricles. 30

tablet contain other materials that are mixed with the medication and compressed. 43

tachycardia rapid heart rate (> 100 beats/minute). 56, 57

tachypnea increased respiratory rate. 38, 92, 107

TBI traumatic brain injury. 87, 88, 137, 185

team in the context of EMS a collection of health care providers who have been assigned specific roles, working interdependently in a coordinated manner under a designated leader. 118

team leader the team member who provides a combination of role-assignment, coordination, oversight, centralized decision making, and support for the team to accomplish its goals and achieve desired results. 118

telemetry a process in which electronic signals are converted into coded, audible signals; these signals can then be transmitted by radio or telephone to a receiver with a decoder at the hospital. 15

temporal bones lateral bones on each side of the cranium; the temples. 30

temporomandibular joint the joint form for the mandible and the and cranium meet, just in front of the ear. 85, 97, 100

tendons fibrous connective tissue that attaches muscle to bone. 30

tension pneumothorax accumulation of air or gas in the pleural cavity that progressively increases pressure in the chest that interferes with cardiac function with potentially fatal results. 92

term gestation a pregnancy that has reached full term, between 39 weeks 0 days and 40 weeks 6 days. 104

testicle it male genital land that contain specialized cells that produce hormones and sperm. 30

therapeutic communication verbal and nonverbal indication techniques that encourage patients to express their feelings and to achieve a positive relationship. 15

thighbone another name for the femur. 30

third-degree burn See *full thickness burn*. 82

thoracic cage chest or rib cage. 30

thoracic spine 12 vertebrae that lie between the cervical vertebrae and the lumbar vertebrae. One pair of ribs is attached to each of these vertebrae. 30

thorax chest cavity contains the heart, lungs, esophagus, and great vessels. 30

thyroid cartilage firm prominence of cartilage that forms the upper part of the larynx; the Adam's apple. 30

tibia shinbone; larger of the two bones of the lower leg. 30

tidal volume amount of air moved in and out of the lungs are one relaxed breath; about 500 mL for an adult. 30

toddler child between 1 and 3 years of age. 107

topographic anatomy the superficial landmarks of the body that serve as guides to the structures that lie beneath them. 31

tort a wrongful act that gives rise to a civil lawsuit. 12

tourniquet the bleeding control method used when a wound continues to bleed despite the use of direct pressure; use with the patient is bleeding severely from a partial or complete amputation. 79

toxemia of pregnancy see: pregnancy-induced hypertension. 104

trachea the windpipe; main trunk for air passing to and from the lungs. 31

tracheitis inflammation of the trachea. 107

tracheostomy surgical procedure to create an opening (stoma) into the trachea; a stoma in the neck connects the trachea directly to the skin. 112

tracheostomy tube plastic tube placed within the tracheostomy site (stoma). 112

trade name the brand name that a manufacturer gives a medication; the name is capitalized.
Also called proprietary name. 43

tragus the small, rounded, fleshy bulge that lies immediately anterior to the ear canal. 85, 97, 100

trajectory the path a projectile takes once it is propelled. 76

transcutaneous administered via the skin (alt. transdermal). 43

transdermal administered via the skin (alt. transcutaneous). 43

transmission the way in which an infectious disease is spread: contact, airborne, by vehicles, or by vectors. 7

transverse plane an imaginary line with the body is divided in the top and bottom parts. Also known as the axial plane. 31, 141, 189

trauma emergencies emergencies that are the result of physical force is applied to a patient's body. 76

trauma score A score calculated from 1 to 16, with 16 being the best possible score. It relates to the likelihood of a patient survival with the exception of a severe head injury. It takes into account the Glasgow Coma Scale (GCS) score, respiratory rate, respiratory expansion, systolic blood pressure, and capillary refill. 76

traumatic asphyxia a pattern of injury scene after severe force is applied to the chest, forcing blood from the great vessels back into the head and neck. 92

triage the process of establishing treatment and transportation priorities according to severity of injury and medical need. 38

triceps muscle in the back of the upper arm. 31

tripod position an upright position in which the patient leans forward onto outstretched arms with the head and chin thrust slightly forward. 107

trunking telecommunication systems that allow computer to maximize utilization of a group of frequencies. 15

tunica media middle and thickest part of tissue of a blood vessel wall, composed of elastic tissue and smooth muscle cells that allow the vessel to expand or contract in response to changes in blood pressure and tissue demand. 31

tympenic membrane the eardrum; then, semi transparent membrane in the middle ear that transmit sound vibrations to the internal ear by means of auditory ossicles. 76, 85, 97, 100

UHF ultra-high frequency. 13, 15, 135, 183

ulna enter bone of the forearm, on the side opposite the thumb. 31

umbilical cord the structure that connects the pregnant woman to the fetus via the placenta; contains two arteries and one vein. 104

unintended effect effects that are undesirable but pose little risk to the patient. 43

untoward effect effects that can be harmful to the patient. 43

upper airway . 65

ureter small, hollow tube that carries urine from the kidneys to the bladder. 31

urethra canal that conveys urine from the bladder to the outside of the body. 31

urinary bladder a sac behind the pubic symphysis made of smooth muscle that collects and stores urine. 31

urinary system organs that control the discharge of certain waste materials filtered from the blood and excreted as urine. 31

urostomy surgical procedure to create an opening (stoma) which connects the urinary system to the surface of the skin and allows urine to drain through the abdominal wall. 112

UTI urinary tract infection. 110, 137, 185

v-fib ventricular fibrillation. 54, 56, 57, 136, 184

v-tac ventricular tachycardia. 54, 56, 57, 136, 184

V/Q ratio measurement that examines how much gas is being moved effectively and how much blood is flowing around the alveoli or gas exchange (perfusion) occurs. 31

vagina muscular, dispensable to that connects the uterus with the vulva (the external female genitalia); also called the birth canal. 31

vas deferens see: vasa deferentia. 31

vasoconstriction the narrowing of a blood vessel, such as with hypoperfusion or cold extremities. 38, 79

vector-borne transmission the use of an animal to spread an organism from one person or place to another. 7

vein the blood vessels that carry blood from the tissues to the heart. 79

ventilation movement of air between the lungs and the environment. 31

ventricle one of two lower chambers of the heart. 31

venule very small, thin-walled blood vessels. 79

vernix caseosa a white, cheesy substance that covers the body of the fetus. 104

vertebrae the 33 bones that make up the spinal column. 31

vertex presentation a delivery in which the head of the newborn comes out first. 104

VHF very high frequency. 13, 15, 136, 184

vital signs the key signs used to evaluate the patients overall condition, including respirations, pulse, blood pressure, level of consciousness (LOC), and skin characteristics. 38

VoIP Voice over Internet Protocol. 13

voluntary activity actions that are consciously performed, in which sensory input or conscious thought determines a specific muscular activity. 89

voluntary muscle muscle that is under direct voluntary control of the brain can be contracted or relax that will; skeletal, or striated, muscle. 31

VRE vancomycin-resistant enterococci. 110, 137, 185

white blood cell blood cell that has a role in the body's immune defense against infection; also called a leukocyte. 31

whooping cough another name for pertussis; see pertussis. 107

work the measure of force over distance. 76

work of breathing an indicator of oxygenation and ventilation; reflects the child's attempt to compensate for hypoxia. 107

xiphoid process narrow, cartilaginous lower tip of the sternum. 31, 56

zygomas the quadrangular bones of the cheek, articulating with the frontal bone, the maxillae, the zygomatic processes of the temporal bone, and the great wings of the sphenoid bone. 31

Glossary

Americans With Disabilities Act (ADA) comprehensive legislation that is designed to protect people with disabilities against discrimination. 2

automated external defibrillator (AED) a device that detects treatable life-threatening cardiac dysrhythmias (ventricular fibrillation and ventricular tachycardia) and delivers the appropriate electrical shock to the patient. 2, 55

advanced EMT (AEMT) an individual who has training in specific aspects of advanced life support, such as intravenous therapy (IV) therapy, and the administration of certain emergency medications. 2

atrial fibrillation (a-fib) upper heart chambers contract irregularly. 55, 57

automated implanted cardioverter-defibrillator (AICD) the technical term for *pacemaker*. 55

advanced life support (ALS) advanced lifesaving procedures, some of which are now being provided by the EMT. 2

basic life support (BLS) noninvasive, emergency lifesaving care that is used to treat medical conditions, including airway obstruction, respiratory arrest, and cardiac arrest. 55

Center for Disease Control and Prevention (CDC) the primary federal agency that conducts and supports public health activities in the United States. The CDC is part of the US Department of Health and Human Services. 5

critical incident stress management system (CISM) a process that confronts the responses to critical incidents and defuses them, directing the emergency services personnel toward physical and emotional equilibrium. 6

central nervous system (cns) division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food. 21

cardiac output (CO) the measure of the volume of blood circulated by the heart in 1 minute; calculated by multiplying the stroke volume by the heart rate. 21, 50

cardiopulmonary resuscitation (CPR) the combination of chest compressions and rescue breathing used to establish adequate ventilation and circulation in a patient who is not breathing and has no pulse. 55

continuous quality improvement (CQI) system of internal and external reviews and audits of all aspects of an EMS system. 2

do not resuscitate (DNR) orders your evaluation of the conditions in which you will be operating. 9

emergency medical dispatch (EMD) a system that assists dispatchers in selecting appropriate units to respond to a particular call for assistance and provides callers with vital instructions until the arrival of EMS crews. 2

emergency medical responder (EMR) the first trained professional, such as police officers, firefighters, lifeguards, or other rescuer, to arrive at the scene of an emergency to provide initial medical assistance. 2

emergency medical services (EMS) a multidisciplinary system that represents the combined efforts of several professionals and agencies to provide prehospital emergency care to the sick and injured. 2

emergency medical technician (EMT) an individual who has training in basic life support, including automated external defibrillation, use of a definitive airway adjunct, and assisting patients with certain medications. 2

Federal Communications Commission (FCC) the federal agency that is jurisdiction over interstate and international telephone and telegraph services and cyclic medications, all of which may involve EMS activity. 14

Health Insurance Portability and Accountability Act (HIPAA) federal legislation passed in 1996; its main effect in EMS is in limiting the availability of patients' healthcare information and penalizing violations of patient privacy. 2

human immunodeficiency virus (HIV) acquired immunodeficiency syndrome (AIDS) is caused by HIV, which damages the cells in the body's immune system so that the body is unable to fight infection or certain cancers. 6

intramuscular (IM) administered via the muscle. 42

intranasal (IN) administered into the nostril (usually via mucosal atomizer device). 42

intraosseous (IO) administered into the bone. 42

impedance threshold device (ITD) a valve device placed between the endotracheal tube and a bag-valve mask that limits the amount of air entering the lungs during the recoil phase between chest compressions. 56

intravenous therapy (IV) the delivery of a medication directly into a vein. 3, 42

load-distributing band (LDB) circumferential chest compression device composed of a constricting band and backboard that is either electrically or pneumatically driven to compress the heart by putting inward pressure on the thorax. 56

metered-dose inhaler (MDI) a device that delivers a consistent amount of medication using a short burst of aerosolized medicine via inhalation. 42

myocardial infarction (MI) heart attack. 42

mechanism of injury (MOI) the forces, or energy transmission, applied to the body that cause injury. 37, 75

nature of illness (NOI) the general type of illness a patient is experiencing. 37

Occupational Safety and Health Administration (OSHA) the federal regulatory compliance agency that develops, publishes, and enforces guidelines concerning safety in the workplace. 7

patient care report (PCR) the legal document used to record all patient care activities. This report has direct patient care functions but also administrative and quality control functions. PCRs are also known as prehospital care reports. 14

protected health information (PHI) any information about health status, provision of health care, or payment for health care that can be linked to an individual. This is interpreted rather broadly and includes any part of a patient's medical record or payment history. 11

per oral (PO) administered by the mouth. 42

personal protective equipment (PPE) protective equipment that blocks exposure to a pathogen or a hazardous material. 7

per rectum (PR) administered by the rectum. 42

posttraumatic stress disorder (PTSD) a delayed stress reaction to a prior incident. Often the result of one or more unresolved issues concerning the incident, and may relate to an incident that involved physical harm or the threat of physical harm. 7

revised trauma score (RTS) a scoring system used for patients with head trauma. 76

subcutaneous (SC) administered under the skin. 42

sublingual (SL) under the tongue; a medication route. 42

ultra-high frequency (UHF) radio frequencies between 300 and 3,000 MHz. 15

ventricular fibrillation (v-fib) disorganized, ineffective quivering of the ventricles, resulting in no blood flow and a state of cardiac arrest. 56, 57

very high frequency (VHF) radio frequencies between 30 and 300 MHz; the VHF spectrum is further divided into “high” and “low” bands. 15

ventricular tachycardia (v-tac) rapid heart rhythm in which the electrical impulse begins in the ventricle (instead of the atrium), which may result in inadequate blood flow and eventually deteriorate into cardiac arrest. 56, 57

apparent life-threatening event event that causes unresponsiveness, cyanosis, and apnea in an infant, who then resumes breathing with stimulation. 105

autonomic nervous system division of peripheral nervous system; regulates involuntary activities of the body such as heart rate blood pressure and digestion of food. 20

autism spectrum disorder group of complex disorders of brain development, characterized by difficulties in social interaction, repetitive behaviors, and verbal and nonverbal communication. 111

adenosine triphosphate the nucleotide involved in energy metabolism; used to store energy. 19

blood pressure pressure that the blood exerts against the walls of the arteries as it passes through them. 21

cerebrospinal fluid fluid produced in the ventricles of the brain that flows in the subarachnoid space and bathes the meninges. 22

Glasgow Coma Scale an evaluation tool used to determine level of consciousness, which evaluates and the signs point values (scores) for eye opening, verbal response, and motor response, which are then totaled; effective in helping predict patient outcomes. 75

heart rate number of heartbeats during a specific time (usually 1 minute). 24

intracranial pressure the pressure within the cranial vault. 88

jugular vein distention a visual bulging of the jugular veins in the neck that can be caused by fluid overload, pressure in the chest, cardiac tamponade, or tension pneumothorax. 109

mobile integrated healthcare a method of delivering health care which involves providing health care within the community rather than at a physician’s office or hospital. 3

methicillin-resistant *Staphylococcus aureus* a bacterium that causes infections in different parts of the body and is often resistant to commonly used antibiotics; can be found on the skin and in surgical wounds, the bloodstream, lungs, and urinary tract. 109

pediatric assessment triangle a structured assessment tool used to rapidly form a general impression of the infant or child without touching him or her; consists of assessing appearance, work of breathing, and circulation to the skin. 106

primary service area the designated area in which the EMS agency is responsible for the provision prehospital emergency care and transportation to the hospital. 3

respiratory syncytial virus highly contagious virus that causes an infection of the upper and lower respiratory system. 110

sudden infant death syndrome death of an infant or young child that remains unexplained after a complete autopsy. 107

systemic vascular resistance resistance that blood must overcome to be able to move within the blood vessels; related to the amount of dilation or constriction in the blood vessel. 30

stroke volume volume of blood pumped forward with each ventricular contraction. 29

traumatic brain injury a traumatic injury to the brain capable of producing physical, intellectual, emotional, social, and vocational changes. 88

urinary tract infection a bacterial infection that affects the urinary tract. 110

vancomycin-resistant enterococci bacterium that is normally present in the human intestines and the female reproductive tract, but which can cause infection and which is resistant to the antibiotic vancomycin. 110

AVPU scale a method of assessing the level of consciousness by determining whether the patient is awake and alert, responsive to verbal stimuli or pain, or unresponsive; used principally early in the assessment process. 36

a-fib atrial fibrillation. 55, 57, 133, 181

AAA abdominal aortic aneurysm. 108

abandonment unilateral termination of care by the EMT without the patient's consent and without making provisions for transferring care to another medical professional with the skills and training necessary to meet the needs of the patient. 8

ABC airway (obstruction)
breathing (respiratory arrest)
circulation (cardiac arrest). 54

abdomen the body cavity that contains the major organs of digestion and excretion. It is located below the diaphragm and above the pelvis. 19

abdominal aortic aneurysm a rapidly fatal condition in which the walls of the aorta in the abdomen weaken and blood leaks into the layers of the vessel, causing it to bulge. 108, 110

abrasion loss or damage of the superficial layer of skin as a result of a body part rubbing or scraping across a rough or hard surface. 81

abruptio placenta premature separation of the placenta from the wall of the uterus. 102

absorption the process by which medications travel through body tissues to the bloodstream. 41

accessory muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 36, 40

acetabulum depression on the lateral pelvis where the three component bones join, in which the femoral head fits snugly. 19

action the therapeutic effect that a medication is expected to have on the body. 41

active compression decompression CPR technique that involves compressing the chest and then actively pulling it back up to its neutral position and beyond. 55

acute stress reactions reactions to stress that occur during a stressful situation. 5

ADA Americans With Disabilities Act. 1, 2, 133, 181

Adam's apple a firm prominence of cartilage that forms the upper part of the larynx. It is more prominent in men than in women. 19

adolescent a young person between 12 and 18 years of age. 33, 105

adrenal gland endocrine gland located on top of each kidney that releases adrenaline when stimulated by the sympathetic nervous system. 19

adrenaline another name for epinephrine. 20

adrenergic pertaining to nerves that release the neurotransmitter norepinephrine, or noradrenalin (such as adrenergic nerves, adrenergic response); also pertains to the receptors acted on by norepinephrine. 20

advance directive written documentation that specifies medical treatment for a competent patient should the patient become unable to make decisions; also called a living will or health care directive. 8, 10, 11, 108, 109, 155, 160, 203, 208

AED automated external defibrillator. ii, 1, 2, 54, 55, 58–60, 133, 181

AEMT advanced EMT. 1, 2, 133, 181

aerobic metabolism metabolism that can proceed only in the presence of oxygen. 20

afterload force a resistance against which the heart pumps. 50

agonal gasps abnormal breathing pattern characterized by slow, gasping breaths, sometimes seen in patients in cardiac arrest. 20

agonist medication that causes stimulation of receptors. 41

AHA American Heart Association. 54, 57

AICD automated implanted cardioverter-defibrillator. 54–56, 59, 133, 165, 181, 213

AIDS acquired immunodeficiency syndrome. 5, 6, 134, 182

air embolism the presence of air in the veins, which can lead to cardiac arrest if it enters the heart. 84, 96, 99

airborne transmission the spread of an organism via droplets or dust. 5

alpha-adrenergic receptors portions of the nervous system that, when stimulated, can cause constriction of the blood vessels. 20

ALS advanced life support. 1–3, 54, 57, 58, 63, 133, 165, 181, 213

ALTE apparent life-threatening event. 105, 136, 184

altered mental status any deviation from alert and oriented to person, place, time, and event, or any deviation from a patient’s normal baseline mental status. 36

alveoli air sacs of the lungs in which the exchange of oxygen and carbon dioxide takes place. 20

ambient temperature the temperature of the surrounding environment. 96, 99

amniotic sac the fluid-filled, baglike membrane in which the fetus develops. 102

amputation an injury in which part of the body is completely severed. 81

anaerobic metabolism the metabolism that takes place in the absence of oxygen; the main byproduct is lactic acid. 20

anaphylactic shock severe shock caused by an allergic reaction. 50

anaphylaxis in extreme life-threatening systemic allergic reaction that may include shock and respiratory failure. 50

anatomic position the position of reference in which the patient stands facing forward, arms at the side, with the palms of the hands forward. 20

anemic describes a condition in which the patient has too few red blood cells, resulting a decreased ability to transport oxygen throughout the body via the bloodstream. 102

aneurysm a swelling or enlargement of a part of an artery resulting from weakening of the arterial wall. 50, 108

anisocoria naturally occurring uneven pupil size. 84

anoxia absence of oxygen. 55

ANS autonomic nervous system. 19, 20, 50, 136, 184

antagonist medication that binds to a receptor and blocks other medications or chemicals from attaching there. 41

anterograde amnesia inability to remember events after an injury. 87, 88, 167, 215

antivenin a serum that counteracts the effect of venom from an animal or insect. 96, 99

aorta the main artery that receives blood from the left ventricle and delivers it to all the other arteries that carry blood to the tissues of the body. 20, 78, 108

aortocaval compression relating to the aorta and the vena cava. 55

Apgar score a scoring system for assessing the status of a newborn that assigns a number value to each of five areas. 102

apneic absence of spontaneous breathing. 55

appendicular skeleton the portion of the skeletal system that comprises the arms, legs, pelvis, and shoulder girdle. 20

appendix a small, tubular structure that is attached to the lower border of the cecum in the lower right quadrant of the abdomen. 20

applied ethics the manner in which principles of ethics are incorporated into professional conduct. 8

arterial air embolism air bubbles in the arterial blood vessels. 75

arteriole the smallest branch of arteries leading to the vast network of capillaries. 20, 78

arteriosclerosis a disease that causes the arteries to thicken, harden, and calcify. 108

artery a blood vessel, consisting of three layers of tissue and smooth muscle, that carries blood away from the heart. 20, 78

articular cartilage a pearly layer specialized cartilage covering the articular surfaces (contact surfaces on the ends) of bones in synovial joints. 20

ascites fluid in the abdomen. 108

ASD autism spectrum disorder. 111, 136, 184

assault unlawfully placing a patient in fear of bodily harm. 8

atherosclerosis an accumulation of fat and cholesterol in the arteries. 108

ATP adenosine triphosphate. 19, 136, 184

atrium one of the two upper chambers of the heart. 20

auscultate to listen to sounds within an organ with a stethoscope. 36

AVPU Alert Verbal Pain Unresponsive. 36, 137, 185

avulsion an injury in which soft tissue is torn completely loose or is hanging as a flap. 81

axial loading injury injuries in which load is applied along the vertical or longitudinal axis of the spine, which results in [the] load being transmitted along the entire length of the vertebral column; for example, falling from a height and landing on the feet in an upright position. 87

axial plane see: transverse plane. 31, 177, 225

axial skeleton the part of the skull to comprising the skull, spinal column, and rib cage. 20

ball-and-socket joint a joint that allows internal and external rotation, as well as bending. 21

base station any radio hardware containing a transmitter and receiver that is located in a fixed place. 13

basilar skull fracture usually occur following diffuse impact to the head (such as falls, motor vehicle crashes); generally result from extension of a linear fracture to the base of the skull and could be difficult to diagnose with a radiograph. 87

Battle sign bruising behind an ear over the mastoid process that may indicate a skull fracture. 87

bedsore another name for a decubitus ulcer. 108

bends See decompression sickness. 96, 99

beta-adrenergic receptors portions of the nervous system that, when stimulated, can cause an increase in the force of contraction of the heart, an increased heart rate, and bronchial dilation. 21

biceps the large muscles that cover the front of the humerus. 21

bile duct the duct that conveys bile between the liver and the intestine. 21

bioethics the study of ethics related to issues that arise in health care. 8

birth canal the vagina and cervix. 102

blanch to turn white. 105

blood-borne pathogens pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus (HIV). 5

bloody show a small amount of blood in the vagina that appears at the beginning of labor and may include a plug of pink-tinged mucus that is discharged when the cervix begins to dilate. 102

blow-out fracture a fracture of the orbit or of the bones that support the floor of the orbit. 84

BLS basic life support. ii, 1, 54, 55, 57, 133, 181

blunt trauma an impact on the body by objects that cause injury without penetrating soft tissues or internal organs and cavities. 75, 84

BP blood pressure. 21, 136, 184

brachial artery the major blood vessel in the upper extremities that supplies blood to the arm. 21

bradycardia a slow heart rate, less than 60 beats/min. 57

bradypnea slow respiratory rate; ominous sign in a child that indicates impending respiratory arrest. 105

brain the controlling organ of the body and center of consciousness; functions include perception, control of reactions to the environment, emotional responses, and judgment. 21

brainstem the area of the brain between the spinal cord and cerebrum, surrounded by the cerebellum; controls functions that are necessary for life, such as respiration. 21

breach of confidentiality disclosure of information without proper authorization. 8

breath holding syncope loss of consciousness caused by a. 96, 99

breech presentation a delivery in which the buttocks come out first. 102

bronchiolitis inflammation of the bronchioles that usually occurs in children younger than 2 years and is often caused by the respiratory syncytial virus. 105

bronchodilator . 65

bronchodilator . 65

bronchospasm . 65

burn injury in which soft tissue damage occurs as a result of thermal heat, frictional heat, toxic chemicals, electricity, or nuclear radiation. 81

BVM bag-valve mask. 54

capillary a small blood vessel that connects arterials and venules; various substances pass through capillary walls, into and out of the interstitial fluid, and then on to the cells. 21, 78

capillary vessels tiny blood vessels between the arterials and venules that permit transfer of oxygen, carbon dioxide, nutrients, and waste between body tissues and the blood. 21

capsule gelatin shells filled with powdered or liquid medication. 41

carbon dioxide retention a condition characterized by a chronically high blood level of carbon dioxide. 65

cardiac muscle the heart muscle. 21

cardiac tamponade compression of the heart is a result of the buildup of blood or other fluid in the pericardial sac leading to decreased cardiac output. 50, 91

cardiogenic shock a state in which not enough oxygen is delivered to the tissues of the body caused by low output of blood from the heart it may be a severe complication of an large acute myocardial infection as well as other conditions. 50

carotid artery the major artery that supplies blood to the head and brain. 21

cartilage the smooth connective tissue that forms the support structure of the skeletal system and provides cushioning between bones; also forms the nasal septum and portions of the outer ear. 21

cataracts clouding of the lens of the eye or its surrounding transparent membranes. 108

cavitation a phenomenon in which speed causes a bullet to generate pressure waves which cause damage distant from the bullets path. 75

CDC Center for Disease Control and Prevention. 5, 7, 37, 133, 174, 181, 222

cecum the first part of the large intestine, into which the ileum opens. 21

cellular telephone a low-power portable radio that communicates through an interconnected series of repeater stations called “cells”. 13

central pulses pulses that are closest to the core (central) part of the body where the vital organs are located; include the carotid, femoral, and apical pulses. 105

cerebellum one of the three major subdivisions of the brain, sometimes called the ‘little brain’; coordinates the various activities of the brain, particularly fine body movements. 22

cerebral edema swelling of the brain. 87

cerebral palsy group of disorders characterized by poorly controlled body movements. 111

cerebrum the largest part of the three subdivisions of the brain, sometimes called the gray matter; made up of several lobes that control movement, hearing, balance, speech, visual perception, emotions, and personality. 22

certification a process in which a person, an institution, or a program is evaluated and recognized as meeting certain predetermined standards to provide safe and ethical care. 2, 8

cervical spine the portion of the spinal column consisting of the first seven (7) vertebrae that lie in the neck. 22

cervix narrowest portion of the uterus that opens into the vagina. 102

channel an assigned frequency or frequencies that are used to carry voice and/or data communications. 13

child abuse a general term applying to all forms of abuse and neglect of children. 105

chordae tendineae thin bands of fibrous tissue that attach to the valves in the heart and prevent them from inverting. 22

chyme the substance that leaves the stomach; it is a combination of all the eaten foods with added stomach acids. 22

circulatory system the complex arrangement of connected tubes, including the arteries, arterioles, capillaries, venules, and veins, that moves blood, oxygen, nutrients, carbon dioxide, and cellular waste throughout the body. 22

CISM critical incident stress management system. 5, 6, 133, 181

clavicle the collar bone; it is lateral to the sternum and anterior to the scapula. 22

closed abdominal injury an injury in which there is soft tissue damage inside the body but the skin remains intact. 94

closed chest injury an injury to the chest in which the skin is not broken usually caused by blunt trauma. 91

closed head injury injury in which the brain has been injured but the skin has not been broken and there is no obvious bleeding. 87

closed injury injury in which damage occurs beneath the skin or mucous membrane but the surface of the skin remains intact. 81

closed-ended questions questions that can be answered in short bursts single word responses. 13

cns central nervous system. 19, 21, 50, 133, 181

CO cardiac output. 19, 21, 50, 133, 181

coagulation the formation of clots of plug openings in injured blood vessels and stop blood flow. 78

coccyx the last three or four (3-4) vertebrae of the spine; the 'tail bone'. 22

colostomy surgical procedure to create an opening (stoma) between the colon and the surface of the body. 111

commotio cordis a blunt chest injury caused by a sudden, direct blow to the chest that occurs only during the critical portion of a person's heartbeat. 91

communicable disease a disease that can be spread from one person or species to another. 5

communication the transmission of information to another person— verbally or through body language. 13

community paramedicine a health care model in which experienced paramedics receive advanced training to equip them to provide additional services in the pre-hospital environment, such as health evaluations, monitoring of chronic illnesses or conditions, and patient advocacy. 2

compartment syndrome swelling in a confined space that produces dangerous pressure; may cut off blood flow or damage sensitive tissue. 81

compensated shock the early stage of shock in which the body could still compensate for blood loss. 50

compensatory damages damages awarded in a civil lawsuit that are intended to restore the plaintiff to the same condition that he or she was in prior to the incident. 8

competent able to make rational decisions about personal well-being. 8

concealment the use of objects to limit a person's visibility of you. 5

concussion a temporary loss or alteration of part or all of the brain's abilities to function without actual physical damage to the brain. 87

conduction the transparent tissue layer in front of the pupil and iris of the eye. 96, 99

conductive hearing loss hearing loss caused by a faulty transmission of sound waves. 111

conjunctiva the delicate membrane that lines the eyelids and covers the exposed surface of the eye. 84

conjunctivitis inflammation of the conjunctiva. 84

consent permission to render care. 9

contamination the presence of infectious organisms on or in objects such as dressings, water, food, needles, wounds, or patient's body. 5, 81

contraindication when a medication would either harm the patient or have no positive effect. 41

contributory negligence a legal defense that may be raised when the defendant feels that the conduct of the plaintiff somehow contributed to any injuries or damages sustained by the plaintiff. 9

contusion a bruise from an injury that causes bleeding beneath the skin without breaking the skin; see also ecchymosis. 78, 81

convection a branch of the internal auditory canal that connects the middle ear to the oropharynx. 96, 99

core temperature the ear canal; leads to the tympanic membrane. 96, 99

cornea the transparent tissue layer in front of the pupil and iris of the eye. 84

coronal plane an imaginary plane where the body is divided into front and back parts. 22

coup-contrecoup brain injury a brain injury that occurs when force is applied to the head and energy transmission through brain tissue causes injury on the opposite side of the original impact. 75

coup-contrecoup brain injury dual impacting of the brain into the skull; coup injury occurs at the point of impact; contrecoup injury occurs on the opposite side of the impact as the brain rebounds. 87

cover the tactical use of an impenetrable barrier for protection. 6

CPR cardiopulmonary resuscitation. ii, 54, 55, 57–63, 134, 138, 182, 186

CQI continuous quality improvement. 2, 134, 182

cranium the area of the head above the ears and eyes; the skull; the cranium contains the brain. 22

credentialing an established process to determine the qualifications necessary to be allowed to practice a particular profession, or to function as an organization. 9

crepitus a grating or grinding sensation caused by fractured bone ends or joints rubbing together; also air bubbles under the skin that produce a crackling sound or crinkly feeling. 91

cricothyroid membrane A tubular structure. 22

crioid cartilage A tubular structure. 22

CRM crew resource management. 118

croup an inflammatory disease of the upper respiratory system that may cause a partial airway obstruction and is characterized by a barking cough; usually seen in children. 105

crowning the appearance of the fetus's head at the vaginal opening during labor. 102

crush syndrome significant metabolic derangement that develops with crushed extremities or body parts remain trapped for prolonged periods. This can lead to renal failure and death. 81

crushing injury an injury that occurs when a great amount of force is applied to the body. 81

CSF cerebrospinal fluid. 22, 111, 112, 136, 172, 184, 220

cultural imposition when one person poses his or her beliefs, values, and practices on another because he or she believe his or her ideals are superior. 13

cumulative stress reactions prolonged or excessive stress. 6

cyanosis a blue-gray skin color that is caused by reduced level of oxygen in the blood. 51, 55

dead space any portion of the airway that does not contain air and cannot participate in gas exchange, such as the trachea and bronchi. 22

deceleration the slowing of an object. 75

decision-making capability ability to understand and process information and make a choice regarding appropriate medical care. 9

decompensated shock the late stage of shock when blood pressure is falling. 51

decompression sickness the eyeball. 96, 99, 142, 190

decubitus ulcer a sore caused by the pressure of skin against a surface for long periods; can range from a pink discoloration of the skin to a deep wound that may invade into bone or organs; also known as a bedsore. 108

dedicated line a special telephone line that is used for a specific point-to-point communications; also known as a hotline. 13

deep venous thrombosis the formation of a blood clot within the larger veins of an extremity, typically following a period of prolonged immobilization. 109

defamation the communication of false information about a person that is damaging to that person's reputation or standing in the community. 9

dehydration loss of water from the tissues of the body. 51

delayed stress reactions reactions to stress that occur after a stressful situation. 6

delirium a sudden change in mental status marked by the inability to focus, think logically, and maintain attention; this condition is generally acute and reversible. 109

dementia the slow onset of progressive disorientation, shorten attention span, and loss of cognitive function; this condition is generally chronic and irreversible. 109

dependent edema . 65

dependent lividity blood settling to the lowest point of the body, causing discoloration of the skin; a definite sign of death. 9

depositions oral questions asked of parties and witnesses under oath. 9

dermis the inner layer of the skin, containing hair follicles, sweat glands, nerve endings, and blood vessels. 22, 81

designated officer the individual in the department who is charged with the responsibility of managing exposures and infection control issues. 6

developmental disability insufficient development of the brain, resulting in some level of dysfunction or impairment. 111

diaphoretic characterized by light or profuse sweating. 42, 55

diaphragm muscular dome that forms the undersurface of the thorax, separating the chest from the abdominal cavity. Contraction of this (and the chest wall muscles) brings air into the lungs. Relaxation allows air to be expelled from the lungs. 22

diastole relaxation, or period of relaxation, of the heart, especially of the ventricles. 22

diffusion movement of gas from an area of higher concentration to an area of lower concentration. 23

digestion processing of food that nourishes the individual cells of the body. 23

direct contact exposure a transmission of a communicable disease from one person to another by physical contact. 6

directive unlawfully touching a patient or providing emergency care without consent. 8

discovery the phase of a civil lawsuit where the plaintiff and the defense obtain information from each other that will enable the attorneys to have a better understanding of the case and which will assist in preparing for trial. Discovery includes depositions, interrogatories, and demands for production of records. 9

distributive shock a condition that occurs when there is widespread dilation of the small arterioles small venules or both. 51

diuretic . 65

diving reflex the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color. 96, 99

DNR do not resuscitate. 8, 9, 134, 182

documentation the recorded portion of the EMT's patient interaction either written or electronic. This becomes part of the patient's permanent medical record. 14

dorsalis pedis artery artery on the anterior surface of the foot between the first and second metatarsals. 23

dose the amount of the medication that is given. 42

Down syndrome genetic chromosomal defect that can occur during fetal development and that results in intellectual impairment as well as certain physical characteristics, such as a round head with flat occiput and slanted, wide-set eyes. 111

drag resistance that slows a projectile, such as air. 75

drowning the glands that produce fluids to keep the eye moist; also called tear glands. 96, 99

duplex the ability to transmit and receive simultaneously. 14

durable power of attorney for health care a type of advance directive executed by a competent adult that appoints another individual to make medical treatment decisions on his or her behalf, in the event that the person making the appointment loses decision-making capability. 9, 10, 155, 203

duty to act a medicolegal term relating to certain personnel who either by statute or by function have a responsibility to provide care. 9

dyspnea difficulty or trouble breathing. 55, 65, 109

ecchymosis a buildup of blood beneath the skin that produces a characteristic blue or black discoloration as the result of an injury; also see contusion. 78, 81

eclampsia severe hypertension in a pregnant woman, resulting in seizures (convulsions). 102

ectopic pregnancy a pregnancy that develops outside the uterus, typically in a fallopian tube. 102

edema the presence of abnormally large amounts of fluid between cells in body tissues, causing swelling of the affected area. 51

elder abuse any action on the part of an older person's family member, caregiver, or other associated person that takes advantage of the older person's person, property, or emotional state. 109

emancipated minor a person who is under the legal age in a given state but, because of other circumstances, is legally considered an adult. 9

embryo the early stage of development after the fertilization of the egg (first 10 weeks). 102

EMD emergency medical dispatch. 1, 2, 134, 182

emergency a serious situation, such as injury or illness, that threatens the life or welfare of a person or group of people and requires immediate intervention. 9

emergency doctrine the principle of law that permits a health care provider to treat a patient in an emergency situation when the patient is incapable of granting consent because of an altered level of consciousness, disability, the effects of drugs or alcohol, or the patient's age. 9

emergency medical care immediate care or treatment. 9

EMR emergency medical responder. 1, 2, 134, 182

EMS emergency medical services. 1–3, 10, 14, 118, 134, 137, 155, 161, 163, 176, 182, 185, 203, 209, 211, 224

EMT emergency medical technician. v, 1–3, 8, 44, 47, 48, 63, 134, 137, 161, 170, 182, 185, 209, 218

endocrine system complex message and control system that integrates many of the body's functions, including the release of hormones. 23

endometrium the lining of the inside of the uterus. 102

enteral absorbed via the digestive system. 42

enzyme substance designed to speed up the rate of specific biochemical reactions; a biological catalyst. 23

epidermis the outer layer of skin that acts as a watertight protective covering. 23, 82

epidural hematoma an accumulation of blood between the skull and the dura mater. 88

epiglottis A tubular structure. 23

epiglottitis a disease in which the epiglottis becomes inflamed and enlarged and may cause an upper airway obstruction. 105

epinephrine hormone produced by the adrenal medulla that has a vital role in the function of the sympathetic nervous system. Also called adrenaline. 23

epistaxis a nosebleed. 78

esophagus collapsible tube that extends from the pharynx to the stomach; muscle contractions propel food and liquids through it to the stomach. 23

ethics the philosophy of right and wrong, of moral duties, and of ideal professional behavior. 10

ethnocentrism when a person considers his or her own cultural values is more important when interacting with people of different culture. 14

eustachian tube a branch of the internal auditory canal that connects the middle ear to the oropharynx. 84

evaporation the prominent bony mass at the base of the skull about 1 inch posterior to the external opening of the ear. 99

evisceration the displacement of organs outside the body. 82, 94

excited delirium a serious behavior condition in which a person exhibits agitated behavior combined with disorientation, hallucinations, or delusions; also called agitated delirium or exhaustive mania. 82

expiratory reserve volume amount of air that can be exhaled following a normal exhalation; average volume is about 1200 mL in the average adult male. 23

exposure a situation in which a person has contact with blood, body fluids, tissues, or airborne particles in a matter that suggest disease transmission may occur. 6

expressed consent a type of consent in which a patient gives verbal or nonverbal authorization for provision of care or transport. 10

extension the straightening of a joint. 23

external auditory canal the ear canal; leads to the tympanic membrane. 84

eyes forward position a head position in which the patient's eyes are looking straight ahead and the head and torso are in line. 88

fallopian tubes long, slender tubes that extend from the uterus to the region of the ovary on the same side and through which the ova pass from the ovary to the uterus. 23

false imprisonment the confinement of a person without legal authority or the person's consent. 10

fascia fiberlike connective tissue that covers arteries, veins, tendons, and ligaments. 82

FCC Federal Communications Commission. 13, 14, 134, 182

femoral artery the major artery of the thigh, a continuation of the external iliac artery. It supplies blood to lower abdominal wall, external genitalia, and legs. It can be palpated to the groin area. 23

femoral head proximal end of the femur, articulating with the acetabulum to form the hip joint. 23

femur the longest and one of the strongest bones in the body. Also called the thighbone.. 23

fetal alcohol syndrome a condition caused by the consumption of alcohol by a pregnant woman; characterized by growth and physical problems, mental retardation, an a variety of congenital abnormalities. 102

fetus the developing, unborn infant inside the uterus, from 10 weeks after fertilization until birth. 103

flail chest a condition which three or more ribs are fractured into are more places or in association with the fracture of the sternum so that a segment of the chest wall is effectively detached from the rest of the thoracic cage. 91

flame burn a burn caused by an open flame. 82

flank the region below the rib cage above the hip. 94

flash burn a burn caused by exposure to very intense heat such as in an explosion. 82

flexion bending of a joint. 23

flutter valve a one-way valve that allows air to leave the chest cavity but not return; formed by keeping three sides of an occlusive dressing to the chest wall, leaving the fourth site open is a valve; may also be part of a commercial vented occlusive dressing. 91

focused assessment a type of physical assessment typically performed on patients who have sustained nonsignificant mechanisms of injury or on responsive medical patients. This type of examination is based on the chief complaint and focuses on one body system or part. 36

fontanelles areas where the neonate's or infant's skull has not fused together; usually disappear at approximately 18 months of age. 33, 105

foodborne transmission the contamination of food or water with an organism that can cause disease. 6

foramen magnum large opening at the base of the skull through which the brain connects to the spinal cord. 23

forcible constraint the act of physically preventing an individual from initiating any physical action. 10

four-person log roll the recommended procedure for moving a patient with a suspected spinal injury from the ground to a long backboard or other spinal immobilization device. 88

frontal bone portion of the cranium that forms the forehead. 23

frostbite damage to tissues as the result of exposure to cold; frozen or partially frozen body parts are frostbitten. 99

full thickness burns that affect all skin layers and may affect the subcutaneous layers, muscle, bone, and internal organs, leaving the area dry, leathery, and white, dark brown, or charred
Also called a *third-degree burn*. 82

fundus part of a hollow organ that is farthest from the opening. 55, 103

gallbladder a sac on the under surface of the liver that collects bile from the liver and discharges it into the duodenum through the common bile duct. 24

gastric distention a condition in which air fills the stomach, often as a result of high volume and pressure during artificial ventilation. 55

GCS Glasgow Coma Scale. 75, 78, 136, 184

general adaptation syndrome the body's response to stress that begins with alarm response, followed by a stage of reaction and resistance, then recovery or, if distress is prolonged, exhaustion. 6

general impression the overall initial impression that determines the priority for patient care; based on the patient's surroundings, the mechanism of injury (MOI), signs and symptoms, and the chief complaint. 36

generalized tonic clonic seizure a seizure that features rhythmic back-and-forth motion of an extremity and body stiffness. 106

generic name the original chemical name of a medication (in contrast with one of its proprietary, or trade name); the name is not capitalized. 42

genital system reproductive system in men and women. 24

geriatrics the assessment and treatment of disease in someone who is 65 years or older. 109

germinal layer deepest layer of the epidermis where new skin cells are formed. 24

gestational diabetes diabetes that develops during pregnancy in women who did not have diabetes before pregnancy. 103

globe the eyeball. 84

Good Samaritan law statutory provisions enacted by many states to protect citizens from liability for errors and omissions in giving good faith emergency medical care, unless there is wanton, gross, or willful negligence. 10

government immunity legal doctrine that can protect an EMS provider from being sued or which may limit the amount of the monetary judgement that the plaintiff may recover; generally applies only to EMS systems that are operated by municipalities or other governmental entities. 10

greater trochanter bony prominence on the proximal lateral side of the thigh, just below the hip joint. 24

gross negligence conduct that constitutes a willful or reckless disregard for a duty or standard of care. 10

group in the context of EMS a collection of individual healthcare providers working to health the patient. 118

grunting an "uh" sound heard during exhalation; reflects the child's attempt to keep the alveoli open; a sign of increased work of breathing. 106

guarding involuntary muscle contractions of the abdominal wall to minimize the pain of abdominal movement; a sign of peritonitis. 94

hair follicles small organs that produce hair. 24

head tilt-chin lift maneuver a combination of two movements to open the airway by tilting the forehead back and lifting the chin; not used for trauma patients. 55

health care directive See: advance directive. 10, 109

health care proxies a type of advance directive executed by a competent adult that appoints another individual to make medical decisions on his or her behalf in the event that the person making the appointment loses decision-making capacity. Also known as durable power of attorney for health care. 10

heart hollow muscular organ that pumps blood throughout the body. 24

heat cramps the external, visible part of the ear. 99

heat exhaustion the circular opening in the middle of the iris that admits light to the back of the eye. 99

heat stroke the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain. 100

hematemesis vomited blood. 78

hematoma a mass of blood that has collected within damaged tissue beneath the skin or in a body cavity. 78, 82

hematuria blood in the urine. 78, 94

hemophilia a hereditary condition in which the patient lacks one or more of the blood's normal clotting factors. 79

hemopneumothorax the accumulation of blood and air in the pleural space of the chest. 91

hemoptysis the coughing up of blood. 79, 109

hemorrhage bleeding. 79

hemostatic agent a chemical compound that slows or stops bleeding by assisting with clot formation. 79

hemothorax the collection of blood in the pleural cavity. 91

hepatitis inflammation of the liver, usually caused by viral infection, it causes fever, loss of appetite, jaundice, fatigue, and altered liver function. 6

hinge joint joint that can bend and straighten but cannot rotate; restricted to motion in one plane. 24

HIPAA Health Insurance Portability and Accountability Act. 1, 2, 134, 182

HIV human immunodeficiency virus. 5, 6, 134, 182

hollow organs structures through which materials pass, such as the stomach, small intestines, large intestines, ureters, and urinary bladder. 94

homeostasis a balance of all systems of the body. 51, 100

hormone substance formed in specialized organs or glands and carried to another organ or group of cells in the same organism; they regulate many body functions, including metabolism, growth, and body temperature. 24

host the organism or individual is attacked by the infecting agent. 6

hotline see: dedicated line. 14

HR heart rate. 19, 24, 136, 184

humerus supporting bone of the upper arm. 24

hydrostatic pressure pressure water against the walls of its container. 24

hypercarbia increased level of carbon dioxide (CO₂) in the bloodstream. 55

hypertension blood pressure that is higher than the normal range. 37, 65

hyperventilation Rapid or deep breathing that lowers the blood carbon dioxide (CO₂) level below normal. 55

hypoglycemia extremely low blood sugar. 42

hypoperfusion another term for shock. 24, 51, 79

hypotension blood pressure that is lower than the normal range. 55

hypothermia condition in which the internal body temperature falls below 95°F (35°C). 36, 51

hypovolemic shock shock caused by fluid or blood loss. 51, 79

hypoxia a dangerous condition in which the body's tissues and cells do not have enough oxygen. 56

hypoxic drive A condition in which chronically low. 24

ICP intracranial pressure. 87, 88, 136, 184

ileostomy surgical procedure to create an opening (stoma) between the small intestine and the surface of the body. 111

ileum one of the three bones the fuse to form the pelvic ring. 24

IM intramuscular. 41, 42, 134, 182

immune the body's ability to protect itself from acquiring a disease. 6

implied consent type of consent in which a patient who is unable to give consent is given treatment under the legal assumption that he or she would want treatment. 10

IN intranasal. 41, 42, 134, 182

in loco parentis refers to the legal responsibility of a person or organization to take on some of the functions and responsibilities of a parent. 10

index of suspicion awareness that unseen life-threatening injuries may exist when determining the mechanism of injury. 75

indications reasons or conditions for which a particular medication is given. 42

indirect contact exposure or transmission of a disease from one person to another by contact with a contaminated object. 6

infancy the first year of life. 106

infection the abnormal invasion of a host or host tissues by organisms such as bacteria, viruses, or parasites, with or without signs or symptoms of disease. 6

infection control procedures to reduce transmission of infection among patients and healthcare personnel. 6

infectious disease a medical condition caused by the growth and spread of small, harmful organisms within the body. 6

inferior vena cava one of the two largest veins in the body; carries blood from the lower extremities and the pelvic and the abdominal organs to the heart. 24

informed consent permission for treatment given by a competent patient after the potential risks, benefits, and alternatives to treatment have been explained. 10

inhalation administered via inhalation into the lungs. 42

inspiratory reserve volume amount of air that can be inhaled after normal inhalation; the amount of air that can be inhaled in addition to the normal tidal volume. 24

intercostal muscles the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 24, 33

interrogatories written questions that the defense and plaintiff send to one another. 10

interstitial space space in between the cells. 24

intervertebral disc the cushion that lies between two vertebrae. 88

intracerebral hematoma bleeding within the brain (parenchyma) itself; also referred to as an intraparenchymal hematoma. 88

intrapulmonary shunting a condition where blood bypassing of oxygen-poor blood past nonfunctional alveoli to the left side of the heart. 40

intrathoracic within the chest (thoracic) cavity. 56

involuntary activity actions of the body that are not under a person's conscious control. 88

involuntary muscle muscle over which a person has no conscious control. It is found in many automatic regulating systems of the body. 24

IO intraosseous. 41, 42, 134, 182

iris the muscle and surrounding tissue behind the cornea that dilate and constrict the pupil, regulating the amount of light that enters the eye; pigmented this tissue gives the eye its color. 84

ischemia decreased oxygen supply. 56

ischium one of three bones that fuse to form the pelvic ring. 24

ITD impedance threshold device. 54, 56, 134, 182

IV intravenous therapy. 1-3, 41, 42, 54, 57, 133, 135, 181, 183

jaw-thrust maneuver technique to open the airway by placing the fingers behind the angle of the jaw and bringing the jaw forward; use for patients who may have a cervical spine injury. 56

joint (articulation) place where two bones come into contact. 25

joint capsule fibrous sac that encloses a joint. 25

JVD jugular vein distention. 108, 109, 136, 184

kidnapping the seizing, confining, abducting, or carrying away of a person by force, including transporting a competent adult for medical treatment without his or her consent. 10

kidneys two retroperitoneal organs that excrete the end products of metabolism as urine and regulate the body salt and water content. 25

kinetic energy the energy of a moving object. 75

kyphosis a forward curling of the back caused by an abnormal increase in the curvature of the spine. 109

labored breathing use of muscles of the chest, back, and abdomen to assist in expanding the chest; occurs when air movement is impaired. 25

lacrimal glands the glands that produce fluids to keep the eye moist; also called tear glands. 84, 96

lactic acid a metabolic byproduct of the breakdown of glucose that accumulates when Metabolism proceeds in the absence of oxygen (anaerobic metabolism). 25

large intestine portion of the digestive to betting circles the abdomen around the small bowel, consisting of the cecum, the colon, and the rectum. It helps regulate water balance and eliminate solid waste. 25

laryngopharynx the secondary muscles of respiration. They include the neck muscles (sternocleidomastoids), the chest pectoralis major muscles, and the abdominal muscles. 25

LDB load-distributing band. 54, 56, 135, 183

length-based resuscitation tape a tape used to estimate an infant or child's weight on the basis of length; appropriate drug doses and equipment sizes are listed on the tape. 106

lens the transparent part of the eye through which images are focused on the retina. 84, 96

lesser trochanter projection on the medial superior portion of the femur. 25

libel false and damaging information about a person that is communicated in writing. 10

licensure the process whereby a competent authority, usually the state, allows people to perform a regulated act. 3, 11

ligament band of fibrous tissue that connects bones to the bones. It supports and strengthens a joint. 25

lightening the movement of the fetus down into the pelvis late in pregnancy. 103

limb presentation a delivery in which the presenting part is a single arm or leg. 103

linear skull fracture account for 80% of skull fractures; also referred to as nondisplaced skull fractures; commonly occur in the temporal/parietal region of the skull; not associated with deformities to the skull. 88

liver a large solid organ that lies in the right upper quadrant immediately below the diaphragm; it produces bile, stores glucose for immediate use by the body, and produces many substances that help regulate immune responses. 25

living will See: advance directive. 11, 109

LOC level of consciousness. 36, 38, 179, 227

lower airway includes the trachea bronchi bronchioles and alveoli surrounded by the pulmonary capillaries. 65

lumbar spine lower part of the back formed by the lowest five nonfused vertebrae; also called the dorsal spine. 25

lymph fainting, straw colored fluid that carries oxygen, nutrients, and hormones to the cells and carries waste products of metabolism away from the cells and back into the capillary so that they may be excreted. 25

lymph nodes tiny, oval-shaped structures located in various places along the length vessels that filter lymph. 25

mandible bone of the lower jaw. 25

mastoid process the prominent bony mass at the base of the skull about 1" posterior to the external opening of the ear. 84, 96

maxillae upper jaw bones that assist in the formation of the orbit, the nasal cavity, and the pallet and hold the upper teeth. 25

MDI metered-dose inhaler. 41, 42, 135, 183

MDT mobile data terminal. 13

meconium fetal stool; appears as a dark green material in the amniotic fluid, in can indicate distress or disease in the newborn. Problematic as it can be aspirated into the fetus's lungs during delivery. 103

MED channels VHF and UHF channels that the Federal Communications Commission has designated exclusively for EMS use. 14

mediastinum space within the chest that contains the heart, major blood vessels, vagus nerve, trachea, major bronchi, and esophagus; located between the two lungs. 40, 51

medical control physician instructions given directly by radio or cell phone (online/direct) or indirectly by protocol/guidelines (off-line, indirect), as authorized by the medical director of the service program. 3

medical director the physician who authorizes or delegates to the EMT the authority to provide medical care in the field. 3

medical emergencies emergencies that require EMS attention because of illnesses or conditions not caused by an outside force. 76

medication substance used to treat or prevent disease or relieve pain. 42

medicolegal a term relating to medical jurisprudence (law) or forensic medicine. 11

medulla oblongata nerve tissue that is continuous inferior way with the spinal cord; serves as a conduction pathway for sending and descending nerve tracts; coordinates the heart rate blood vessel diameter, breathing, swallowing, vomiting, coughing, and sneezing. 26

melena black, foul-smelling, tarry stool containing digested blood. 79, 94, 109

meninges three distinct layers of tissue that surround and protect the brain and the spinal cord within the skull and the spinal canal. 88

meningitis an inflammation of the meningeal coverings of the brain and spinal cord; it is usually caused by a virus or bacterium. 106

menubrium upper quarter of the sternum. 25

metabolism biochemical processes that result in production of energy from nutrients within cells. 26

MI myocardial infarction. 41, 42, 135, 183

midbrain part of the brain that is responsible for helping to regulate the level of consciousness. 26

midsagittal plane (midline) imaginary vertical line drawn from the middle of the forehead through the nose and the umbilicus (navel) to the floor, dividing the body and equal left and right halves. 26

MIH mobile integrated healthcare. 1, 3, 136, 184

minute ventilation see: minute volume. 26

minute volume volume of air that moved and out of the lungs per minute; calculated by multiplying the tidal volume and respiratory rate; also called minute ventilation. 26

miscarriage the spontaneous passage of the fetus and placenta before 20 weeks; also called spontaneous abortion. 103

MOI mechanism of injury. 36, 37, 75, 135, 154, 171, 183, 202, 219

morality a code of conduct that can be defined by society, religion, or a person, affecting character, conduct, and conscience. 11

motor nerves nerves that carry information from the central nervous system to the muscles of the body. 26

MRSA methicillin-resistant *Staphylococcus aureus*. 108, 109, 137, 185

mucous membranes lining of body cavities and passages that communicate directly or indirectly with the environment outside of the body. 26

mucus moderate secretion of the mucous membranes that lubricates the body openings. 26

multiplex the ability to transmit audio and data signals through the use of more than one communications channel. 14

multisystem trauma trauma that affects more than one body system. 76

musculoskeletal system bones involuntary muscles of the body. 26

multigravida a woman who has had previous pregnancies. 103

myocardial contractility the ability of the heart muscle to contract. 51

myocardial contusion bruising of the heart muscle. 91

myocardium heart muscle. 26

nares the external openings of the nostrils. A single nostril opening is called a naris. 106

naris singular form of nares. 106

nasopharynx part of the pharynx that lies above the level of the roof of the mouth, or palate. 26

National EMS Scope of Practice Model a document created by the National Highway Traffic Safety Administration (NHTSA) that outlines the skills performed by various EMS providers. 3

neglect refusal or failure on the part of the parent or caregiver to provide life necessities. 106

negligence failure to provide the same care that a person with similar training would provide. 11

negligence per se a theory that may be used when the conduct of the person being sued is alleged to have occurred in clear violation of a statute. 11

Neisseria meningitides a form of bacterial meningitis characterized by rapid onset of symptoms; often leading to shock and death. 106

nervous system system that controls virtually all activities of the body, both voluntary and involuntary. 26

neurogenic shock circulatory failure caused by the paralysis of the nerves that control the size of the blood vessels, leading to widespread dilation; seen in patients with spinal cord injuries. 51

neuropathy a group of conditions in which the nerves leaving the spinal cord are damaged, resulting in distortion of signals to or from the brain. 109

NHTSA National Highway Traffic Safety Administration. 1, 3, 163, 211

NOI nature of illness. 37, 135, 171, 183, 219

noise anything that dampens obscures the true meaning of a message. 14

norepinephrine neurotransmitter and drug sometimes used in the treatment of shock; produces vasoconstriction to its alpha-stimulator properties. 26

nuchal cord an umbilical cord that is wrapped around the fetus's neck. 103

obesity complex condition in which a person has an excessive amount of fat. 111

obstructive shock shock that occurs when there is a block to the blood flow in the heart or great vessels, causing an insufficient blood supply to the body's tissues. 51

occiput most posterior portion of the cranium. 26

occlusive dressing an airtight dressing that protects a wound from air and bacteria; a commercial vented version allows air to passively escape from the chest, while in unvented dressing may be made of petroleum jelly based (Vaseline) gauze, aluminum foil, or plastic. 91

oncotic pressure pressure of water to move, typically into the capillary, as the result of the presence of plasma proteins. 26

open abdominal injury an injury in which there is a break in the surface of the skin or mucous membrane, exposing deeper tissue to potential contamination. 94

open chest injury an injury to the chest in which the chest wall itself is penetrated by a fractured rib or, more frequently, by an external object such as a bullet or knife. 91

open head injury injury to the head often caused by penetrating object in which there may be bleeding and exposed brain tissue. 88

open pneumothorax an open or penetrating chest wall wound through which air passes during inspiration and expiration, creating a sucking chest sound; also referred to as a sucking chest wound. 92

open-book pelvic fracture a life-threatening fracture of the pelvis caused by force that displaces one or both sides of the pelvis laterally and posteriorly. 79

open-ended questions questions for which the patient must provide detail to give an answer. 14

opiate A subset of the opioid family, referring to natural, non-synthetic opioids. 56

opioid A synthetically-produced narcotic medication, drug, or agent similar to the opiate morphine, but not derived from opium. Used to relieve pain. 56

optic nerve a cranial nerve that transmits visual information to the brain. 85, 96

orbit eye socket, made up of maxilla and zygoma. 26

orientation your evaluation of the conditions in which you will be operating. 37

OSHA Occupational Safety and Health Administration. 5, 7, 135, 183

osteoporosis generalized bone disease, commonly associated with postmenopausal women, in which there is a reduction in the amount of bone mass leading to fractures after minimal trauma in either sex. 109

OTC over-the-counter. 41

ovaries female glands that produce sex hormones and (ova). 27

pacemaker a medical device that delivers shocks directly to the heart if necessary. Also called an automated implanted cardioverter-defibrillator (AICD). 56

paging the use of a radio signal and a voice or digital message that is transmitted to pagers ("beepers") or desktop monitor radios. 14

palate the "roof" of the mouth. 27

pancreas a flat, solid organ that lies below the liver and the stomach; it is a major source of digestive enzymes that produces the hormone insulin. 27

paradoxical motion the motion of the portion of the chest wall that is attached in a flail chest; the motion—enduring inhalation, out during exhalation—is exactly the opposite of normal chest wall motion during breathing. 92

paramedic an individual who has extensive training in advanced life support, including endotracheal intubation, emergency pharmacology cardiac monitoring, and other advanced assessment and treatment skills. 3

parasympathetic nervous system subdivision of the autonomic nervous system, involved in control of involuntary functions mediated largely by the vagus nerve to the chemical acetylcholine. 27

parenteral absorbed via means other than the digestive system. 42

parietal bones bones that lie between the temporal and occipital regions of the cranium. 27

PAT pediatric assessment triangle. 105, 106, 137, 185

patella knee cap; a specialized bone that lies within the tendon of the quadriceps muscle. 27

pathogen a microorganism that is capable of causing disease in a susceptible host. 7

pathophysiology study of how normal physiologic processes are affected by disease. 27

patient autonomy the right of a patient to make informed choices regarding his or her health care. 11

PCR patient care report. 13, 14, 135, 168, 183, 216

pediatrics a specialized branch of medical practice devoted to the care of the young. 106

pelvic binder a device to split the bony pelvis to reduce hemorrhagic from bone ends, venous disruption, and pain. 79

penetrating trauma injury caused by objects, such as knives and bullets, that pierce the surface of the body and damage internal tissues and organs. 76

peptic ulcer disease abrasion of the stomach or small intestine. 109

perfusion circulation of oxygenated blood within an organ or tissue in adequate amounts to meet the cells' current needs. 27, 37, 51, 79

pericardial effusion a collection of fluid between the pericardial sac and the myocardium. 51

pericardial tamponade See *cardiac tamponade*. 92

pericardium the fibrous sac that surrounds the heart. 92

perineum in a woman, the area between the vagina and anus. 103

peristalsis the wavelike contraction of the smooth muscle by which the ureters or other tubular organs propelled their contents. 27

peritoneal cavity the abdominal cavity. 94

peritoneum the membrane lining the abdominal cavity (per radial peritoneum) and covering the abdominal organs (visceral peritoneum). 94

pertussis an airborne bacterial infection that affects mostly children younger than 6 years of age, in which the patient is feverish and exhibits a "whoop" sound on inspiration after a coughing attack; highly contagious through droplet infection. Also called whooping cough.. 106

pharmacodynamics the process by which medication works on the body. 42

pharmacology the science of drugs, including their ingredients, preparation, uses, and actions on the body. 42

PHI protected health information. 8, 11, 135, 183

pinna the external, visible part of the ear. 85, 97

placenta the tissue attached to the uterine wall that nourishes the fetus through the umbilical cord. 103

placenta previa a condition in which the placenta develops over and covers the cervix. 103

plasma a sticky, yellow fluid that carries the blood cells and nutrients and transport cellular waste material to the organs of excretion. 27

pleura the Sarco membranes covering the lungs and lining the thorax completely enclosing a potential space known as the pleural space. 27

pleural space potential space between the parietal pleura and of the visceral pleura; described as "potential" because under normal conditions, the spaces not exist. 27

pneumonia inflammation of the lung from a bacterial, viral, or fungal cause. 109

pneumothorax an accumulation of Airgas in the pleural cavity. 92

PNS peripheral nervous system. 19–21, 50, 87, 133, 136, 181, 184

PO per oral. 41, 42, 135, 183

polypharmacy use of multiple medications on a regular basis. 110

posterior tibial artery artery just behind the medial malleolus; supplies blood to the foot. 27

posttraumatic amnesia See anterograde amnesia. 88

potential energy the product of mass, gravity, and height, which is converted into kinetic energy and results in injury, such as from a fall. 76

PPE personal protective equipment. 5, 7, 36, 135, 183

PR per rectum. 41, 42, 135, 183

preeclampsia see: pregnancy-induced hypertension. 103

pregnancy-induced hypertension a condition of late pregnancy that is characterized by headache, visual changes, and swelling of the hands and feet; also called preclampsia or toxemia of pregnancy. 103

prehospital care reports see: patient care report (PCR). 14

preload the pre-contraction pressure in the heart as the volume of blood builds up. 51

presbycusis age-related condition of the ear that produces progressive bilateral hearing loss that is most noted at higher frequencies. 110

preschool-age child between 3 and 6 years of age. 106

presentation the position in which an infant is born; defined by the part of the body that appears first. 103

primary assessment your evaluation of the conditions in which you will be operating. 36, 37

primary injury an injury to the brain and its associated structures that is a direct result of impact to the head. 88

primary prevention efforts to prevent an injury or illness from ever occurring. 3

primigravida a woman who is experiencing her first birth. 103

projectile any object propelled by force, such as a bullet by a weapon. 76

prolapse of the umbilical cord a situation in which the umbilical cord comes out of the vagina before the fetus. 103

proprietary name the brand name that a manufacturer gives a medication; the name is capitalized. 42

prostate gland small gland that surrounds the male urethra where it emerges from the urinary bladder; it's increase the fluid that is part of the ejaculatory fluid. 27

protocols see: standing orders. 14

proximate causation when a person who has a duty abuses it, and causes harm to another individual, the EMT, the agency, and/or the medical director may be sued for negligence. 11

PSA primary service area. 1, 3, 137, 185

PSNS parasympathetic nervous system. 19, 50

PTSD posttraumatic stress disorder. 5, 7, 135, 183

pubic symphysis hard, bony, and cartilaginous prominence found at the midline in the lowermost portion of the abdomen where the two halves of the pelvic ring are joined by cartilage at a joint with minimal motion. 27

pubis one of the three bones that fuse to form the pelvic ring. 27

public health focused on examining the health needs of entire populations with the goal of preventing health problems. 3

public safety access point a call center, staffed by trained personnel, who are responsible for managing requests for police, fire, and ambulance services. 3

pulmonary artery the major artery leading from the right ventricle of the heart to the lungs; carries oxygen-poor blood. 27

pulmonary blast injuries pulmonary trauma resulting from short-range exposure to the detonation of explosives. 76

pulmonary circulation flow of blood from the right ventricle through the pulmonary arteries and all of their branches and capillaries in the lungs and back to the left atrium through the venules and pulmonary veins; also called the lesser circulation. 28

pulmonary contusion separation of the retina from its attachments at the back of the eye. 92

pulmonary edema A buildup of fluid in the lungs, usually as a result of congestive heart failure. 40, 65

pulmonary embolism a blood clot that breaks out from the large vein and travels to the blood vessels of the lung, causing obstruction of blood flow. 65, 110

pulmonary veins four veins that return oxygenated blood from the lungs to the left atrium of the heart. 28

pulse wave of pressure created as the heart contracts of horses blood out of the left ventricle and into the major arteries. 28

pulse pressure the difference between the systolic and diastolic pressures. Sensitization developing a sensitivity to a substance that initially caused no allergic reaction. 51

punitive damages damages that are sometimes awarded in a civil lawsuit when the conduct of the defendant was intentional or constituted a reckless disregard for the safety of the public. 11

pupil the circular opening in the middle of the iris that admits light to the back of the eye. 85, 97

putrefaction decomposition of body tissues; a definitive sign of death. 11

QA quality assurance. 1

QC quality control. 1

quality assurance See: quality control. 3

quality control the responsibility of the medical director to ensure the appropriate medical care standards are met the EMTs on each call. 3, 170, 218

raccoon eyes bruising under the eyes that may indicate a skull fracture. 88

radial artery major artery in the forearm; it is palpable at the wrist on the thumb side. 28

radius the bone on the thumb side of the forearm. 28

rapport a trusting relationship that you build with your patient. 14

rectum the lowermost end of the:. 28

red blood cell cell that carries oxygen to the body's tissues; also an called erythrocyte. 28

Renal pelvis cone-shaped area that collects urine from the kidneys and funnels it through the ureter into the bladder. 28

repeater a special base station radio that receives messages and signals on one frequency and then automatically re-transmits them on a second frequency. 14

res ipsa loquiter when the EMT or an EMS system is held liable even the plaintiff is unable to clearly demonstrate how an injury occurred. 11

residual volume air that remains in the lungs after maximal expiration. 28

respiration inhaling and exhaling of air; the physiologic process that exchanges carbon dioxide from fresh air. 28, 65

respiratory compromise inability of the body to move gas effectively. 28

respiratory system all the structures of the body that contribute to the process of breathing, consisting of the upper and lower airways and their component parts. 28

responsiveness The way in which a patient responds to external stimuli, including verbal stimuli (sound), tactile stimuli (touch) and painful stimuli. 37

reticular activating system located in the upper brainstem; responsible for the maintenance of consciousness, specifically one's level of arousal. 28

retina the light-sensitive area of the eye where images are projected; a layer of cells at the back of the eye that changes the light image into electrical impulses, which are carried by the optic nerve to the brain. 85, 97, 100

retinal detachment separation of the retina from its attachments at the back of the eye. 85, 97, 100

retrograde amnesia the inability to remember events leading up to head injury. 88

retroperitoneal behind the abdominal cavity. 28

rhonchi Coarse, low-pitched breath sounds heard in patients with chronic mucus in the upper airways. 40

rigor mortis stiffening of the body muscles; a definitive sign of death. 11

ROSC return of spontaneous circulation. 54

RSV respiratory syncytial virus. 110, 137, 185

RTS revised trauma score. 75, 76, 78, 135, 183

sacroiliac joint connection point between the pelvis and the vertebral column. 28

sacrum one of the three bones (sacrum and two pelvic bones) that make up the pelvic ring; consists of five fused sacral vertebrae. 28, 40

sagittal (lateral) plane imaginary line where the body is divided into left and right parts. 28

salivary glands glands that produce saliva to keep the mouth and pharynx moist. 28

SAMPLE history a brief history of a patient's condition to determine signs and symptoms, allergies, medications, pertinent past history, last oral intake, and events leading to the injury or illness. 37

SC subcutaneous. 41, 42, 135, 183

SCA sudden cardiac arrest. 54

scalp thick skin covering the cranium which usually bears hair. 28

scanner a radio receiver that searches or "scans" across several frequencies until the message completed; the process is then repeated. 14

scapula the shoulder blade. 29

scene size-up A step within the patient assessment process that involves a quick assessment of the scene and the surroundings to provide information about scene safety and that mechanism of injury (MOI) or nature of illness (NOI). 37

school age child between 6 and 12 years of age. 106

sclera the tough, fibrous, white portion of the eye that protects the more delicate inner structures. 85, 97, 100

scope of practice most commonly defined by state law; outlines the care that the EMT is able to provide for the patient. 11

sebaceous glands glands that produce an oily substance called sebum, which discharges along the shafts of the hairs. 29

secondary assessment A step within the patient assessment process in which a systematic physical examination of the patient is performed. The examination may be a systematic exam or an assessment that focuses on a certain area or region of the body, often determined through the chief complaint. 37

secondary injury the after effects of the primary injury; includes abnormal processes such as cerebral edema increased intracranial pressure, cerebral ischemia and hypoxia, and infection; onset is often delayed following the primary brain injury. 88

secondary prevention efforts to limit the effects of an injury or illness cannot be completely prevented. 3

semen fluid ejaculated from the penis and containing sperm. 29

seminal vesicles storage sacs for sperm and seminal fluid which empty into the urethra at the prostate. 29

sensorineural deafness permanent lack of hearing caused by a lesion or damage of the inner ear. 111

sensory nerves nerves that carry sensations such as touch, taste, smell, heat, cold, and pain from the body to the central nervous system. 29

septic shock shock caused by a severe infection usually a bacterial infection. 51

shaken baby syndrome a syndrome seen in abused infants and children; the patient has been subjected to violent, whiplash-type shaking injuries inflicted by the abusing individual that may cause coma, seizures, and increased intracranial pressure due to tearing of the cerebral veins with consequent bleeding into the brain. 106

shock abnormal state associated with the inadequate oxygen and nutrient delivery to the cells of the body, also known as hypoperfusion. 29, 51, 79

shoulder girdle the proximal portion of the upper extremities, made up of the clavicle, the scapula, and the humerus. 29

shunt tube that drains excess cerebrospinal fluid (CSF) from the brain to another part of the body outside of the brain, such as the abdomen; lowers pressure in the brain. 112

side effect any action of a medication other than the desired ones. 42

SIDS sudden infant death syndrome. 105, 107, 137, 185

sign objective findings that can be seen, heard, felt, smelled, or measured. 37

simple pneumothorax any pneumothorax that is free from significant physiological changes and does not cause drastic changes in the vital signs of the patient. 92

simplex single-frequency radio; transmissions can occur in either direction but not simultaneously in both; when one party transmits the other can only receive, and the party that is transmitting is unable to receive. 14

situational awareness your evaluation of the conditions in which you will be operating. 37

skeletal muscle muscle that is attached to bones and usually crosses at least one joint; striated, or voluntary, muscle. 29

skeleton framework that gives the body its recognizable form; also designed to allow motion of the body and protection of vital organs. 29

SL sublingual. 41, 42, 135, 183

slander false and damaging information about a person that is communicated by the spoken word. 11

small intestine portion of the digestive tract between the stomach and the cecum, consisting of the duodenum, jejunum, and ileum. 29

smooth muscle involuntary muscle; it constitutes the bulk of the gastrointestinal tract and is present in nearly every organ to regulate automatic activity. 29

sniffing position an upright position in which the patient's head and chin are thrust forward slightly forward to keep the airway open. 37, 106

SNS enteric nervous system. 19

SNS sympathetic nervous system. 19, 50, 138, 186

solid organs solid masses of tissue where much of the chemical work of the body takes place (e.g., the liver, spleen, pancreas, and kidneys). 94

solution liquid mixture of one or more substances that cannot be separated simply. 42

somatic nervous system part of the nervous system that regulates activities over which there is voluntary control. 29

sphincter muscle arranged in a circle that is able to decrease the diameter of tubes. Examples are found within the rectum, bladder, and blood vessels. 29, 52

sphygmomanometer device used to measure blood pressure. 29

spina bifida a developmental defect in which a portion of the spinal cord or meninges may protrude outside of the vertebrae and possibly even outside of the body, usually at the lower third of the spine in the lumbar area. 103, 112

spinal cord extension of the brain, composed of virtually all the nerves carry messages between the brain and the rest of the body. It lies inside of and is protected by the spinal canal. 29

spontaneous abortion see miscarriage. 103

spontaneous pneumothorax a pneumothorax occurs when a weak area on the lung ruptures in the absence of major injury, allowing air to leak into the pleural space. 92

spontaneous respiration respirations characterized by little movement of the chest wall (reduced tidal volume) or poor chest excursion. 37

spontaneous respiration breathing that occurs without assistance. 37

standard of care written, accepted levels of emergency care expected by reason of training and profession; written by legal or professional organizations so that patients are not exposed to unreasonable risk or harm. 11

standard precautions protective measures that have traditionally been developed by the CDC for use in dealing with objects, blood, body fluids, and other potential exposure risks of communicable disease. 7, 37

standing orders written documents, signed by the EMS systems adequate director, that outline specific directions, permissions, and sometimes prohibitions regarding patient care; also called protocols. 15

statue of limitations the time within which a case must be commenced. 12

sternocleidomastoid muscles the muscles on either side of the neck that allow movement of the head. 85, 97, 100

sternum breastbone. 29

stoma an opening through the skin and into an organ or other structure. 56, 112

stratum corneal layer outermost board dead layer of the skin. 29

stridor high-pitched noise heard primarily on inspiration. 38

subcutaneous emphysema the measure of force over distance. 88

subcutaneous emphysema the measure of force over distance. 85, 97, 100

subcutaneous tissue tissue, largely fat, that lies directly under the dermis and serves as an insulator of the body. 30

subdural hematoma an accumulation of blood beneath the dura mater but outside the brain. 88

sucking chest wound an open or penetrating chest wall wound through which air passes during inspiration expiration creating a sucking sound. 92

superior vena cava one of the two largest veins in the body; carries blood from the upper extremities, head, neck, and chest into the heart. 30

supine hypotensive syndrome low blood pressure resulting from compression of the inferior vena cava by the weight of the pregnant uterus when the woman is supine. 104

suspension substance that does not dissolve well in liquids. 43

SV stroke volume. 19, 29, 137, 185

SVR systemic vascular resistance. 30, 137, 185

sweat glands glands that secrete sweat located in the dermal layer of the skin. 30

sympathomimetic simulating sympathetic nervous action in physiological effect. 43

symphysis type of joint that is grown together to form a very stable connection. 30

syncope a fainting spell or transient loss of consciousness. 52, 110

synovial fluid small amount of liquid within a joint use as lubrication. 30

synovial membrane lining of a joint that secrete synovial fluid into the joint space. 30

systemic circulation portion of the circulatory system outside of the heart and lungs. 30

systemic effect whole-body. 43

systole contraction, or period of contraction, of the heart, especially that of the ventricles. 30

tablet contain other materials that are mixed with the medication and compressed. 43

tachycardia rapid heart rate (> 100 beats/minute). 56, 57

tachypnea increased respiratory rate. 38, 92, 107

TBI traumatic brain injury. 87, 88, 137, 185

team in the context of EMS a collection of health care providers who have been assigned specific roles, working interdependently in a coordinated manner under a designated leader. 118

team leader the team member who provides a combination of role-assignment, coordination, oversight, centralized decision making, and support for the team to accomplish its goals and achieve desired results. 118

telemetry a process in which electronic signals are converted into coded, audible signals; these signals can then be transmitted by radio or telephone to a receiver with a decoder at the hospital. 15

temporal bones lateral bones on each side of the cranium; the temples. 30

temporomandibular joint the joint form for the mandible and the and cranium meet, just in front of the ear. 85, 97, 100

tendons fibrous connective tissue that attaches muscle to bone. 30

tension pneumothorax accumulation of air or gas in the pleural cavity that progressively increases pressure in the chest that interferes with cardiac function with potentially fatal results. 92

term gestation a pregnancy that has reached full term, between 39 weeks 0 days and 40 weeks 6 days. 104

testicle it male genital land that contain specialized cells that produce hormones and sperm. 30

therapeutic communication verbal and nonverbal indication techniques that encourage patients to express their feelings and to achieve a positive relationship. 15

thighbone another name for the femur. 30

third-degree burn See *full thickness burn*. 82

thoracic cage chest or rib cage. 30

thoracic spine 12 vertebrae that lie between the cervical vertebrae and the lumbar vertebrae. One pair of ribs is attached to each of these vertebrae. 30

thorax chest cavity contains the heart, lungs, esophagus, and great vessels. 30

thyroid cartilage firm prominence of cartilage that forms the upper part of the larynx; the Adam's apple. 30

tibia shinbone; larger of the two bones of the lower leg. 30

tidal volume amount of air moved in and out of the lungs are one relaxed breath; about 500 mL for an adult. 30

toddler child between 1 and 3 years of age. 107

topographic anatomy the superficial landmarks of the body that serve as guides to the structures that lie beneath them. 31

tort a wrongful act that gives rise to a civil lawsuit. 12

tourniquet the bleeding control method used when a wound continues to bleed despite the use of direct pressure; use with the patient is bleeding severely from a partial or complete amputation. 79

toxemia of pregnancy see: pregnancy-induced hypertension. 104

trachea the windpipe; main trunk for air passing to and from the lungs. 31

tracheitis inflammation of the trachea. 107

tracheostomy surgical procedure to create an opening (stoma) into the trachea; a stoma in the neck connects the trachea directly to the skin. 112

tracheostomy tube plastic tube placed within the tracheostomy site (stoma). 112

trade name the brand name that a manufacturer gives a medication; the name is capitalized.
Also called proprietary name. 43

tragus the small, rounded, fleshy bulge that lies immediately anterior to the ear canal. 85, 97, 100

trajectory the path a projectile takes once it is propelled. 76

transcutaneous administered via the skin (alt. transdermal). 43

transdermal administered via the skin (alt. transcutaneous). 43

transmission the way in which an infectious disease is spread: contact, airborne, by vehicles, or by vectors. 7

transverse plane an imaginary line with the body is divided in the top and bottom parts. Also known as the axial plane. 31, 141, 189

trauma emergencies emergencies that are the result of physical force is applied to a patient's body. 76

trauma score A score calculated from 1 to 16, with 16 being the best possible score. It relates to the likelihood of a patient survival with the exception of a severe head injury. It takes into account the Glasgow Coma Scale (GCS) score, respiratory rate, respiratory expansion, systolic blood pressure, and capillary refill. 76

traumatic asphyxia a pattern of injury scene after severe force is applied to the chest, forcing blood from the great vessels back into the head and neck. 92

triage the process of establishing treatment and transportation priorities according to severity of injury and medical need. 38

triceps muscle in the back of the upper arm. 31

tripod position an upright position in which the patient leans forward onto outstretched arms with the head and chin thrust slightly forward. 107

trunking telecommunication systems that allow computer to maximize utilization of a group of frequencies. 15

tunica media middle and thickest part of tissue of a blood vessel wall, composed of elastic tissue and smooth muscle cells that allow the vessel to expand or contract in response to changes in blood pressure and tissue demand. 31

tympenic membrane the eardrum; then, semi transparent membrane in the middle ear that transmit sound vibrations to the internal ear by means of auditory ossicles. 76, 85, 97, 100

UHF ultra-high frequency. 13, 15, 135, 183

ulna enter bone of the forearm, on the side opposite the thumb. 31

umbilical cord the structure that connects the pregnant woman to the fetus via the placenta; contains two arteries and one vein. 104

unintended effect effects that are undesirable but pose little risk to the patient. 43

untoward effect effects that can be harmful to the patient. 43

upper airway . 65

ureter small, hollow tube that carries urine from the kidneys to the bladder. 31

urethra canal that conveys urine from the bladder to the outside of the body. 31

urinary bladder a sac behind the pubic symphysis made of smooth muscle that collects and stores urine. 31

urinary system organs that control the discharge of certain waste materials filtered from the blood and excreted as urine. 31

urostomy surgical procedure to create an opening (stoma) which connects the urinary system to the surface of the skin and allows urine to drain through the abdominal wall. 112

UTI urinary tract infection. 110, 137, 185

v-fib ventricular fibrillation. 54, 56, 57, 136, 184

v-tac ventricular tachycardia. 54, 56, 57, 136, 184

V/Q ratio measurement that examines how much gas is being moved effectively and how much blood is flowing around the alveoli or gas exchange (perfusion) occurs. 31

vagina muscular, dispensable to that connects the uterus with the vulva (the external female genitalia); also called the birth canal. 31

vas deferens see: vasa deferentia. 31

vasoconstriction the narrowing of a blood vessel, such as with hypoperfusion or cold extremities. 38, 79

vector-borne transmission the use of an animal to spread an organism from one person or place to another. 7

vein the blood vessels that carry blood from the tissues to the heart. 79

ventilation movement of air between the lungs and the environment. 31

ventricle one of two lower chambers of the heart. 31

venule very small, thin-walled blood vessels. 79

vernix caseosa a white, cheesy substance that covers the body of the fetus. 104

vertebrae the 33 bones that make up the spinal column. 31

vertex presentation a delivery in which the head of the newborn comes out first. 104

VHF very high frequency. 13, 15, 136, 184

vital signs the key signs used to evaluate the patients overall condition, including respirations, pulse, blood pressure, level of consciousness (LOC), and skin characteristics. 38

VoIP Voice over Internet Protocol. 13

voluntary activity actions that are consciously performed, in which sensory input or conscious thought determines a specific muscular activity. 89

voluntary muscle muscle that is under direct voluntary control of the brain can be contracted or relax that will; skeletal, or striated, muscle. 31

VRE vancomycin-resistant enterococci. 110, 137, 185

white blood cell blood cell that has a role in the body's immune defense against infection; also called a leukocyte. 31

whooping cough another name for pertussis; see pertussis. 107

work the measure of force over distance. 76

work of breathing an indicator of oxygenation and ventilation; reflects the child's attempt to compensate for hypoxia. 107

xiphoid process narrow, cartilaginous lower tip of the sternum. 31, 56

zygomas the quadrangular bones of the cheek, articulating with the frontal bone, the maxillae, the zygomatic processes of the temporal bone, and the great wings of the sphenoid bone. 31

Further Reading

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