

# WEBSTER'S NEW WORLD<sup>TM</sup>

## Medical Dictionary

### Third Edition

*From the Doctors and Experts at WebMD*



Wiley Publishing, Inc.

# Aa

**A** In genetics, adenine, a member of the adenine-thymine (A-T) base pair in DNA.

**a-** Prefix indicating the absence or depletion of something; for example, aphagia (not eating) or aphonia (voiceless). The related prefix an- is usually used before a vowel, as in anemia (without blood) and anoxia (without oxygen).

**AA** 1 Alcoholics Anonymous. 2 Amino acid.

**AAAS** American Association for the Advancement of Science, a professional organization that publishes the weekly journal *Science*.

**AAFP** 1 American Association of Family Physicians, a professional organization for physicians who treat both children and adults. 2 American Academy of Family Physicians, a professional organization for physicians who treat both children and adults.

**AAO** 1 American Association of Ophthalmology, a professional organization. 2 American Association of Orthodontists, a professional organization. 3 American Academy of Otolaryngology, a professional organization.

**AAOS** American Academy of Orthopaedic Surgeons, a professional organization. See also *orthopaedics*.

**AAP** 1 American Academy of Pediatrics, a professional organization for physicians who treat infants, children, adolescents, and young adults. 2 American Academy of Pedodontics, a professional organization. 3 American Academy of Periodontology, a professional organization. 4 American Association of Pathologists, a professional organization.

**ab-** Prefix indicating from, away from, or off, as in abduction (movement of a limb away from the midline of the body) and abnormal (away from normal).

**abdomen** The part of the body that contains all the structures between the chest and the pelvis. The abdomen, or belly, is anatomically separated from the chest by the diaphragm, the powerful muscle

that spans the body cavity, just below the lungs. See also *abdominal cavity*.

**abdomen, acute** See *acute abdomen*.

**abdominal aorta** The final section of the aorta, the largest artery in the body, which begins at the diaphragm as a continuation of the thoracic aorta and ends by splitting in two, to form the common iliac arteries. The abdominal aorta supplies oxygenated blood to all the abdominal and pelvic organs, as well as to the legs. See also *aorta*.

**abdominal aortic aneurysm** See *aneurysm, abdominal aortic*.

**abdominal cavity** The cavity within the abdomen. This space between the abdominal wall and the spine contains a number of crucial organs, including the lower part of the esophagus, the stomach, small intestine, colon, rectum, liver, gallbladder, pancreas, spleen, kidneys, adrenal glands, ureters, and bladder. See also *abdomen*.

**abdominal guarding** Tensing of the abdominal wall muscles to guard inflamed organs within the abdomen from the pain of pressure upon them. Abdominal guarding is detected when the abdomen is pressed and is an indication that inflammation of the inner abdominal (peritoneal) surface may be present due, for example, to appendicitis or diverticulitis. The tensed muscles of the abdominal wall automatically go into spasm to keep the tender underlying tissues from being irritated.

**abdominal hysterectomy** See *hysterectomy, abdominal*.

**abdominal muscle** One of a large group of muscles in the front of the abdomen that assists in maintaining regular breathing movements, supports the muscles of the spine while lifting, and keeps abdominal organs in place. Abdominal muscles are the target of many exercises, such as sit-ups. Abdominal muscles are informally known as the abs.

**abdominal pain** Pain in the belly. Abdominal pain can be acute or chronic. It may reflect a major problem with one of the organs in the abdomen, such as appendicitis or a perforated intestine, or it may result from a fairly minor problem, such as excess buildup of intestinal gas.

**abducens nerve** See *abducent nerve*.

**abducent nerve** The sixth cranial nerve, which emerges from the skull to operate the lateral rectus muscle. This muscle draws the eye toward the side of the head. Paralysis of the abducent nerve causes inward turning of the eye.

**abduction** The movement of a limb away from the midline of the body. The opposite of abduction is adduction.

**abductor muscle** See *muscle, abductor*.

**ABG** Arterial blood gas, a sampling of the blood levels of oxygen and carbon dioxide within the arteries, as opposed to the levels of oxygen and carbon dioxide in veins. Typically, the acidity (pH) is also simultaneously measured.

**abiopathy** Loss of function, or degeneration for reasons unknown.

**ablate** To remove, from a Latin word meaning “to carry away.” See *ablation*.

**ablation** Removal or excision. Ablation is usually carried out surgically. For example, surgical removal of the thyroid gland (a total thyroidectomy) is ablation of the thyroid.

**abnormal** Outside the expected norm, or uncharacteristic of a particular patient.

**ABO blood group** The major human blood group system. The ABO type of a person depends on the presence or absence of two genes, A and B. These genes determine the configuration of the red blood cell surface. A person who has two A genes has red blood cells of type A. A person who has two B genes has red cells of type B. If the person has one A and one B gene, the red cells are type AB. If the person has neither the A nor the B gene, the red cells are type O. It is essential to match the ABO status of both donor and recipient in blood transfusions and organ transplants.

**abortifacient** A medication or substance that causes pregnancy to end prematurely.

**abortion** Premature exit of the products of the fetus, fetal membranes, and placenta from the uterus. Abortion can be a natural process, as in a miscarriage; an induced procedure, using medication or other substances that cause the body to expel the fetus; or a surgical procedure that removes the contents of the uterus. See also *dilation and curettage*.

**abortion, habitual** The miscarriage of three or more consecutive pregnancies with no intervening pregnancies. Habitual abortion is a form of infertility. Also known as recurrent abortion and multiple abortion.

**abortion, multiple** See *abortion, habitual*.

**abortion, recurrent** See *abortion, habitual*.

**abortion, spontaneous** Miscarriage.

**abortive** Tending to cut short the course of a disease, as in abortive polio (polio cut short).

**abortive polio** A minor, abbreviated form of infection with the polio virus. Full recovery occurs in 24 to 72 hours, and the condition does not involve the nervous system or permanent disabilities. See also *polio*.

**ABP** American Board of Pediatrics, a professional organization for physicians who treat infants, children, adolescents, and young adults.

**abrasion** **1** A wearing away of the upper layer of skin as a result of applied friction force. See also *scrape*. **2** In dentistry, the wearing away of a tooth surface.

**abruptio placentae** Premature separation (abruption) of the placenta from the wall of the uterus, often in association with high blood pressure or preeclampsia. Abruption is a potentially serious problem both for mother and fetus because the area where it occurs bleeds and the uterus begins to contract. Shock may result. See also *placenta; preeclampsia*.

**abs** Slang term for the abdominal muscles.

**abscess** A local accumulation of pus anywhere in the body. See also *boil; pus*.

**abscess, perianal** An abscess next to the anus that causes tenderness, swelling, and pain on defecation.

**abscess, peritonsillar** An abscess behind the tonsils that pushes one of the tonsils toward the uvula (the prominent soft tissue dangling from the back of the palate in the back of the mouth). A peritonsillar abscess is generally very painful and associated with difficulty opening the mouth. If a peritonsillar abscess is untreated, the infection can spread deep into the neck, causing airway obstruction and other life-threatening complications.

**abscess, skin** A confined collection of pus in the skin. The common boil is a type of skin abscess. See also *boil*.

**abscission** To remove tissue by cutting it away, as in surgery. See also *resection*.

**absence of the breast** See *amastia*.

**absence of the nipple** See *athelia*.

**absinthe** An emerald-green liqueur flavored with extracts of the wormwood plant, licorice, and aromatic flavorings in an alcohol base. Absinthe was manufactured, commercialized, and popularized in France in the late 1700s. It was an extremely addictive drink. Prolonged drinking of absinthe causes convulsions, blindness, hallucinations, and mental deterioration. Absinthe has been banned, but something of its taste is still available in such drinks as Greek ouzo and French pastis. Homemade absinthe may still be illicitly consumed in some areas.

**absolute CD4 count** The number of “helper” T-lymphocytes in a cubic millimeter of blood. The absolute CD4 count is frequently used to monitor the extent of immune suppression in persons with HIV because with HIV, this number declines as the infection progresses. Also known as T4 count.

**absorption** Uptake. For example, intestinal absorption is the uptake of food (or other substances) from the digestive tract.

**abstinence** The voluntary self-denial of food, drink, or sex. Today, abstinence most commonly refers to denial of one’s sexual activity.

**abuse, child** See *child abuse*.

**abuse, elder** See *elder abuse*.

**a.c.** Abbreviation of the Latin phrase *ante cibum*, meaning “before meals.” See also Appendix A, “Prescription Abbreviations.”

**AC joint** See *acromioclavicular joint*.

**acanthosis nigricans** A skin condition characterized by dark, thickened, velvety patches, especially in the folds of skin in the armpit, groin, and back of the neck. It can occur with endocrine diseases such as Cushing disease and diabetes mellitus, from tumors of the pituitary gland, underlying malignancies, certain drugs, and as a genetic disorder. It is most common in people who have insulin resistance—those whose body is not responding correctly to the insulin that they make in their pancreas.

**acapnia** Lower than normal level of carbon dioxide in the blood. The opposite of acapnia is hypercapnia.

**accelerated phase of leukemia** Chronic myelogenous leukemia that is progressing. In this phase, the number of immature, abnormal white blood cells in the bone marrow and blood is higher than in the chronic phase, but not as high as in the blast phase.

**accessory nerve** The eleventh cranial nerve, which emerges from the skull and receives an additional (accessory) root from the upper part of the spinal cord. It supplies the sternocleidomastoid and trapezius muscles.

**accessory neuropathy** A disease of the accessory nerve, paralysis of which prevents rotation of the head away from one or both sides and causes the shoulder to droop. Damage can be confined to the accessory nerve, or it may also involve the ninth and tenth cranial nerves, which exit the skull through the same opening.

**accessory placenta** See *placenta, accessory*.

**acclimatization to altitude** The process of adapting to the decrease in oxygen concentration at a specific altitude. A number of changes must take place for the body to operate with decreased oxygen. These changes include increasing the depth of respiration; increasing the pressure in the pulmonary arteries, forcing blood into portions of the lung that are normally not used at sea level; manufacturing additional oxygen-carrying red blood cells; and manufacturing extra 2, 4-DPG, a substance that facilitates the release of oxygen from hemoglobin to the body tissues. Acclimatization generally takes 1 to 3 days and occurs after any significant altitude change above 1,220 meters (approximately 4,000 feet). Acclimatization is the body’s natural means of correcting altitude sickness and the rate of acclimatization depends on the altitude, rate of ascent, and individual susceptibility.

**accoucheur** A male obstetrician. An accoucheuse is a woman obstetrician, or sometimes a midwife.

**ACE** Angiotensin converting enzyme. ACE converts an angiotensin to its activated form, angiotensin II, enabling it to function. Angiotensin II constricts blood vessels and elevates blood pressure.

**ACE inhibitor** A drug that inhibits ACE. Using an ACE inhibitor relaxes the arteries, not only lowering blood pressure but also improving the pumping efficiency of a failing heart and improving cardiac output in patients with heart failure. ACE inhibitors are therefore used for blood pressure control and congestive heart failure. ACE inhibitors include benazepril (brand name: Lotensin), captopril (brand name: Capoten), lisinopril (brand names: Zestril, Prinivil), quinapril (brand name: Accupril), and ramipril (brand name: Altace). Interestingly, ACE inhibitors were originally developed from the venom of a Brazilian viper snake.

**acentric chromosome** A chromosome that is lacking a centromere (a specialized region of the chromosome to which spindle fibers attach during cell division). As a result, an acentric chromosome is lost when the cell divides. See also *centromere*.

**aceruloplasminemia** See *ceruloplasmin deficiency*.

**acetabulum** The cup-shaped socket of the hip joint. The acetabulum is a feature of the pelvis. The head (upper end) of the femur (thighbone) fits into the acetabulum and articulates with it, forming a ball-and-socket joint.

**acetaminophen** A nonaspirin pain reliever or analgesic. Acetaminophen may be given alone to relieve pain and inflammation or it may be combined with other drugs, as in some migraine medications, which contain acetaminophen, a barbiturate, and caffeine.

**acetone** A volatile liquid used as an industrial solvent. Acetone is also one of the ketone bodies that is formed when the body uses fat instead of glucose (sugar) for energy. The formation of acetone is usually a sign that cells lack insulin or cannot effectively use the insulin that is available, as occurs in diabetes. Acetone is excreted from the body in the urine.

**acetone breath** The breath of a person with excessive acetone in their body. Acetone breath smells fruity and is a telltale sign of significant diabetes. See also *diabetes mellitus*.

**acetylcholine** A neurotransmitter released by nerves that is essential for communication between the nerves and muscles.

**acetylsalicylic acid** See *aspirin*.

**achalasia** A disease of the esophagus that mainly affects young adults. Abnormal function of nerves and muscles of the esophagus causes difficulty swallowing and sometimes chest pain. Regurgitation of undigested food can occur, as can coughing or breathing problems related to entry of food material into the lungs. The underlying problems are weakness of the lower portion of the esophagus and failure of the lower esophageal sphincter to open and allow passage of food. Diagnosis is made by an X-ray, endoscopy, or esophageal manometry. Treatment includes medication, dilation (stretching) to widen the lower part of the esophagus, and surgery to open the lower esophagus. A fairly recent approach involves injecting medicines into the lower esophagus to relax the sphincter.

**Achilles tendon** One of the longest tendons in the body, a tough sinew that attaches the calf muscle to the back of the heel bone (calcaneus). The name comes from Greek mythology: The hero Achilles was invulnerable to injury except for his heel, which proved his downfall when it was pierced by Paris's arrow. It has also proved, literally, to be the downfall of many athletes who have experienced the sudden pain of its rupture.

**Achilles tendonitis** Inflammation in the tendon of the calf muscle, where it attaches to the heel bone. Achilles tendonitis causes pain and stiffness at the back of the leg, near the heel. Achilles tendonitis can be caused by overuse of the Achilles tendon, overly tight calf muscles or Achilles tendons, excess uphill running, a sudden increase in the intensity of training or the type of shoes worn to run, or wearing high heels at work and then switching to a lower-heeled workout shoe. Achilles tendonitis causes pain, tenderness, and often swelling over the Achilles tendon. There is pain on rising up on the toes and pain with stretching of the tendon. The range of motion of the ankle may be limited. Treatment includes applying ice packs to the Achilles tendon, raising the lower leg, and taking an anti-inflammatory medication. In some severe cases of Achilles tendonitis, a cast may be needed for several weeks. A heel lift insert may also be used in shoes to prevent future overstretching of the Achilles tendon. Exerting rapid stress on the Achilles tendon when it is inflamed can result in rupture of the tendon.

**achlorhydria** A lack of hydrochloric acid in the digestive juices in the stomach.

**achondroplasia** A genetic disorder of bone growth and the most common cause of short stature with disproportionately short arms and legs (known as dwarfism). The individual has a large head with a prominent forehead (frontal bossing); underdevelopment (hypoplasia) of the midface, with cheekbones that lack prominence; and a low nasal bridge with narrow nasal passages. The fingers are short, and the ring and middle fingers diverge to give the hand a trident (three-pronged) appearance. The brain is entirely normal in people with achondroplasia, but complications can damage the brain and spinal cord. Achondroplasia is an autosomal dominant trait, affecting boys and girls equally. Most cases are due to new gene mutations that appear for the first time in the affected child. Achondroplasia is caused by mutation in the fibroblast growth factor receptor-3 gene (FGFR3), and prenatal diagnosis is possible. See also *dwarfism*; *dwarfism*, *hyochondroplastic*.



**acid, pantothenic** Vitamin B5. See also Appendix C, "Vitamins."

**acid indigestion** Excessive secretion of hydrochloric acid by the stomach cells. Medically known as hyperchlorhydria. Sometimes used interchangeably with heartburn. See also *heartburn*.

**acid phosphatase** An enzyme that acts to liberate phosphate under acidic conditions and is made in the liver, spleen, bone marrow, and prostate gland. Abnormally high serum levels of acid phosphatase may indicate infection, injury, or cancer of the prostate.

**acidophilus** Bacteria found in yogurt with "live cultures" that can help restore supportive bacteria to an intestinal tract whose normal bacterial population (flora) has been disturbed by disease or antibiotics. Eating yogurt with acidophilus may also be useful in preventing overgrowth of yeast (Candida) in the intestinal tract, mouth (thrush), and vagina. See also *probiotic*.

**acidosis** Too much acid in the blood and body. Acidosis is an abnormal condition resulting from the accumulation of acid or the depletion of alkaline reserves. The pH of a body with acidosis is below normal. For a person with diabetes, this can lead to diabetic ketoacidosis. The opposite of acidosis is alkalosis. See also *pH*.

**ACL** Anterior cruciate ligament.

**acne** Localized skin inflammation resulting from overactivity of the oil glands at the base of hair follicles or as a response to contact with irritating substances. See also *acne vulgaris*.

**acne rosacea** See *rosacea*.

**acne vulgaris** The common form of acne, in teens and young adults, that is due to overactivity of the oil (sebaceous) glands in the skin that become plugged and inflamed. Acne typically develops when the oil glands come to life around puberty and are stimulated by male hormones that are produced in the adrenal glands of both boys and girls. Treatments include keeping the skin clean and avoiding irritating soaps, foods, drinks, and cosmetics. Severe acne and acne in those who are prone to scarring can be treated with topical creams and oral medications. Skin damaged by acne can be improved with treatment by a dermatologist or facial technologist using dermabrasion (sanding), removal of scar tissue via laser, and chemical peels. Also known as pimples.

**ACOG** American College of Obstetricians and Gynecologists, a professional organization for women's health care providers that also does advocacy work to improve the care of female patients.

**acoustic nerve** The eighth cranial nerve which is concerned with hearing, balance, and head position. It branches into two parts—a cochlear part that transmits sound reception for hearing and a vestibular part that senses balance and head position. Also known as the vestibulocochlear nerve.

**acquired** Not inherited, or present at birth (congenital), but developing after birth. For example, AIDS is an acquired, not an inherited, form of immune deficiency.

**acquired immunodeficiency disease** See *AIDS*.

**acquired mutation** A genetic change that occurs in a single cell after the conception of an individual. That change is then passed along to all cells descended from that cell. Acquired mutations are involved in the development of cancer.

**acral-lentiginous melanoma** See *melanoma, acral-lentiginous*.

**acrocentric chromosome** A chromosome in which the centromere is located quite near one end of the chromosome. Humans normally have five pairs of acrocentric chromosomes. Down syndrome is caused by an extra acrocentric chromosome (chromosome 21).

**acrocephalosyndactyly** An inherited disorder characterized by abnormalities of the skull, face, hands, and feet. It begins with premature closure of some sutures of the skull (craniosynostosis) and results in a tall peaked head, shallow eye sockets, and underdeveloped cheekbones. With acrocephalosyndactyly, fingers and toes are fused (syndactyly), and the thumbs and big toes have broad ends. Acrocephalosyndactyly is an autosomal dominant trait that affects boys and girls. A parent can transmit the gene for the disorder, or it can occur due to a new mutation. Surgery is often useful to correct the abnormalities of the skull, face, hands, and feet. See also *Apert syndrome*; *Crouzon syndrome*.

**acrochordon** See *skin tag*.

**acrocyanosis** Blueness of the hands and feet, usually due to inadequate circulation.

**acrodermatitis enteropathica** A progressive, hereditary disease of children, characterized by the simultaneous occurrence of skin inflammation (dermatitis) and diarrhea. The skin on the cheeks, elbows, and knees is inflamed, as is tissue about the mouth and anus. There is also balding of the scalp, eyebrows, and lashes; delayed wound healing; and recurrent bacterial and fungal infections due to immune deficiency. The key laboratory finding is an abnormally low blood zinc level, reflecting impaired zinc uptake. Treatment with zinc by mouth is curative. Acrodermatitis enteropathica is an autosomal recessive disorder. See also *deficiency*; *zinc*; *zinc*.

**acromegaly** See *gigantism*; *pituitary*.

**acromioclavicular joint** A gliding joint located between the acromion (a projection of the scapula that forms the point of the shoulder) and the clavicle (the collar bone). It is served and supported by the capsular, superior, and inferior acromioclavicular ligaments; the articular disk; and the coracoclavicular (trapezoid and conoid) ligaments. Abbreviated AC joint.

**acrosyndactyly** A condition in which a person has fused or webbed fingers or toes. Acrosyndactyly can be partial or complete, and it can usually be corrected via surgery. It is associated with several birth defect syndromes. See also *Apert syndrome*.

**ACS** American College of Surgeons, a professional organization that administers standards of practice for surgeons. Those who meet the group's standards can call themselves Fellows of the ACS.

**actinic** Referring to the ultraviolet (UV) rays from sunlight and UV lamps. Sunburn is an actinic burn. An actinic keratosis is a skin lesion that is the consequence of chronic sun exposure.

**actinic keratosis** Rough, scaly patches of skin that are considered precancerous and are due to sun exposure. Prevention is to cut sun exposure and wear sunscreen. Treatments include performing cryosurgery (freezing with liquid nitrogen), cutting the keratoses away, burning them, putting 5-fluorouracil on them, and using photodynamic therapy (injecting into the bloodstream a chemical that collects in actinic keratoses and makes them more sensitive to destruction by a specialized form of light). Also known as solar keratosis and senile keratosis.

**activated charcoal** Charcoal that has been heated to increase its ability to absorb molecules. Activated charcoal is used to help relieve intestinal gas. It is also used to filter and purify liquids, to absorb poisons (as in gas mask filters), and in emergency situations to neutralize swallowed poisons.

**active euthanasia** The active acceleration of a terminally ill patient's death by use of drugs or other means. Currently, active euthanasia is openly practiced in the Netherlands and in the US state of Oregon. The patient's request to the physician must be voluntary, explicit, and carefully considered, and it must be made repeatedly. Moreover, the patient's suffering must be unbearable and without any prospect of improvement. Suicide for other reasons, whether irrational or rational, is not active euthanasia. The forced killing of an ill or disabled person, as has occurred in eugenics programs, is also not active euthanasia. And although medications administered for pain relief may hasten death, aggressive pain relief is a normal medical decision in terminal care, not in active euthanasia. See also *assisted suicide*; *eugenics*; *euthanasia*.

**active immunity** Immunity produced by the body in response to stimulation by a disease-causing organism or other agent.

**activities of daily living** Things that a person normally does during a day, including self-care (eating, bathing, dressing, grooming), work, homemaking, and leisure. The ability or inability to perform these activities can be used as a practical measure of ability or disability, and it may be used by insurers and HMOs as a rationale for approving or denying physical therapy or other treatments. Abbreviated ADL.

**acuity, auditory** The clearness of hearing, a measure of how well a person hears.

**acuity, visual** The clearness of vision, a measure of how well one sees.

**acuity test, visual** The familiar eye chart test, which measures how well a person can see at various distances.

**acupressure** The application of pressure on specific points on the body to control symptoms such as pain or nausea. Similar in concept to acupuncture, but without needles. See also *acupuncture*.

**acupuncture** The practice of inserting needles into specific points on the body with a therapeutic aim, such as to reduce pain or to induce anesthesia without the use of drugs. Traditional Chinese acupuncturists say the practice unblocks the flow of a life force called *ch'i*; Western researchers believe acupuncture may affect production of endorphins, the body's natural painkillers. In 1997, the National Institutes of Health (NIH) issued a consensus statement stating that "There is sufficient evidence of acupuncture's value to expand its use into conventional medicine." See also *acupressure*.

**acupuncturist** A person skilled in the practice of acupuncture, who may or may not be credentialed by an accrediting body.

**acute** Of short duration, rapid, and abbreviated in onset. A condition is termed acute in comparison to a subacute condition, which lasts longer or changes less rapidly; or a chronic condition, which may last almost indefinitely, with virtually no change. Each disease has a unique time scale: An acute myocardial infarction (heart attack) may last a week, whereas an acute sore throat may last only a day or two. See also *chronic*.

**acute abdomen** Medical shorthand for the acute onset of abdominal pain. A potential medical emergency, an acute abdomen may reflect a major problem with one of the organs in the abdomen, such as appendicitis (inflamed appendix), cholecystitis (inflamed gallbladder), a perforated ulcer in the intestine, or a ruptured spleen.

**acute esophageal stricture** See *esophageal stricture, acute*.

**acute fatty liver of pregnancy** Abbreviated AFLP, liver failure in late pregnancy, usually of unknown cause. Symptoms include nausea and vomiting, abdominal pain, yellowing of the skin and eyes (jaundice), frequent thirst (polydipsia), increased urination (polyuria), headache, and altered mental state. Laboratory features of AFLP include low blood sugar (hypoglycemia), elevated liver enzymes, and low levels of blood platelets. Untreated AFLP can cause complete liver failure, bleeding due to impaired blood clotting, and death of the mother and fetus. AFLP is treated by delivering the baby as soon as possible, often by inducing early labor. It usually subsides after delivery and does not occur in subsequent pregnancies. In some cases AFLP is associated with an abnormality of fatty-acid metabolism: a deficiency of the enzyme long-chain-3-hydroxyacyl-CoA dehydrogenase (LCHAD). The mother and father have half the normal LCHAD activity, and the fetus has no LCHAD activity. This metabolic disease in the baby's liver causes the fatty liver disease in the mother.

**acute HIV infection** See *HIV infection, acute*.

**acute idiopathic polyneuritis** See *Guillain-Barre syndrome*.

**acute illness** A disease with an abrupt onset and, usually, a short course.

**acute leukemia** Cancer of the blood cells that characteristically comes on suddenly and, if not

treated, progresses quickly. In acute leukemia, the leukemic cells are not able to mature properly.

**acute membranous gingivitis** A progressive and painful infection of the mouth and throat due to the spread of infection from the gums. Symptoms include ulceration, swelling, and sloughing off of dead tissue from the mouth and throat. Certain germs (including fusiform bacteria and spirochetes) have been thought to be involved, but the actual cause is not yet known. Like most other poorly understood diseases, acute membranous gingivitis goes by many other names, including acute necrotizing ulcerative gingivitis, fusospirillary gingivitis, fusospirochetal gingivitis, necrotizing gingivitis, phagedenic gingivitis, trench mouth, ulcerative gingivitis, ulcerative stomatitis, Vincent angina, Vincent gingivitis, Vincent infection, and Vincent stomatitis.

**acute mountain sickness** The physical effect of being in a high-altitude environment. Abbreviated AMS, it is common at altitudes above 2,440 meters (approximately 8,000 feet). Three-fourths of people have mild symptoms of AMS at altitudes over 3,048 meters (approximately 10,000 feet). Occurrence depends on the altitude, rate of ascent, and individual susceptibility. Symptoms begin 12 to 24 hours after arrival at a new altitude and include headache, dizziness, fatigue, shortness of breath, loss of appetite, nausea, disturbed sleep, and general malaise. These symptoms tend to worsen at night, when the respiratory drive is decreased. Symptoms should subside within 2 to 4 days, and can be treated by using pain medications such as aspirin. Acetazolamide (brand name: Diamox) can also be used to minimize symptoms and may be taken as a preventive measure. Moderate AMS has the same symptoms as AMS, but the headaches cannot be relieved with medication, and both breathing and coordinated movements become difficult. The only remedies are advanced medications and descent to lower altitudes. Severe AMS causes great shortness of breath at rest, inability to walk, decreased mental status, and fluid buildup in the lungs. Severe AMS requires immediate descent to lower altitudes: 610 to 1,220 meters (approximately 2,000 to 4,000 feet). See also *acclimatization to altitude*.

**acute myelogenous leukemia** See *leukemia, acute myeloid*.

**acute myeloid leukemia** See *leukemia, acute myeloid*.

**acute myocardial infarction** A heart attack that occurs when the heart muscle is suddenly deprived



of circulating blood. Abbreviated AMI. See also *heart attack*.

**acute nonlymphocytic leukemia** See *leukemia, acute myeloid*.

**acute otitis media** Painful inflammation of the middle ear, typically with fluid in the middle ear, behind a bulging eardrum or a perforated eardrum, often with drainage of pus. The customary treatment is antibiotics for 7 to 10 days. After antibiotic treatment, some children are left with fluid in the middle ear, which can cause temporary hearing loss. In most children, the fluid eventually disappears spontaneously. If a child has a bulging eardrum and is experiencing severe pain, a myringotomy (surgical incision of the eardrum) to release the pus may be done. Tubes may be placed in the ear to drain fluid. See also *ear infection*.

**acute peritonitis** See *peritonitis, acute*.

**acute respiratory distress syndrome** Respiratory failure of sudden onset due to fluid in the lungs (pulmonary edema), following an abrupt increase in the permeability of the normal barrier between the capillaries in the lungs and the air sacs. The muscles used in breathing are forced to work harder, causing labored and inefficient breathing. An abnormally low level of oxygen in the blood (hypoxemia) occurs. The types of acute lung injury that may lead to ARDS include, but are not limited to, aspiration of food or other items into the lungs, inhalation of a toxic substance, widespread infection of the lungs, blood infection (sepsis), and near-drowning. Treatment frequently involves temporary use of a mechanical ventilator to help the patient breathe.

**acute thrombocytopenic purpura** Sudden onset of low blood platelet levels, with bleeding into the skin and elsewhere. Abbreviated ATP. ATP can have many causes; for example, it can be a potentially serious complication during the acute phase of measles infection.

**acute-phase protein** A protein whose plasma concentrations increase during certain inflammatory disorders. Perhaps the best-known acute-phase protein is C-reactive protein (CRP).

**acyclovir** A potent antiviral drug or medication (brand name: Zovirax) that works against several human herpes viruses, Epstein-Barr virus, herpes zoster, varicella (chickenpox), cytomegalovirus, and other viruses. It is part of the AIDS drug AZT. See also *AZT*.

**ad-** Prefix indicating toward or in the direction of. For example, adduction is the movement of a limb toward the midline of the body, and adrenal literally means "toward the kidney."

**ad lib** Abbreviation of the Latin phrase *ad libitum*, meaning "as much as one desires" or "at your discretion." See also Appendix A, "Prescription Abbreviations."

**ADA** **1** American Dental Association, a professional organization for dentists. Its Council on Dental Education and Commission on Dental Accreditation are responsible for accrediting schools of dentistry and allied professions. **2** American Diabetes Association, a nonprofit health organization that sponsors diabetes research, provides information about diabetes and diabetes prevention to patients and others, and advocates for improved treatment of people with diabetes. **3** Adenosine deaminase.

**Adam's apple** The familiar feature on the front of the neck that is the forward protrusion of the thyroid cartilage, the largest cartilage of the larynx. It tends to enlarge at adolescence, particularly in males. It is usually said to take its name from the extrabiblical story that a piece of the forbidden fruit stuck in Adam's throat.

**ADD** **1** Attention deficit disorder. **2** Adenosine deaminase deficiency.

**addiction** An uncontrollable craving, seeking, and use of a substance such as alcohol or another drug. Dependence is such an issue with addiction that stopping is very difficult and causes severe physical and mental reactions.

**Addison's anemia** See *anemia, pernicious*.

**Addison's disease** Chronic underfunction of the outer portion of the adrenal gland, most commonly due to autoimmune destruction. Other causes include physical trauma to the adrenal gland, hemorrhage, tuberculosis, and destruction of the pituitary gland cells that secrete adrenocorticotrophic hormone (ACTH), which normally controls the adrenal gland. Addison's disease is characterized by bronzing of the skin, anemia, weakness, and low blood pressure.

**adducted thumbs** Clapsed thumbs, caused by absence of the extensor pollicis longus and/or brevis muscles to the thumb. When associated with mental retardation, it is part of an X-linked syndrome that affects mainly boys. See *MASA syndrome*.

**adduction** Movement of a limb toward the midline of the body. The opposite of adduction is abduction.

**adductor muscle** See *muscle, adductor*.

**adenine** A nucleotide member of the base pair adenine-thymine (A-T) in DNA.

**adenitis** Inflammation of a gland.

**adenocarcinoma** A cancer that develops in the lining or inner surface of an organ and usually has glandular (secretory) properties. More than 95 percent of prostate cancers are adenocarcinomas.

**adenoid** A mass of lymphoid tissue in the upper part of the throat, behind the nose. When the adenoids are enlarged due to frequent infections, breathing through the nose may become difficult. Surgical removal may be done, often accompanied by removal of the tonsils. Also known as pharyngeal tonsil.

**adenoidectomy** The surgical removal of the adenoids.

**adenoiditis** Infection of the adenoids.

**adenoma** A benign tumor that arises in or resembles glandular tissue. If an adenoma becomes cancerous, it is called an adenocarcinoma.

**adenomyoma** A nodule that forms around endometrial tissue in cases of adenomyosis. See *adenomyosis*.

**adenomyosis** A common, benign condition of the uterus in which the endometrium (the inner uterus) grows into the adjacent myometrium (the uterine musculature located just outside the endometrium). The myometrium may respond to this intrusion with muscular overgrowth. If an island of endometrial tissue is contained within the myometrium, it forms an adenomyoma. Also known as endometriosis interna, endometriosis uterina, adenomyosis uteri, and adenomyometritis.

**adenopathy** Large or swollen lymph nodes. Lymph nodes can become enlarged as a result of inflammatory diseases, infection, or cancer. Synonymous with lymphadenopathy.

**adenosine deaminase** An enzyme that plays a key role in salvaging purine molecules. Abbreviated ADA.

**adenosine deaminase deficiency** An autosomal recessive genetic condition that results in severe combined immunodeficiency disease. The

first successful gene therapy for this condition in humans was done in 1990, by infusing patients with genetically engineered blood cells.

**adenosine triphosphate** A nucleotide compound that is of critical importance for the storage of energy within cells and the synthesis of RNA. Abbreviated ATP.

**adenovirus** One of a group of viruses that can cause infections of the lung, stomach, intestine, and eyes. Symptoms resemble those of the common cold. There are no effective medications for treating adenovirus infection. Adenovirus infection typically does not cause death or permanent problems. More than 40 types of adenoviruses have been recognized, all of which are extremely tiny. Adenoviruses are being used in research as a vehicle for gene therapy and as a vector for vaccines.

**ADH** Antidiuretic hormone.

**ADH secretion, inappropriate** A condition that results in the inability to produce dilute urine and imbalance of fluids and electrolytes in the body, particularly lowering blood sodium. Symptoms include nausea, vomiting, muscle cramps, confusion, and convulsions. This syndrome may occur with oat-cell lung cancer, pancreatic cancer, prostate cancer, and Hodgkin's disease, among other disorders. Also known as syndrome of inappropriate ADH secretion or SIADH.

**ADHD** Attention deficit hyperactivity disorder.

**adhesion** The union of two opposing tissue surfaces. This term is often used to refer to the sides of a wound, as well as to scar tissue strands that can form at the site of a previous operation, such as within the abdomen after a laparotomy.

**adhesive capsulitis** A condition in which a person has constant severe limitation of the range of motion of the shoulder due to scarring around the shoulder joint. Adhesive capsulitis is an unwanted consequence of rotator cuff disease that involves damage to the rotator cuff. The affected joint is characteristically painful and tender to palpation. Physical therapy and cortisone injections are often helpful. Surgery is used in advanced cases. Also known as frozen shoulder.

**adipose** Fatty. Adipose refers to tissue made up of mainly fat cells such as the yellow layer of fat beneath the skin.

**adiposis dolorosa** See *Dercum disease*.

**adjuvant** A substance that helps and enhances the effect of a drug, treatment, or biologic system.

**adjuvant chemotherapy** Chemotherapy given after removal of a cancerous tumor to further help in treatment. Many chemotherapy drugs are most effective after the majority of the tumor has been removed.

**ADLs** Activities of daily living.

**admitting physician** The doctor responsible for admitting a patient to a hospital or other inpatient health facility.

**adnexa** In gynecology, the appendages of the uterus, namely the ovaries, the Fallopian tubes, and the ligaments that hold the uterus in place.

**adrenal gland** A small gland located on top of the kidney. The adrenal glands produce hormones that help control heart rate, blood pressure, the way the body uses food, the levels of minerals such as sodium and potassium in the blood, and other functions particularly involved in stress reactions.

**adrenal medulla** See *medulla*, *adrenal*.

**adrenaline** A stress hormone produced within the adrenal gland that quickens the heart beat, strengthens the force of the heart's contraction, and opens up the bronchioles in the lungs, among other effects. The secretion of adrenaline is part of the human "fight or flight" response to fear, panic, or perceived threat. Also known as epinephrine.

**adult hemoglobin** See *hemoglobin A*.

**adult-onset diabetes** Non-insulin-dependent, or type 2, diabetes, the most common form of diabetes mellitus. Unlike patients with insulin-dependent, or type 1, diabetes, in whom the pancreas makes no insulin, patients with adult-onset diabetes produce some insulin, sometimes even large amounts. However, their bodies do not produce enough insulin or their body cells are resistant to the action of insulin. People with this form of diabetes are frequently overweight and can sometimes control their disease by losing weight through diet and exercise. Otherwise, they may need to combine insulin or another diabetes medication with diet and exercise. See also *diabetes*, *type 1*.

**adult-onset Still's disease** Still's disease that begins in adulthood rather than in childhood. See also *Still's disease*.

**advance directive** A document drawn up by a patient or, in some cases, the patient's representative to set treatment preferences and to designate a surrogate decision maker should the patient become unable to make medical decisions. Advance

directives include the living will, power of attorney, and health care proxy. See also *DNR*.

**adverse event** In pharmacology, any unexpected or dangerous reaction to a drug or vaccine.

**AED** See *automated external defibrillator*.

**aer-, aero-** Prefix indicating air or gas, such as aerogastria (excess stomach gas).

**aerobic** Oxygen-requiring. Aerobic bacteria need oxygen to grow. Aerobic exercise requires the heart and lungs to work harder to meet the body's increased oxygen demand.

**aerobic exercise** Brisk exercise that promotes the circulation of oxygen through the blood and is associated with an increased rate of breathing. Examples include running, swimming, and bicycling.

**aerophagia** Literally, eating air, from the Greek words *aer*, meaning "air," and *phagein*, meaning "to eat." Aerophagia is a common cause of stomach gas. Everyone swallows small amounts of air when eating or drinking. However, activities such as rapid eating or drinking, gum chewing, smoking, and wearing ill-fitting dentures may cause a significant increase in swallowed air.

**aerosinusitis** Painful sinus troubles due to changing atmospheric pressures. Aerosinusitis is the cause of sinus pain when going up or down in a plane. Also known as barosinusitis and sinus barotrauma.

**aerosol** A fine spray or mist. Medications in aerosol form can be administered via a nebulizer and inhaled.

**aerotitis** Middle ear problems due to changing atmospheric pressures, as when a plane descends to land. Symptoms include ear pain, ringing ears, diminished hearing and, sometimes, dizziness. Also known as aerotitis media, barotitis, barotitis media, and otic barotrauma.

**Aesculapius** The ancient Roman god of medicine, whose staff with a snake curled around it is commonly used as a symbol of medicine. According to mythology, Aesculapius's children included Hygeia, the goddess of health, and Panacea, the goddess of healing.

**affective disorder** A psychiatric disorder that affects the control of mood. See *bipolar disorder*; *cyclothymia*; *depression*; *seasonal affective disorder*.

**afferent** Carrying toward. A vein is an afferent vessel because it carries blood from the body toward the heart. The opposite of afferent is efferent.

**afferent nerve** A nerve that carries impulses toward the central nervous system.

**afferent vessel** A vessel that carries blood toward the heart. A vein or venule.

**AFLP** Acute fatty liver of pregnancy.

**AFO** Ankle-foot orthosis.

**AFP** Alpha-fetoprotein.

**African tapeworm** See *Taenia saginata*.

**African tick typhus** See *typhus, African tick*.

**afterbirth** The placenta and the fetal membranes that are normally expelled from the uterus after the birth of a baby. See also *placenta*.

**aftercare** Medical care and instructions for patients after leaving a medical facility.

**agammaglobulinemia** Total or near-total absence of infection-fighting antibodies belonging to the class called gamma globulins. Agammaglobulinemia can be due to certain genetic diseases or caused by acquired diseases, including AIDS.

**agenesis** Lack of development. For example, agenesis of a toe means the toe failed to form.

**agenesis, sacral** See *caudal regression syndrome*.

**agenesis of the gallbladder** A condition in which the gallbladder fails to develop. It occurs in 1 in about every 1,000 people, usually without additional birth defects.

**agent, antihypertensive** See *antihypertensive*.

**agent, anti-infective** See *anti-infective*.

**Agent Orange** An herbicide and defoliant containing 2,4-D and 2,4,5-T, as well as trace amounts of dioxin. Agent Orange was used as a defoliant in the Vietnam War. There has been concern about Agent Orange potentially causing cancer and birth defects.

**age-related macular degeneration** See *macular degeneration*.

**ageusia** An inability to taste sweet, sour, bitter, or salty substances. People who can taste sweet, sour, bitter, or salty substances but have a reduced ability to do so are said to have hypogeusia.

**aggressive** 1 In cancer medicine, quickly growing or tending to spread rapidly. For example, an aggressive tumor. 2 In psychiatry, having a tendency to aggression or belligerent behavior.

**aggressive fibromatosis** See *desmoid tumor*.

**agnosia** An inability to recognize sensory inputs such as light, sound, and touch). Agnosia is typically a result of brain injury. For example, damaging the back part of the brain can cause visual agnosia (inability to properly recognize objects by sight).

**agonist** A substance that acts like another substance and therefore stimulates an action. Agonist is the opposite of antagonist. Antagonists and agonists are key players in the chemistry of the human body and in pharmacology.

**agoraphobia** An abnormal and persistent fear of public places or open areas, especially those from which escape could be difficult or in which help might not be immediately accessible. Persons with agoraphobia frequently also have panic disorder. People with mild agoraphobia often live normal lives by avoiding anxiety-provoking situations. In the most severe agoraphobia, the victims may be incapacitated and homebound. Agoraphobia tends to start in the mid to late 20s, and the onset may appear to be triggered by a traumatic event.

**agranulocytosis** A marked decrease in the number of granulocytes (neutrophils). Agranulocytosis results in frequent chronic bacterial infections of the skin, lungs, throat, and other areas. It can be an inherited genetic condition or acquired as, for example, in leukemia. See also *agranulocytosis, infantile genetic; granulocytopenia; severe congenital neutropenia*.

**agranulocytosis, infantile genetic** An inherited condition characterized by a lack of granulocytes (neutrophils), a type of white blood cell that is important in fighting infection, and a predisposition to frequent bacterial infections. Also known as Kostmann disease or syndrome and genetic infantile agranulocytosis. See also *agranulocytosis; granulocytopenia; severe congenital neutropenia*.

**agreement, arbitration** See *arbitration agreement*.

**Aicardis syndrome** A rare genetic disorder that occurs only in females and is caused by congenital

absence of the corpus callosum, a large bundle of nerves that connects the left and right sides of the brain. Features include epilepsy that emerges in infancy and is difficult to control, vision problems due to maldeveloped retinas, developmental delay, and sometimes physical deformities of the spine, face, and/or heart. See also *epilepsy*; *seizure disorders*.

**AID** Artificial insemination by donor.

**AIDS** Acquired immunodeficiency syndrome, a syndrome caused by infection with the human immunodeficiency virus (HIV), with ensuing compromise of the body's immune system. Features include deficiency of certain types of leukocytes, especially T cells; infection with opportunistic infections that take advantage of the impaired immune response, such as tuberculosis, bacterial pneumonia, human herpes virus, or toxoplasmosis; certain types of cancer, particularly Kaposi sarcoma; inability to maintain body weight (wasting); and in advanced cases, AIDS dementia complex. Treatment for AIDS has advanced rapidly. Antiviral, antibacterial, and immune-boosting medications, among other treatments, are part of current treatment protocols.

**AIDS dementia complex** A brain disorder in people with severe AIDS, causing loss of thinking capacity and affecting the ability to function. AIDS dementia complex is considered an AIDS-defining illness—that is, one of the serious illnesses that occurs in HIV-positive individuals warranting an AIDS diagnosis, according to the definition of AIDS by the Centers for Disease Control and Prevention (CDC).

**AIDS-related complex** A term used in the early years of the AIDS epidemic to describe people with HIV infection who had only mild symptoms of illness, such as swollen lymph glands. It is rarely used today. Abbreviated ARC.

**airway** The path that air follows to get into and out of the lungs. The mouth and nose are the normal entry and exit ports for the airway. Entering air then passes through the back of the throat (pharynx) and continues through the voice box (larynx), down the trachea, to finally pass through the bronchi.

**airway obstruction** Partial or complete blockage of the breathing passages to the lungs. Causes include the presence of foreign matter, allergic reactions, infections, anatomical abnormalities, and trauma. Associated respiratory distress may be sudden, with only a cough for a warning. There is often agitation in the early stages. Other signs include labored, ineffective breathing, until the person is no

longer breathing (apneic). Loss of consciousness occurs if the obstruction is not relieved. Treatment of airway obstruction due to a foreign body includes the Heimlich maneuver for adults, a series of five abdominal thrusts for children over 1 year of age, and a combination of five back blows with the flat of the hand and five abdominal thrusts with two fingers on the upper abdomen for infants.

**AKA** Above-the-knee amputation, generally performed when the leg is not medically viable or to prevent the spread of disease to the tissues above the knee from below.

**akathisia** A movement disorder characterized by a feeling of inner restlessness and a compelling need to be in constant motion, as well as by actions such as rocking while standing or sitting, lifting the feet as if marching on the spot, and crossing and uncrossing the legs while sitting. People with akathisia are unable to sit or keep still, complain of restlessness, fidget, rock from foot to foot, and pace.

**akinesia** The state of being without movement.

**akinetic** Related to the loss of the normal ability to move the muscles.

**akinetic epilepsy** See *epilepsy*, *akinetic*.

**akinetic mutism** See *mutism*, *akinetic*.

**alanine aminotransferase** An enzyme normally present in liver, skeletal muscle, and heart cells. Abbreviated ALT. ALT is released into blood when the liver, skeletal muscle, or heart is inflamed or injured by diseases, conditions, or medications. Also known as serum glutamic pyruvic transaminase (SGPT).

**albinism** A pigmentation disorder characterized by partial or total lack of the pigment melanin in the skin, hair, and iris. Albinism is caused by an autosomal recessive gene and can occur in people of any ethnic background. People with albinism have delicate skin that sunburns and develops skin cancer easily, and they may suffer from eye disorders. See also *Hermansky-Pudlak syndrome*; *vitiligo*.

**albino** A person with albinism. The term was first applied by the Portuguese to people in West Africa, who may have had partial or complete albinism.

**albuginea** Tough white fibrous tissue. The tunica albuginea of the testis, for example, is the layer of dense whitish inelastic tissue that surrounds the testis.



**albumin** The main protein in human blood and the key to regulating the osmotic pressure of blood. Chemically, albumin is soluble in water; precipitated by acid, and coagulated by heat.

**albuminuria** More than the normal amount of albumin in the urine. Albuminuria can be a sign that protein is leaking through the kidney, most often through the glomeruli, or a sign of significant kidney disease. It may also be the harmless result of vigorous exercise. Also known as proteinuria.

**alcohol** An organic substance formed when a hydroxyl group is substituted for a hydrogen atom in a hydrocarbon. The type of alcohol used in alcoholic beverages, ethanol, derives from fermenting sugar with yeast. After alcohol is ingested, the body converts it to sugar-based fuel. Alcohol acts as a central nervous system depressant, and it may be part of solutions used as preservatives, antiseptics, or medications.

**alcohol abuse** Use of alcoholic beverages to excess, either on individual occasions (binge drinking) or as a regular practice. For some individuals—children or pregnant women, for example—almost any amount of alcohol use may be legally considered “alcohol abuse.” Heavy alcohol abuse can cause physical damage and death.

**alcohol poisoning** A condition in which a toxic amount of alcohol has been consumed, usually in a short period of time. The affected individual may become extremely disoriented, unresponsive, or unconscious, with shallow breathing. Because alcohol poisoning can be deadly, emergency treatment is necessary.

**alcohol use in pregnancy** The consumption of alcohol during pregnancy, which can damage the fetus. See also *fetal alcohol effect*; *fetal alcohol syndrome*.

**Alcoholics Anonymous** A free self-help organization founded to assist people addicted to alcohol in breaking old behavior patterns and gaining support for consistently living a sober lifestyle.

**alcoholism** Physical dependence on alcohol to the extent that stopping alcohol use would bring on withdrawal symptoms. In popular and therapeutic parlance, the term may also be used to refer to ingrained drinking habits that cause health or social problems. Treatment requires first ending the physical dependence and then making lifestyle changes that help the individual avoid relapse. In some cases, medication and hospitalization are necessary. Alcohol dependence can have many serious effects

on the brain, liver, and other organs of the body, some of which can lead to death.

**aldosterone** A hormone produced by the outer portion (cortex) of the adrenal gland. Aldosterone regulates the balance of water and electrolytes in the body, encouraging the kidney to excrete potassium into the urine and retain sodium, thereby retaining water. It is classified as a mineralocorticoid hormone.

**aldosteronism** See *Conn syndrome*.

**alexia** Loss of the ability to read or understand the written word, due either to brain damage that disconnects these functions or to temporary dysfunction caused by abnormal electrical or chemical activity in the brain.

**alienist** French term for a psychologist, a psychiatrist, or another practitioner who cares for the mentally ill.

**alimentary** Concerning food, nourishment, and the organs of digestion. From the Latin *alimentum*, meaning nourishment.

**alkaline phosphatase** An enzyme that liberates phosphate under alkaline conditions and is made in liver, bone, and other tissues. Alkaline phosphatase can be measured in a routine blood test. Abnormally high serum levels of alkaline phosphatase may indicate bone disease, liver disease, or bile duct obstruction.

**alkalosis** Relatively too much base in the blood and body, an abnormal condition resulting from the accumulation of base or the depletion of acid. The pH of an alkalotic body measures above normal. The opposite of alkalosis is acidosis.

**alkaptonuria** A genetic metabolic disorder due to deficiency of the enzyme homogentisic acid (HGA) dioxygenase. Deficiency of this enzyme leads to the three cardinal features of alkaptonuria (the presence of homogentisic acid in the urine), ochronosis (bluish-black pigmentation in connective tissue), and arthritis. Urine that turns dark is a characteristic feature.

**allele** An alternative form of a gene.

**allergen** A substance that can cause an allergic reaction. Common allergens include ragweed pollen, animal dander, and mold.

**allergic conjunctivitis** Inflammation of the whites of the eyes (conjunctivae), with itching, redness, and tearing, due to allergy.

**allergic granulomatosis** See *Churg-Strauss syndrome*.

**allergic reaction** A hypersensitive immune response to a substance. An allergic reaction can occur when the immune system attacks a normally harmless substance. The allergic immune system calls upon a protective antibody called immunoglobulin E (IgE) to fight these invading substances. In the melee, cells called mast cells release a variety of strong chemicals, including histamine, into the tissues and blood. This chemical release is irritating and causes itching and swelling and can also lead to lung airway narrowing and throat tightening, as is found in asthma, as well as to loss of voice. For example, this is how hay fever and allergic pink eye (conjunctivitis) occur. See also *allergic conjunctivitis; allergic rhinitis; anaphylactic shock; asthma*.

**allergic rhinitis** Medical term for hay fever, an allergic reaction that mimics a chronic cold. Symptoms include nasal congestion, a clear runny nose, sneezing, nose and eye itching, and tearing of the eyes. Postnasal dripping of clear mucus frequently causes a cough, loss of smell is common, and occasionally loss of taste. Nosebleeds may occur. Also known as June cold and summer cold.

**allergic rhinitis, perennial** Allergic rhinitis that occurs throughout the year.

**allergic rhinitis, seasonal** Allergic rhinitis that occurs during a specific season.

**allergic salute** The characteristic gesture of a person with allergic rhinitis: rubbing his or her nose with the index finger.

**allergic vasculitis** See *Churg-Strauss syndrome*.

**allergy** Hypersensitivity of the body's immune system in response to exposure to specific substances (antigens), such as pollen, bee stings, poison ivy, drugs, or foods. See also *allergic reaction; anaphylactic shock*.

**allergy desensitization** Stimulation of the immune system with gradually increasing doses of the substances to which a person is allergic in order to modify or stop the allergic response. This form of treatment is very effective for allergies to pollen, mites, animal dander, and stinging insects, including bees, hornets, yellow jackets, wasps, velvet ants, fire ants, and certain necessary medications.

**allergy scratch test** See *allergy skin test*.

**allergy skin test** A test in which a small drop of the suspected allergy-provoking substance (allergen) is placed on the skin and the skin is then gently scratched through the drop with a sterile needle. If the skin reddens and, more importantly, if it swells, the test is read as positive, and allergy to that substance is considered probable.

**allergy to cockroaches** An allergic reaction to tiny protein particles shed or excreted by cockroaches. Asthma can be due to exposure to cockroach allergens. Removing cockroach allergens from the home is not an easy job, but it can go far in reducing the frequency and severity of asthma and other allergic reactions.

**allograft** The transplant of an organ or tissue from one individual to another of the same species with a different genotype. For example, a transplant from one person to another, but not an identical twin, is an allograft. Allografts account for many human transplants, including those from cadaveric, living related, and living unrelated donors. Also known as an allogeneic graft or a homograft.

**allopath** A term sometimes applied to a physician who practices allopathy, or conventional medicine. See also *allopathy*.

**allopathic medicine** See *allopathy*.

**allopathy** The system of medical practice that treats disease by the use of remedies to produce effects different from those produced by the disease under treatment. Doctors of medicine (MDs) practice allopathic medicine. The term "allopathy" was coined to designate conventional medicine as opposed to homeopathy, the system of therapy based on the concept that disease can be treated with drugs (in minute doses) thought capable of producing the same symptoms in healthy people as the disease itself. Allopathy is also known as conventional medicine. See also *allopath*.

**alopecia** Baldness. Temporary alopecia may occur as a result of chemotherapy. Permanent alopecia may result from any of several conditions, including common male-pattern baldness. Radiation therapy administered to the head can also cause permanent alopecia due to irreversible damage to the hair follicles. See also *alopecia areata; alopecia capitis totalis; alopecia universalis; alopecia, traumatic*.

**alopecia, traumatic** Hair loss caused by injury to the scalp. Common causes include the use of caustic hair straighteners, especially those that include lye as an ingredient; stress traction injury

from tight rollers and braiding; overheating of the hair shafts; and compulsive pulling out of hair (trichotillomania).

**alopecia areata** Patchy baldness that typically begins with rapid hair loss on discrete areas of the scalp and sometimes progresses to complete baldness and even loss of body hair. The characteristic diagnostic finding is short, broken hairs called "exclamation point" hairs. Alopecia areata affects both males and females and, most often, children and young adults. It seems to be caused by an autoimmune mechanism, wherein the body's own immune system attacks the hair follicles and disrupts normal hair formation. Alopecia areata is sometimes associated with allergic disorders, thyroid disease, vitiligo, lupus, rheumatoid arthritis, ulcerative colitis, and other conditions, and some forms may be inherited. Hair can sometimes regrow within a year without treatment. The longer the period of time of hair loss, the less chance that the hair will regrow.

**alopecia capitis totalis** Loss of all scalp hair, with normal hair elsewhere on the body remaining.

**alopecia universalis** Loss of all hair on the entire body.

**alpha cell, pancreatic** A type of cell found in areas within the pancreas called the islets of Langerhans. Alpha cells make and release glucagon, which raises the level of glucose (sugar) in the blood.

**alpha error** The statistical error made in testing a hypothesis when it is concluded that a result is positive, but it really is not. Also known as false positive.

**alpha interferon** One of the three main classes of interferons, which are specialized proteins (lymphokines) produced by the body in response to microbial infection that interfere with the multiplication of viruses in cells. The other two main classes are called beta interferon and gamma interferon. See also *interferon*; *interferon therapy*.

**Alpha Omega Alpha** An honor society, the medical school equivalent of Phi Beta Kappa of undergraduate school.

**alpha thalassemia** See *thalassemia*, *alpha*.

**alpha-1 antitrypsin deficiency** An inherited disorder characterized by a lack of the alpha-1 antitrypsin protease inhibitor. Alpha-1 antitrypsin deficiency leads to damage of various organs, especially the lung and liver. Symptoms may become

apparent at a very early age or anytime later, manifesting as shortness of breath due to emphysema or as liver symptoms such as jaundice, fatigue, fluid in the abdomen, mental changes, or gastrointestinal bleeding. Treatment options include, for lung disease, replacement of the missing alpha-1 antitrypsin. Avoidance of smoking and of other lung irritants is an important part of management. Treatment of the liver disease is liver transplant. Also known as protease inhibitor 1 deficiency.

**alpha-fetoprotein** A plasma protein normally produced by a fetus, principally in the fetus's liver, the fetal gastrointestinal tract, and the yolk sac, a structure temporarily present during embryonic development. Abbreviated AFP. The level of AFP is typically high in the fetus's blood. It goes down after birth. By 1 year of age, it is virtually undetectable. During pregnancy, AFP crosses the placenta from the fetal circulation and appears in the mother's blood. The level of AFP in the mother's blood provides an opportunity to screen for a number of disorders, including open neural tube defects (such as anencephaly and spina bifida), Down syndrome, and other chromosome abnormalities.

**Alport syndrome** A hereditary condition characterized by kidney disease, deafness, and sometimes eye defects. Alport syndrome involves inflammation of the kidney (nephritis), often progressing to kidney failure, and sensory nerve hearing loss. Progression to kidney failure is gradual and usually occurs in males before 50 years of age.

**ALS** Amyotrophic lateral sclerosis, Lou Gehrig's disease.

**ALT** Alanine aminotransferase.

**alternative medicine** Healing arts not taught in traditional Western medical schools that promote options to conventional medicine that is taught in these schools. An example of an alternative therapy is using a special diet to treat cancer instead of undergoing surgery, radiation, or chemotherapy that has been recommended by a Western physician. Complementary medicine is different from alternative medicine. Whereas complementary medicine is used together with conventional medicine, alternative medicine is used in place of conventional medicine. See also *complementary medicine*; *conventional medicine*.

**altitude, acclimatization to** See *acclimatization to altitude*.

**altitude illness** See *altitude sickness*.

**altitude sickness** Sickness caused by being at a high altitude, usually above 2,400 meters (approximately 8,000 feet). The cause of altitude sickness is a matter of oxygen physiology. At sea level the concentration of oxygen is about 21 percent, and the barometric pressure averages 760 mm Hg. As altitude increases, the concentration remains the same, but the number of oxygen molecules per breath is reduced. At 5,400 meters (approximately 12,000 feet) above sea level, the barometric pressure is only 483 mm Hg, so there are roughly 40 percent fewer oxygen molecules per breath. In order to oxygenate the body effectively, the breathing rate must increase. This extra ventilation increases the oxygen content in the blood—but not to sea level concentrations. Because the amount of oxygen required for activity is the same at high altitude as at sea level, the body must adjust to having less oxygen. In addition, high altitude and lower air pressure cause fluid to leak from the capillaries, which can cause fluid buildup in the lungs and the brain. Prevention measures for altitude sickness include avoiding or retreating from high-altitude areas, gradual acclimatization, and medication. The acclimatization process is inhibited by dehydration, overexertion, and intake of alcohol and depressant drugs. Preventive medications include acetazolamide (brand name: Diamox) and dexamethasone (a steroid). See also *acclimatization to altitude*; *acute mountain sickness*.

**alveolitis** Inflammation of the alveoli, the air sacs in the lungs.

**alveolus** A tiny air sac in the lungs. Plural alveoli.

**Alzheimer's disease** A progressive degenerative disease of the brain that leads to dementia. On a cellular level, Alzheimer's disease is characterized by the finding of unusual helical protein filaments in nerve cells of the brain. These twisted filaments are called neurofibrillary tangles. In the brain, Alzheimer's disease involves degeneration of the cortical regions, especially the frontal and temporal lobes. There is currently no cure for Alzheimer's disease, but new medications and therapies appear to slow its progress and improve the patient's ability to function.

**AMA** American Medical Association, a professional organization for physicians that sets widely accepted standards of practice and ethics and that publishes the weekly journal *JAMA* (*Journal of the American Medical Association*).

**amastia** A rare condition wherein the normal growth of the breast or nipple does not occur. Unilateral amastia (absence of one breast) is often associated with absence of the pectoral muscles.

Bilateral amastia (absence of both breasts) is associated with multiple birth defects involving other parts of the body. See also *amazia*.

**amaurosis fugax** A symptom that is often described as a shade coming down over the eye. Amaurosis fugax is a partial or complete loss of sight that is temporary. Amaurosis fugax is usually caused by arteriosclerosis in the blood vessels that supply the brain. It can also occur with excessive acceleration, as in flight, and with ophthalmic migraine. See also *arteriosclerosis*.

**amaurotic familial idiocy** An outdated term for Tay-Sachs disease (TSD). See *Tay-Sachs disease*.

**amazia** A condition wherein the breast tissue is absent, but the nipple is present. Amazia is typically a result of radiation or surgery.

**ambidextrous** Able to use both the right and left hands with equal dexterity. Neither right- nor left-handed.

**amblyopia, nocturnal** Night blindness, also known as day sight. See *nyctanopia*.

**ambulance** A vehicle equipped with medications and devices intended to stabilize patients while speeding them to a hospital. In its original sense, an ambulance was a mobile field hospital.

**ambulatory** Able to walk about, not bedridden or immobile.

**ambulatory care** Medical care provided on an outpatient basis, including diagnosis, observation, treatment, and rehabilitation services.

**ameba** A single-celled, protozoan organism that constantly changes shape. Amebae can infect the bowels, causing diarrhea. They can also infect the liver, causing abscesses to form.

**amebiasis** The state of being infected with amebae, especially with the ameba *Entamoeba histolytica*.

**amebic colitis** Amebic dysentery with ulcers in the colon from infection with the ameba *Entamoeba histolytica*. This single-celled parasite is transmitted to humans via contaminated water and food.

**amebic dysentery** Inflammation of the intestine due to infection with the ameba *Entamoeba histolytica*. Amebic dysentery can be accompanied by amebic infection of the liver and other organs.

**amelanotic** Without melanin. A skin lesion that is amelanotic lacks the pigment melanin and, therefore, is essentially colorless.

**amelanotic melanoma** See *melanoma, amelanotic*.

**amelioration** Improvement in a patient's condition, or the activity of making an effort to correct, or at least make more acceptable, conditions that are difficult to endure related to patient's conditions.

**amenorrhea** See *menstruation, cessation of*.

**amenorrhea, physiologic** The cessation of menstruation for completely normal reasons. The lack of menstruation during pregnancy and lactation are forms of physiologic amenorrhea.

**amenorrhea, primary** The failure of menstruation to occur at puberty.

**amenorrhea, secondary** The cessation of menstruation for abnormal reasons. Causes include anorexia nervosa, disease of the female reproductive tract, and overexercise. Secondary amenorrhea can also be caused by certain medications, notably the birth control medication medroxyprogesterone (brand name: Depo-Provera); in this case, amenorrhea is an expected effect.

**American Type Culture Collection** The world's premier biological culture repository, and a key resource for medical research.

**AMI** Acute myocardial infarction.

**amine** A chemical compound containing nitrogen. Amines are derived from ammonia.

**amino acid** One of the 20 building blocks from which proteins are assembled. Isoleucine, leucine, lysine, phenylalanine, threonine, tryptophan, and valine are deemed "essential" amino acids because the human body cannot make them and they must be obtained in the diet. Amino acids are sometimes taken orally in supplement form.

**amino acid screen** A screening blood or urine test that returns information about the levels of amino acids. An amino acid screen is useful in diagnosing certain conditions, including the inborn errors of amino acid metabolisms such as phenylketonuria (PKU).

**aminotransferase** An enzyme that catalyzes the transfer of an amino group from a donor molecule to a recipient molecule. The donor molecule is usually an amino acid and the recipient molecule is usually an alpha-2 keto acid. Two of the best-known enzymes in this class are serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT), both of which

are normally found primarily in cells in the liver and heart.

**amitriptyline** A tricyclic antidepressant drug (brand name: Elavil) prescribed to treat depression, chronic pain, migraines, eating disorders, and a wide variety of other conditions. See also *tricyclic antidepressant*.

**AML** See *leukemia, acute myeloid*.

**amnesia** An impairment to or lack of memory. Antegrade amnesia refers to a lack of memory of events occurring after a traumatic event, whereas retrograde amnesia refers to lack of memory of events that occurred before the event.

**amniocentesis** A before-birth diagnostic procedure during which a long needle is used to obtain amniotic fluid from within the uterus. This fluid can be used for genetic and other diagnostic tests. Informally known as amnio.

**amnion** A thin membrane that surrounds the fetus during pregnancy. The amnion is the inner of the two fetal membranes (the chorion is the outer one), and it contains the amniotic fluid.

**amniotic fluid** The fluid bathing a fetus within the uterus, which serves as a shock absorber.

**amphetamine** A drug that has a stimulant effect on the central nervous system that can be both physically and psychologically addictive when overused. Amphetamine has been much abused recreationally. The street term "speed" refers to stimulant drugs such as amphetamine.

**amplification** An event that produces multiple copies of a gene or of any sequence of DNA. Gene amplification plays a role in cancer. Amplification can occur in vivo (in the living individual) or in vitro (in the laboratory).

**ampulla of Vater** A small projection into the duodenum through which bile and pancreatic secretions flow to mix with food for digestion.

**amputation** Removal of part or all of a body part that is enclosed by skin. Amputation can occur at an accident site, the scene of an animal attack, or a battlefield. Amputation is also performed as a surgical procedure. It is typically performed to prevent the spread of gangrene as a complication of frostbite, injury, diabetes, arteriosclerosis, or any other illness that impairs blood circulation. It is also performed to prevent the spread of bone cancer and to curtail loss of blood and infection in a person who has suffered severe, irreparable damage to a limb.



When performing an amputation, surgeons generally cut above the diseased or injured area so that a portion of healthy tissue remains to cushion bone. Sometimes the location of a cut may depend in part on its suitability to be fitted with an artificial limb, or prosthesis.

**AMS 1** Atypical measles syndrome. **2** Acute mountain sickness.

**amygdala 1** The amygdaloid nucleus in the brain. **2** The tonsils. These structures were so named because they appeared to be shaped like an almond.

**amyloidosis** A group of diseases that result from the abnormal deposition of a protein, called amyloid, in various tissues of the body. Amyloid protein can be deposited in a localized area, and it may not be harmful or it may affect only a single tissue of the body. This form of amyloidosis is called localized amyloidosis. Amyloidosis that affects tissues throughout the body is referred to as systemic amyloidosis. Systemic amyloidosis can cause serious changes in organs throughout the body. Amyloidosis can occur as its own entity or secondarily, as a result of another illness, including multiple myeloma, chronic infections (such as tuberculosis or osteomyelitis), or chronic inflammatory diseases (such as rheumatoid arthritis and ankylosing spondylitis).

**amyotrophic lateral sclerosis** A progressive chronic disease of nerves from the spinal cord that are responsible for supplying electrical stimulation to the muscles. Abbreviated ALS. ALS is progressive and usually fatal in less than eight years, from illnesses that strike as the body becomes weaker. ALS occurs most often in adults over 50. The cause of ALS is unknown. It is sometimes called Lou Gehrig's disease, after a great baseball player who was its best-known victim.

**ANA** Antinuclear antibody, detected when a blood sample is microscopically evaluated using special cellular stain methods. ANAs indicate autoimmunity, or, an overactive misdirected immune system that can be associated with inflammation of various tissues of the body. The ANA test reveals different patterns, depending on how the cell nucleus is stained in the laboratory: homogeneous, or diffuse; speckled; nucleolar; and peripheral, or rim. Although these patterns are not specific for any one illness, certain illnesses can more frequently be associated with some patterns. For example, the nucleolar pattern is commonly found in the disease scleroderma. The speckled pattern is seen in many conditions and in persons who have no autoimmune disorder. ANAs are found in approximately 5

percent of the normal population, usually in low titers (low levels).

**anaerobic** Not requiring oxygen. Anaerobic bacteria, for example, do not require oxygen to grow.

**anal fissure** A tear in the anal canal, one of the most common causes of red blood in the stool.

**anal itching** Irritation of the skin at the exit of the rectum, accompanied by the desire to scratch. The intensity of anal itching is increased by moisture, pressure, and abrasion caused by clothing and sitting. It may be caused by irritating chemicals in food (as in spices, hot sauces, and peppers); irritation due to frequent liquid stools, as in diarrhea; diseases, such as diabetes mellitus or HIV infection, that increase the possibility of yeast infections; and psoriasis. Other causes of anal itching include hemorrhoids, anal fissures, abnormal local growth of anal skin (anal papillae), and skin tags. Treatment is directed first toward relieving the burning and soreness, including cleaning and drying the anus thoroughly, avoiding leaving soap in the anal area, showering gently without directly rubbing or irritating the skin, and using moist pads rather than toilet paper to clean the anus after bowel movements. Local application of cortisone cream may help. Also known as *pruritus ani*.

**analgesia** The inability to feel pain.

**analgesic** A drug that relieves pain.

**analysis** In psychology, a term for conversation-based therapeutic processes used to gain understanding of complex emotional or behavioral issues.

**anaphylactic shock** A widespread and extremely serious allergic reaction that can result in death. Symptoms include dizziness, loss of consciousness, labored breathing, swelling of the tongue and breathing tubes, blueness of the skin, low blood pressure, and heart failure. Immediate emergency treatment is required, for example, administration of epinephrine in the case of bee or wasp stings. See also *allergic reaction*.

**anaphylactoid purpura** A form of blood vessel inflammation that affects small capillaries in the skin and the kidneys. It results in skin rash associated with joint inflammation (arthritis) and cramping pain in the abdomen. Anaphylactoid purpura frequently follows a bacterial or viral infection of the throat or breathing passages, and it is an unusual reaction of the body's immune system to this infection. It occurs most commonly in children. Generally a mild illness that resolves spontaneously, anaphylactoid purpura can sometimes cause serious

problems in the kidneys and bowels. Treatment is directed toward the most significant area of involvement. Also known as Henoch-Schonlein purpura (HSP).

**anaphylaxis** An allergic reaction. In severe cases, anaphylaxis can include potentially deadly anaphylactic shock. See also *allergic reaction*; *anaphylactic shock*.

**anastomosis** The connection of normally separate parts. An anastomosis may be naturally occurring or it may be created during embryonic development, surgery, or trauma, or by pathological means. An anastomosis may, for example, connect two blood vessels, or it may connect the healthy sections of the colon or rectum after a cancerous or otherwise diseased portion has been surgically removed.

**anat.** Abbreviation for anatomy.

**anatomy** The study of human or animal form, by observation or examination of the living being, examination or dissection of dead specimens, microscopic examination, and/or textbooks.

**anatomy, gross** In medicine, the study of human structures that can be seen with the naked eye. Known among medical students studying human anatomy simply as "gross."

**anatomy, microscopic** The study of normal structure of an organism under the microscope. Known among medical students simply as "micro." Also known as histology.

**anatripsis** The use of friction as a treatment modality for a medical condition. Anatripsis may or may not also involve the application of a medicament.

**Anderson-Fabry disease** See *Fabry disease*.

**androgen** A group of hormones, including androsterone, that promotes the development and maintenance of male sex characteristics. Androgen production is stimulated by the hormone testosterone. See also *testosterone*.

**android pelvis** See *male pelvis*.

**androstenedione** A steroid produced in the adrenal gland that is a precursor to testosterone and other male hormones (androgens). Known popularly as andro, it has been used as a supplement to increase muscle strength. Taking andro raises testosterone levels above normal. Side effects include acne, male baldness, and a decrease in "good" cholesterol (which may predispose to heart disease and stroke).

**androsterone** A male sex hormone that is found in the blood and urine of men and women. It is seven times weaker than testosterone.

**anemia** The condition of having a lower-than-normal number of red blood cells or quantity of hemoglobin. Anemia diminishes the capacity of the blood to carry oxygen. Patients with anemia may feel tired, fatigue easily, appear pale, develop palpitations, and become short of breath. Children with chronic anemia are prone to infections and learning problems. The main causes of anemia are bleeding, hemolysis (excessive destruction of red blood cells), underproduction of red blood cells (as in bone marrow diseases), and underproduction of normal hemoglobin (as in sickle cell anemia and in iron deficiency anemia). Women are more likely than men to have anemia because of menstrual blood loss. In children, anemia is most commonly due to insufficient iron in the diet. Anemia is also often due to gastrointestinal bleeding caused by medications, including such common drugs as aspirin and ibuprofen.

**anemia, Addisonian** See *anemia, pernicious*.

**anemia, aplastic** Anemia due to failure of the bone marrow to produce red and white blood cells as well as platelets. Aplastic anemia frequently occurs without a known cause. Known causes include exposure to chemicals (for example, benzene, toluene in glues, insecticides, solvents), drugs (for example, chemotherapy drugs, gold, seizure medications, antibiotics), viruses (for instance, HIV, Epstein-Barr), radiation, immune conditions (for example, systemic lupus erythematosus, rheumatoid arthritis), pregnancy, paroxysmal nocturnal hemoglobinuria, and inherited disorders (for example, Fanconi anemia).

**anemia, Cooley** See *thalassemia*.

**anemia, Fanconi** See *Fanconi anemia*.

**anemia, iron deficiency** Anemia due to inadequate iron. Iron is necessary to make hemoglobin, the molecule in red blood cells that is responsible for the transport of oxygen. In iron deficiency anemia, the red cells are small and pale. Characteristic features of iron deficiency anemia in children include failure to thrive and increased infections. Iron deficiency anemia can be treated with iron supplements and iron-containing foods. Food sources of iron include meat, poultry, eggs, vegetables, and certain cereals. Iron supplements may also be taken, although they should never be given to children without a physician's recommendation.

**anemia, Mediterranean** See *thalassemia*.

**anemia, pernicious** Low red blood cell count caused by inadequate vitamin B12. Abbreviated PA. Patients with PA do not produce intrinsic factor (IF), a substance that allows the body to absorb vitamin B12 from foods. The resulting inadequacy of vitamin B12 hampers the production of red blood cells. PA can be treated by injection of vitamin B12; oral administration will not work because people with PA cannot absorb orally administered vitamin B12. Also known as Addison's anemia.

**anemia, refractory** Anemia that is unresponsive to treatment.

**anemia, sickle cell** A genetic blood disorder caused by the presence of an abnormal, sickle-shaped form of hemoglobin. These hemoglobin molecules tend to aggregate after unloading oxygen, forming long, rod-like structures that force the red cells to assume a sickle shape. Unlike normal red cells, which are usually smooth and malleable, the sickle red cells cannot squeeze through small blood vessels. When the sickle cells block small blood vessels, the organs are deprived of blood and oxygen. This leads to periodic episodes of pain and damages the vital organs. Sickle red cells die after only about 10 to 20 days, instead of the usual 120 days or so. Because they cannot be replaced fast enough, the blood is chronically short of red cells, causing anemia. The gene for sickle cell anemia must be inherited from both parents for the illness to occur in children. A child with only one copy of the gene may have sickle-cell traits but no symptoms of illness. See also *sickle cell trait*.

**anencephaly** Absence of the cranial vault and of most or all of the cerebral hemispheres of the brain, a lethal malformation. Anencephaly is due to imperfect development of the neural tube, the structure that gives rise to the central nervous system, during very early pregnancy. The upper end of the neural tube fails to close. The risk of all neural tube defects, including anencephaly, is decreased if the mother's diet during pregnancy contains ample folic acid. See also *neural tube defect*.

**anesthesia** Loss of feeling or awareness, as when an anesthetic is administered before surgery.

**anesthesiologist** A physician or, less often, a dentist who is specialized in the practice of anesthesiology.

**anesthesiology** The branch of medicine specializing in the use of drugs or other agents that cause insensibility to pain.

**anesthetic** A substance that causes lack of feeling or awareness, dulling pain to permit surgery and other painful procedures.

**anesthetic, epidural** An anesthetic injected into the epidural space surrounding the fluid-filled sac (the dura) around the spinal cord. It partially numbs the abdomen and legs and is most commonly used during childbirth.

**anesthetic, general** An anesthetic that puts a person to sleep rendering them unconscious.

**anesthetic, local** An anesthetic that causes loss of feeling in a limited part of the body.

**anesthetist** A nurse or technician trained to administer anesthetics.

**aneuploidy** A condition in which a person has one or a few chromosomes above or below the normal chromosome number. For example, three copies of chromosome 21, which is characteristic of Down syndrome, is a form of aneuploidy.

**aneurysm** A localized widening (dilatation) of an artery, a vein, or the heart. At the point of an aneurysm, there is typically a bulge. The wall of the blood vessel or organ is weakened and may rupture.

**aneurysm, abdominal aortic** A balloon-like swelling in the wall of the aorta within the abdomen. This swelling weakens the aorta's wall and, because of the great volume of blood flowing under high pressure in the aorta, it can rupture. An abdominal aortic aneurysm is monitored by ultrasound. Surgery is often recommended if the aneurysm is more than 5.5 centimeters (2.2 inches) in diameter or if a smaller aneurysm is enlarging with unusual rapidity.

**aneurysm, aortic** An aneurysm of the largest artery in the body, the aorta, involving that vessel in its course above the diaphragm (thoracic aortic aneurysm) or, more commonly, below the diaphragm (abdominal aortic aneurysm). Because of the volume of blood flowing under relatively high pressure within the aorta, a ruptured aneurysm of the aorta is a catastrophe. See also *aneurysm, abdominal aortic; aneurysm, thoracic*.

**aneurysm, arterial** An aneurysm involving an artery.

**aneurysm, arteriosclerotic** An aneurysm that occurs because a vessel wall is weakened by arteriosclerosis. Also known as atherosclerotic aneurysm. See also *arteriosclerosis*.

**aneurysm, berry** A small aneurysm that looks like a berry and classically occurs at the point at which a cerebral artery departs from the circular artery (the circle of Willis) at the base of the brain. Berry aneurysms frequently rupture and bleed.

**aneurysm, brain** An aneurysm of a blood vessel in the brain, usually due to a defect in the vessel at birth or from high blood pressure. Rupture of the aneurysm causes a sudden severe headache, often with nausea, vomiting, decreased consciousness, and can be life threatening.

**aneurysm, cardiac** An outpouching of an abnormally thin portion of the heart wall. Cardiac aneurysms tend to involve the left ventricle because the blood there is under the greatest pressure.

**aneurysm, dissecting** An aneurysm in which the wall of an artery rips (dissects) longitudinally. This occurs because bleeding into the weakened wall splits the wall. Dissecting aneurysms tend to affect the thoracic aorta. They are a particular danger in Marfan syndrome.

**aneurysm, fusiform** An aneurysm that is shaped like a spindle and widens an artery or a vein.

**aneurysm, miliary** A tiny, millet-seed-sized aneurysm that tends to affect minute arteries in the brain and, in the eye, the retina.

**aneurysm, saccular** An aneurysm that resembles a small sack. A berry aneurysm is typically saccular.

**aneurysm, thoracic** An aneurysm of the largest artery in the body, the aorta, involving that vessel in its course within the thorax (chest). Because of the volume of blood flowing under relatively high pressure within the aorta, a ruptured aneurysm of the aorta is a catastrophe. See also *aneurysm, abdominal aortic*; *aneurysm, aortic*.

**aneurysm, venous** A localized widening of a vein.

**aneurysmal bone cyst** See *bone cyst, aneurysmal*.

**anger** An emotional state that may range in intensity from mild irritation to intense fury and rage. Anger has physical effects, including raising the heart rate and blood pressure, as well as the levels of adrenaline.

**angiitis** Inflammation of the walls of small blood vessels. Also known as vasculitis.

**angiitis, allergic granulomatous** See *Churg-Strauss syndrome*.

**angina** Chest pain due to an inadequate supply of oxygen to the heart muscle. The pain is typically severe and crushing, and it is characterized by a feeling of pressure and suffocation just behind the breastbone. Angina can accompany or be a precursor of a heart attack.

**angina, Prinzmetal** Chest pain due to a coronary artery spasm, a sudden constriction of one of the vessels that supply the heart muscle with blood that is rich in oxygen. This spasm deprives the heart muscle of blood and oxygen. Treatments include beta-blocker medications and nitroglycerin to open up the coronary arteries. Also known as variant angina. See also *coronary artery spasm*.

**angina, variant** See *angina, Prinzmetal*.

**angina, Vincent** See *acute membranous gingivitis*.

**angina pectoris** See *angina*.

**angioedema** A skin condition that resembles hives but affects a deeper skin layer causing localized swellings of soft tissues, such as the tongue or lips. Angioedema can be a sign of an allergic reaction. See also *angioedema, hereditary*.

**angioedema, hereditary** A genetic form of angioedema. Persons with it are born lacking the enzyme C1 esterase inhibitor, a protein that normally inhibits the activation of a cascade of proteins. Without this inhibitor protein, angioedema occurs, resulting in recurrent attacks of swollen tissues, pain in the abdomen, and swelling of the voice box (larynx), which can compromise breathing. The diagnosis of hereditary angioedema is confirmed by finding subnormal blood levels of C1 esterase inhibitor. Treatment and prevention options include antihistamines and male steroids (androgens). Also known as hereditary angioneurotic edema. See also *angioedema*.

**angiogenesis** The process of developing new blood vessels. Angiogenesis is critically important during the normal development of the embryo and fetus. It also appears to be important during tumor formation.

**angiogram** An X-ray image of blood vessels. The vessels can be seen because a contrast dye within them blocks the X-rays from developing an imaging film.

**angioid streaks** Tiny breaks in the elastin-filled tissue in the retina in the back of the eye. Angioid streaks are seen in patients with pseudoxanthoma elasticum, a rare disorder of degeneration of the elastic fibers with tiny areas of calcification in the



skin, retinae, and blood vessels, and they are visible during an examination using an ophthalmoscope. Angioid streaks can cause blindness.

**angiokeratoma corporis diffusum universale** See *Fabry disease*.

**angioneurotic edema, hereditary** See *angioedema, hereditary*.

**angiopathy** Disease of the arteries, veins, and capillaries. There are two types of angiopathy: microangiopathy and macroangiopathy. In microangiopathy, the walls of small blood vessels become so thick and weak that they bleed, leak protein, and slow the flow of blood. For example, diabetics may develop microangiopathy with thickening of capillaries in many areas, including the eye. In macroangiopathy, fat and blood clots build up in the large blood vessels, stick to the vessel walls, and block the flow of blood. Macroangiopathy in the heart is coronary artery disease; in the brain, it is cerebrovascular disease. Peripheral vascular disease is macroangiopathy that affects, for example, vessels in the legs.

**angioplasty** A procedure in which a balloon-tipped catheter is used to enlarge a narrowing in a coronary artery caused by arteriosclerosis. Also known as percutaneous transluminal coronary angioplasty (PTCA). See also *arteriosclerosis*.

**angiosarcoma** A form of tissue cancer (sarcoma) that arises in the lining of blood vessels. Angiosarcomas tend to be aggressive, recur locally, and spread widely. Predisposing factors include lymphedema (as from a radical mastectomy), radiotherapy, foreign materials (such as steel and plastic) in the body, and environmental agents (such as arsenic solutions used to spray grapevines and vinyl chloride in the plastic industry).

**angiotatin** A fragment of a protein, plasminogen, that is involved in blood clotting. Angiotatin is normally secreted by tumors, and it appears to halt the process of developing new blood vessels, which is necessary to tumor development.

**angiotensin** A family of peptides that constrict blood vessels. Narrowing the diameter of the blood vessels causes blood pressure to rise.

**angiotensin converting enzyme** See *ACE*.

**angle-closure glaucoma** Increased pressure in the front chamber of the eye due to blockage of its normal circulation of fluid. When the iris retracts and thickens (when the pupil of the eye is wide open), it blocks the drainage pathway for fluid in

the eye. This causes the pressure in the eye to soar, which can damage the optic nerve and lead to blindness. The elevated pressure is ideally to be detected before the appearance of other symptoms of angle-closure glaucoma, so the pressure is routinely checked during eye exams. Symptoms of acute angle-closure glaucoma include severe eye and facial pain, nausea and vomiting, blurred vision, and a halo effect around lights. Acute angle-closure glaucoma is an emergency because optic nerve damage and vision loss can occur within hours of its onset. Angle-closure glaucoma tends to affect people born with a narrow angle between the cornea and iris. See also *glaucoma*.

**anhidrosis** Lack of sweating. Anhidrosis creates a dangerous inability to tolerate heat.

**anisocoria** A condition in which the left and right pupils of the eyes are not of equal size. The size of the pupil determines how much light is let into the eye. With anisocoria, the larger pupil lets more light enter the eye. There are many causes of anisocoria, including eye injury or infection and swelling within the brain.

**anisocytosis** Excessive inequality in the size of the red blood cells. Anisocytosis is apparent on a blood smear examined under a microscope.

**ankle** A complex structure made up of two joints: the true ankle joint and the subtalar joint. The ankle's movement is constrained and controlled by ligaments, including the anterior tibiofibular ligament, which connects the tibia to the fibula; the lateral collateral ligaments, which attach the fibula to the calcaneus to give the outside of the ankle stability; and the deltoid ligaments on the inside of the ankle, which connect the tibia to the talus and calcaneus to provide medial stability to the ankle. See also *ankle joint*.

**ankle joint** A joint that is composed of three bones: the tibia, the fibula, and the talus. The ankle joint is responsible for the up-and-down motion of the foot. The subtalar joint is under the ankle joint, and it consists of the talus on top and calcaneus on the bottom. The subtalar joint is responsible for the side-to-side motion of the foot.

**ankle-foot orthosis** A brace, usually made of plastic, that is worn on the lower leg and foot to support the ankle, hold the foot and ankle in the correct position and correct foot drop. Abbreviated AFO. Also known as foot drop brace.

**ankyloglossia** A minor birth defect in which the flap of membrane attached to the underside of the tongue (frenulum) is too short. This shortened



frenulum limits the mobility of the tongue. Ankyloglossia is also called tongue tie, from the folk belief that the anomaly causes feeding and speech problems. A child cannot feed or speak properly because the tongue is "tied." This antiquated belief is untrue.

**ankylosing** Having a tendency to stiffen and fuse together.

**ankylosing spondylitis** A form of chronic inflammation of the spine and the sacroiliac joints. Chronic inflammation in these areas causes pain and stiffness in and around the spine. Over time, chronic spinal inflammation (spondylitis) can lead to a complete cementing together (fusion) of the vertebrae, a process called ankylosis. Ankylosing spondylitis can sometimes be seen in patients with psoriasis and inflammatory bowel disease (ulcerative and Crohn's colitis).

**ankyrin deficiency** A genetic disorder of the red blood cell membrane. Ankyrin deficiency is the cause of hereditary spherocytosis. See also *spherocytosis, hereditary*.

**anlage** **1** In biology, whatever precedes something else. **2** In embryology, a precursor or forerunner, of a more mature structure or organ. **3** In psychoanalysis, a predisposition to a given trait or personality characteristic.

**ANLL** Acute nonlymphocytic leukemia.

**annexin** One of a family of proteins that bind calcium and phospholipids.

**annexin V** A substance that normally forms a shield around certain phospholipid molecules in the blood, blocking their entry into coagulation (clotting) reactions. Annexin V is thought to be a cause of antiphospholipid syndrome.

**anomaly** Any deviation from normal, out of the ordinary. In medicine, an anomaly is usually something that is abnormal at birth.

**anomaly, congenital** A birth defect. A minor congenital anomaly is an unusual anatomic feature such as a short second toe that is of no serious medical or cosmetic consequence. By contrast, a major congenital anomaly is a defect such as a cleft palate that is of serious medical or cosmetic consequence.

**anorexia** A decreased appetite or an aversion to food, resulting in disturbed eating habits and weight loss. Anorexia may be caused by some medications and medical conditions, particularly in elderly or hospitalized patients. See also *anorexia nervosa*.

**anorexia nervosa** An eating disorder characterized by extreme attempts to control the diet and/or an aversion to food. It affects young women most often, but it may also be seen in men, children, and older adults. Symptoms can include extreme weight loss, weakness, and dulling of hair and skin. In some cases, anorexia nervosa may be a form of obsessive-compulsive disorder. Treatment includes medication, therapy, dietary counseling and, in extreme cases, hospitalization. Untreated anorexia can cause organ failure and death. See also *body dysmorphic disorder; bulimia nervosa; obsessive-compulsive disorder*.

**anorexic** **1** Pertaining to, or having the appearance of, anorexia. **2** Lack of appetite. **3** A drug or other agent that causes anorexia and so diminishes the appetite. See also *anorexia*.

**anorexigenic** Causing anorexia (loss of appetite) as, for example, an anorexigenic drug. See also *anorexia*.

**anorgasmia** Failure to achieve orgasm (climax) during sexual intercourse. Anorgasmia has many causes, including stress, anxiety, depression, fatigue, worry, guilt, fear of painful intercourse, fear of pregnancy, the undesirability of a partner, the undesirability of a setting, and the use of alcohol or prescription or illicit drugs.

**anosmia** The failure of the development of or the loss of the sense of smell.

**anotia** The absence from birth of the external, visible part of the ear (the auricle).

**anoxia** The absence, or near absence, of oxygen. Anoxia can injure tissues of the body.

**ant, fire** See *fire ant*.

**ant, velvet** See *velvet ant*.

**ant sting** See *fire ant*.

**antagonist** A substance that acts against and blocks an action. Antagonist is the opposite of agonist. Antagonists and agonists are key players in the chemistry of the human body and in pharmacology.

**antenatal diagnosis** See *prenatal diagnosis*.

**anterior** The front. For example, the breastbone is part of the anterior surface of the chest. Opposite of posterior. See also Appendix B, "Anatomic Orientation Terms."

**anterior cruciate ligament** A ligament in the knee that crosses from the underside of the femur to

the top of the tibia. Abbreviated ACL. Injuries to the ACL can occur in a number of situations, including sports, and can be quite serious, sometimes requiring surgery. See also *knee*.

**anterior pituitary** See *pituitary, anterior*.

**anteroposterior** From front to back. Abbreviated AP. When a chest X-ray is taken with the patient's back against the film plate and the X-ray machine in front of the patient, it is referred to as an AP view. The opposite of AP is posteroanterior (PA). See also Appendix B, "Anatomic Orientation Terms."

**anthracosis** See *black lung disease*.

**anthrax** A highly infectious disease that normally affects animals, especially ruminants (such as cattle, sheep, and horses), but that can be transmitted to humans by contact with infected animals or their products or by biologic warfare. The agent of anthrax is the bacterium *Bacillus anthracis*. Its spores can resist destruction and remain viable for years. Anthrax is treated with antibiotics such as penicillin, tetracycline, erythromycin, and ciprofloxin (brand name: Cipro). Three forms of disease are caused by anthrax: cutaneous anthrax, inhalation anthrax, and gastrointestinal anthrax. See also *anthrax, cutaneous*; *anthrax, gastrointestinal*; *anthrax, inhalation*.

**anthrax, cutaneous** Anthrax infection of the skin. The most common form of anthrax, cutaneous anthrax starts as a red-brown raised spot that enlarges and has redness, blistering, and hardening in the area of the spot. The center of the spot then shows an ulcer crater with blood-tinged drainage and the formation of a black crust (an eschar). The glands in the area become swollen (enlarged lymph nodes), and the patient may have muscle aching and pain, headache, fever, nausea, and vomiting.

**anthrax, gastrointestinal** Anthrax infection of the gastrointestinal tract, now very rare but deadly. Gastrointestinal anthrax is caused by eating meat that is contaminated with the bacterium *Bacillus anthracis*.

**anthrax, inhalation** Anthrax infection of the lungs, also known as pulmonary anthrax, that is due to the inhalation of anthrax spores. The inhaled spores multiply rapidly in the lymph nodes in the chest. A person infected with inhalation anthrax experiences local bleeding and tissue death (necrosis) in these lymph nodes, and the disease spreads to the adjacent lung tissue. The first symptoms are subtle, gradual, and somewhat flu-like, including rising

fever. In a few days, severe respiratory distress occurs, followed by shock and coma. Prompt recognition and treatment are critical. Even with treatment, the patient may die. Once called woolsorters' disease.

**anthrax immunization** A series of six injections over a 6-month period, followed by annual booster shots, given to military personnel and others (including veterinarians who work with large animals) who are at high risk of anthrax exposure.

**anthrax toxin** The toxic substance secreted by the bacterium *Bacillus anthracis*, the cause of the disease anthrax.

**anti-angiogenesis drug** A drug, such as angiostatin or endostatin, that halts the development of new blood vessels (angiogenesis).

**antibiotic** A substance produced by one microorganism that selectively inhibits the growth of another. Synthetic antibiotics, usually chemically related to naturally occurring antibiotics, are made to accomplish comparable tasks. Antibiotics are used to treat bacterial infections. See also *cephalosporin antibiotics*; *penicillin*.

**antibiotic resistance** The ability of bacteria and other microorganisms to resist the effects of an antibiotic to which they were once sensitive. Antibiotic resistance is a major concern of overuse of antibiotics. Also known as drug resistance.

**antibody** A specialized immune protein (an immunoglobulin) produced because of the introduction of an antigen into the body. An antibody possesses the remarkable ability to combine with the antigen that triggered its production. The production of antibodies is a major function of the immune system and is carried out by a type of white blood cell called a B cell, or a B lymphocyte. Antibodies can be triggered by, and directed toward, foreign proteins, microorganisms, or toxins. Antibodies that are directed against one's own tissues are referred to as autoantibodies. See also *immune system*.

**antibody, antinuclear** See *antinuclear antibody*.

**anticholinergic** Opposing the actions of the neurotransmitter acetylcholine. Anticholinergic drugs inhibit the transmission of parasympathetic nerve impulses, thereby reducing spasms of smooth muscles (for example, muscles in the bladder). Side effects of anticholinergic medications include dry mouth and related dental problems, blurred vision, tendency toward overheating (hyperpyrexia), and in some cases, dementia-like symptoms.

**anticipation** The progressively earlier appearance and increased severity of a disease from generation to generation. The phenomenon of anticipation was once thought to be an artifact, but a biological basis for it has been discovered in a number of genetic disorders, such as myotonic dystrophy and Huntington disease.

**anti-citrulline antibody** See *citrulline antibody*.

**anticoagulant** An agent that is used to prevent the formation of blood clots. Anticoagulants have various uses. Some are used for the prevention or treatment of disorders characterized by abnormal blood clots and emboli. Anticoagulant drugs include intravenous heparin, which acts by inactivating thrombin and several other clotting factors that are required for a clot to form, and oral anticoagulants such as warfarin and dicumarol, which act by inhibiting the liver's production of vitamin K-dependent factors that are crucial to clotting. Anticoagulant solutions are also used for the preservation of stored whole blood and blood fractions and to keep laboratory blood specimens from clotting.

**antidepressant** A medication that prevents or reduces the symptoms of clinical depression. Some antidepressants may also be prescribed for their other medical effects, including increasing blood flow within the brain and treating chronic pain. See also *MAO inhibitor*; *SSRI*; *tricyclic antidepressant*.

**antidiuretic hormone** A peptide hormone made in the hypothalamus and released at the base of the brain by the nearby pituitary gland. Abbreviated ADH. ADH prevents the production of dilute urine and is therefore antidiuretic. It can also stimulate contraction of arteries and capillaries, and it may have effects on mental function. Also known as vasopressin. See also *ADH secretion*, *inappropriate*; *pituitary*; *posterior*.

**antiDNase B** A blood test for antibodies to the streptococcus B bacteria.

**antidote** A drug that counteracts a poison.

**antifungal** A medication that limits or prevents the growth of yeasts and other fungal organisms.

**antigen** A substance that the immune system perceives as being foreign or dangerous. The body combats an antigen with the production of an antibody.

**antigen, prostate specific** See *prostate specific antigen test*.

**antigen-antibody complex** The complex formed by the binding of an antibody to an antigen. Antigen-antibody complexes initiate immune responses. Also known as an immune complex.

**antihistamine** A drug that opposes the action of histamine released during an allergic reaction by blocking the action of the histamine on the tissue. Antihistamines frequently cause dry mouth and sleepiness. Some antihistamines are nonsedating. Antihistamine side effects that may occur include urine retention in males and increased heart rate.

**antihypertensive** A medication or another substance that reduces high blood pressure (hypertension). See also *high blood pressure*.

**anti-infective** An agent that is capable of acting against infection, either by inhibiting the spread of an infectious agent or by killing the infectious agent outright.

**antineoplastic** 1 Acting to prevent, inhibit, or halt the development of a neoplasm (a malignant tumor, or cancer). 2 An agent with antineoplastic properties. Cancer chemotherapy is antineoplastic.

**antinuclear antibody** An antibody that is directed against the structures within the nucleus of a cell and that is characteristic of autoimmunity. Abbreviated ANA. ANAs are found in the blood of patients whose immune systems attack their own body tissues (autoimmunity), such as patients with systemic lupus erythematosus, rheumatoid arthritis, juvenile diabetes mellitus, and Hashimoto disease. ANAs can also be found in patients with chronic infections and cancer, and many medications—including procainamide (brand name: Procan SR), hydralazine, and phenytoin (brand name: Dilantin)—can stimulate their production. See also *ANA*; *autoimmune disorder*.

**antioxidant** A substance that reduces damage due to oxygen, such as that caused by free radicals. Well-known antioxidants include enzymes and other substances, such as vitamin C, vitamin E, and beta carotene, which are capable of counteracting the damaging effects of oxidation. Antioxidants are also commonly added to food products such as vegetable oils and prepared foods to prevent or delay their deterioration from the action of air. Antioxidants may possibly reduce the risks of cancer. Antioxidants clearly slow the progression of age-related macular degeneration.

**antiphospholipid syndrome** An immune disorder characterized by the presence of abnormal antibodies in the blood that are directed against the chemical structure of fats that contain phosphorus

(phospholipids). Abbreviated APS. APS is associated with abnormal blood clotting, migraine headaches, recurrent pregnancy loss, and low blood platelet counts (thrombocytopenia). APS can occur by itself (primary APS) or be caused by an underlying condition (secondary APS), such as systemic lupus erythematosus. Examples of antiphospholipid antibodies are cardiolipin antibody and lupus anticoagulant. See also *annexin V*.

**antiplatelet agent** A medication that interferes with the tendency of platelets in the blood to clump and clot. Aspirin is an antiplatelet agent.

**antiseptic** Discouraging the growth of microorganisms. Commonly refers to antiseptic preparations used during medical procedures or used to maintain sanitary conditions in nursing homes, barbershops, tattoo parlors, and other facilities where unchecked microorganism growth could result in disease. See also *aseptic*.

**antispasmodic** A medication that relieves, prevents, or lowers the incidence of muscle spasms, especially those of smooth muscle such as in the bowel wall.

**antitoxin** **1** An antibody that is naturally produced to counteract a toxin, such as a toxin from a bacterial infection or snake bite. **2** An antibody from the serum of an animal stimulated with specific antibodies that is administered to humans or other animals to provide passive immunity to a disease. Such antitoxins are of short-term value only and are used for treatment rather than prevention.

**antiviral agent** A medication or another agent that kills viruses or inhibits their capability to reproduce.

**antro-duodenal motility study** A study used to detect and record the contractions of the muscles of the stomach and duodenum in order to diagnose motility disorders of the stomach and small intestine. A tube is passed through the nose, throat, esophagus, and stomach, until the tip lies in the small intestine. The tube senses when the muscles of the stomach and small intestine contract and squeeze it. The contractions are recorded by a computer and analyzed.

**antrum** A general term for a nearly closed cavity or chamber. For example, the antrum of the stomach (gastric antrum) is a portion before the outlet, which is lined by mucosa and does not produce acid. The paranasal sinuses can be referred to as the frontal antrum, ethmoid antrum, and maxillary antrum.

**anus** The opening of the rectum to the outside of the body.

**anus, imperforate** A birth defect in which the rectum is a blind alley and there is no anus. Imperforate anus occurs in about 1 in 5,000 births, and it can be corrected by surgery.

**anxiety** A feeling of apprehension and fear, characterized by physical symptoms such as palpitations, sweating, and feelings of stress.

**anxiety disorder** A chronic condition characterized by an excessive and persistent sense of apprehension, with physical symptoms such as sweating, palpitations, and feelings of stress. Treatments include the comfort offered by understanding the condition, avoiding or desensitizing exacerbating situations, and medications.

**aorta** The largest artery in the body, the major conduit from the heart to the body. The aorta arises from the left ventricle of the heart, ascends a little, arches, and then descends through the chest and the abdomen, ending by dividing into two arteries, the common iliac arteries, that supply blood to the lower extremities. Anatomically, the aorta is traditionally divided into the ascending aorta, the aortic arch, and the descending aorta. The descending aorta is, in turn, subdivided into the thoracic aorta, which goes from the heart to above the diaphragm, and the abdominal aorta, which is below the diaphragm. The aorta has branches to the head and neck, the arms, the major organs in the chest and abdomen, and the legs. It supplies them all with oxygenated blood. See also *abdominal aorta*; *ascending aorta*; *descending aorta*; *thoracic aorta*.

**aorta, coarctation of the** A constriction of the aorta. At the point of coarctation, the sides of the aorta appear to be pressed together. Blood pressure is increased above the constriction, and the flow of blood is impeded below the level of the constriction. Symptoms may not be evident at birth but can develop as soon as the first week after birth, with congestive heart failure or high blood pressure that call for early surgery. The outlook after surgery is usually favorable. Some cases of coarctation of the aorta have been treated with balloon angioplasty.

**aortic aneurysm** See *aneurysm, aortic*.

**aortic arch** The second section of the aorta following the ascending aorta. As it continues from the heart, it gives off the brachiocephalic trunk, and the left common carotid and subclavian arteries. The brachiocephalic trunk splits to form the right subclavian and the right common carotid arteries,

which supply blood to the right arm and the right side of the neck and head. The left common carotid artery and left subclavian artery, the second and third branches off the aortic arch, perform parallel functions on the left side.

**aortic insufficiency** Backflow of blood from the aorta into the left ventricle across a weakened aortic valve. Also known as aortic regurgitation.

**aortic regurgitation** See *aortic insufficiency*.

**aortic stenosis** Narrowing (stenosis) of the aortic valve, the valve between the left ventricle of the heart and the aorta. This narrowing impedes the delivery of blood to the body through the aorta and makes the heart work harder. The need for surgery depends on the degree of stenosis. A procedure called balloon valvuloplasty has been used in some cases of aortic stenosis.

**aortic valve** One of the four valves of the heart. The aortic valve is positioned at the beginning of the aorta. It normally permits blood from the left ventricle to flow into the aorta, and prevents blood in the aorta from returning to the heart. See also *heart valve*.

**aortic valve, bicuspid** An abnormal aortic valve with only two cusps. See also *aortic stenosis*.

**aortitis** Inflammation of the aorta. The causes of aortitis include syphilis and rheumatic fever.

**AP** 1 Angina pectoris. 2 Arterial pressure. 3 In endocrinology, anterior pituitary gland. 4 In anatomy, anteroposterior.

**aperient** Laxative.

**Apert syndrome** The best-known type of acrocephalosyndactyly, a group of disorders characterized by malformations of the skull, face, hands, and feet. Apert syndrome is inherited as an autosomal dominant trait. See also *acrocephalosyndactyly*; *fibroblast growth factor receptor*.

**apex** The Latin word for summit, the apex is the tip of a pyramidal or rounded structure, such as the lung or the heart. The apex of the lung is indeed its tip—its rounded most superior portion. The apex of the heart is likewise its tip, but it is formed by the left ventricle, so it is essentially the most inferior portion of the heart.

**Apgar score** An objective score of the condition of a baby after birth. This score is determined by scoring the heart rate, respiratory effort, muscle tone, skin color, and response to a catheter in the

nostril. Each of these objective signs receives 0, 1, or 2 points. An Apgar score of 10 means an infant is in the best possible condition. The Apgar score is done routinely 60 seconds after the birth of the infant. A child with a score of 0 to 3 needs immediate resuscitation. The Apgar score is often repeated 5 minutes after birth, and in the event of a difficult resuscitation, the Apgar score may be done again at 10, 15, and 20 minutes.

**aphagia** Inability to eat.

**aphasia** Literally, no speech. Aphasia may also be used to describe defects in spoken expression or comprehension of speech.

**apheresis** The process of removing a specific component from blood temporarily. Also known as hemapheresis and pheresis. Forms of apheresis include plasmapheresis, harvesting plasma or liquid part of the blood; leukapheresis, harvesting leukocytes or white blood cells; granulocytapheresis, harvesting granulocytes; lymphocytapheresis, harvesting lymphocytes; lymphoplasmapheresis, harvesting lymphocytes and plasma; and plateletpheresis, harvesting platelets.

**aphonia** Inability to speak.

**apical** The adjective for apex, the tip of a pyramidal or rounded structure, such as the lung or the heart. For example, an apical lung tumor is a tumor located at the top of the lung.

**aplasia** Failure to develop. See also *atrophy*.

**aplasia of the breast** See *amastia*.

**aplastic anemia** See *anemia, aplastic*.

**apnea** The absence of breathing (respiration).

**apnea, sleep** See *sleep apnea*.

**apophysitis calcaneus** Inflammation of the growth plate of the calcaneus, the bone at the back of the heel, where the Achilles tendon attaches. Apophysitis calcaneus occurs mainly in older children and adolescents, especially active boys. It can be very painful, although it may be dismissed as “growing pains.” Treatment includes activity limitation, medication, shoe inserts, heel lifts, and sometimes casting if it becomes especially severe. Fortunately, it usually disappears as the child gets older. Also known as Sever condition. See also *Achilles tendon*.

**apoptosis** A form of cell death in which a programmed sequence of events leads to the elimination



of cells without releasing harmful substances into the surrounding area. Apoptosis plays a crucial role in developing and maintaining the health of the body by eliminating old cells, unnecessary cells, and unhealthy cells. The human body replaces perhaps one million cells per second. Too little or too much apoptosis can play a role in many diseases. When apoptosis does not work correctly, cells that should be eliminated may persist and become immortal, for example, in cancer and leukemia. When apoptosis works overly well, it kills too many cells and inflicts grave tissue damage. This is the case in strokes and neurodegenerative disorders such as Alzheimer's, Huntington's, and Parkinson's diseases. Also known as programmed cell death and cell suicide.

**appendectomy** Surgical removal of the appendix. An appendectomy is performed because of probable appendicitis. See also *appendicitis*.

**appendicitis** Inflammation of the appendix, usually associated with infection of the appendix. Appendicitis often causes fever, loss of appetite, and pain. Appendicitis may be suspected because of the medical history and physical examination. The pain of appendicitis can be located in various areas of the belly. If the appendix ruptures and infection spreads throughout the abdomen, the pain becomes widespread as the entire lining of the abdomen becomes inflamed. Ultrasonography and computerized tomography may be helpful in diagnosis.

**appendix** A small outpouching from the beginning of the large intestine.

**appendix epididymis** A small cystic projection from the surface of the epididymis (a structure within the scrotum that is attached to the backside of the testis), which represents a remnant of the embryologic mesonephros.

**appendix epiploica** A finger-like projection of fat attached to the colon.

**appendix testis** A small solid projection of tissue on the outer surface of the testis, which is a remnant of the embryologic mullerian duct.

**apposition** 1 The act of adding or accretion. Growth by apposition is characteristic of many tissues in the body by which nutritive matter from the blood is transformed on the surface of an organ into a solid unorganized substance. 2 The act of putting things in juxtaposition or side by side. To lose a pair of apposed teeth is to lose teeth that are next to each other. Also known as juxtaposition.

**apraxia** The inability to execute a voluntary motor movement despite being able to demonstrate normal muscle function. Apraxia is not related to a lack of understanding or to any kind of physical paralysis; rather, it is caused by a problem in the cortex of the brain.

**apraxia of speech** A severe speech disorder characterized by an inability to speak or a severe struggle to speak clearly. Apraxia of speech occurs when the oral-motor muscles do not or cannot obey commands from the brain or when the brain cannot reliably send those commands. Apraxia of speech is caused by damage to the Broca area in the brain. See also *dyspraxia of speech*.

**APS** Antiphospholipid syndrome.

**apthous ulcer** See *canker sore*.

**aqueduct** A channel for the passage of fluid.

**aqueduct of Sylvius** A canal between the third and fourth ventricles in the brain within the system of four communicating cavities that are continuous with the central canal of the spinal cord. The ventricles are filled with cerebrospinal fluid, which is carried by the aqueduct of Sylvius.

**aqueduct of the midbrain** See *aqueduct of Sylvius*.

**arachnodactyly** A condition in which a person has long, spider-like fingers and toes. Arachnodactyly is a frequent finding in those with Marfan syndrome. See also *Marfan syndrome*.

**arachnophobia** An abnormal and persistent fear of spiders. Sufferers from arachnophobia experience undue anxiety, even though they realize that the risk of encountering a spider and being harmed by it is small or nonexistent. They may avoid going barefoot and may be especially alert when taking showers or getting into and out of bed.

**arbitration agreement** An arrangement in which the patient waives the right to sue the physician and, instead, agrees to submit any dispute to arbitration. Arbitration agreements are legal and binding. The arguments in their favor are that, for patients, the case can be settled faster, and more money can go to the patient (rather than to a lawyer). Physicians can often get a discount on their malpractice insurance if the majority of their patients sign such agreements.

**arbovirus** A type of virus transmitted to humans by mosquitoes and ticks. Arbovirus can cause inflammation of the brain (encephalitis). The types

of arboviral encephalitis that occur in the US include LaCrosse, eastern equine, western equine, and St. Louis encephalitis, all of which are transmitted by mosquitoes. Another arbovirus, Powassan, transmitted by ticks, is a cause of encephalitis in the northern US. Many other types of arboviral encephalitis occur throughout the world. Most are problems only for travelers to countries where the viruses are endemic. One, the West Nile virus, has made a major entry into the US. It causes West Nile encephalitis, also known as West Nile fever. See also *hemorrhagic fever*, *viral*.

**ARC** AIDS-related complex.

**arch, aortic** See *aortic arch*.

**archaea** A unique group of microorganisms that are called bacteria (Archaeobacteria) but are genetically and metabolically different from all other known bacteria. They appear to be living fossils, the survivors of an ancient group of organisms that bridged the gap in evolution between bacteria and multicellular organisms (eukaryotes).

**arcus senilis** A cloudy opaque arc or circle around the edge of the eye, often seen in the eyes of the elderly.

**ARDS** Acute respiratory distress syndrome.

**areola** **1** The small, darkened area around the nipple of the breast. **2** The colored part of the iris around the pupil of the eye. **3** Any small space in a tissue.

**arginine** An essential amino acid and a key component of protein. Lack of arginine in the diet impairs growth, and in adult males it decreases the sperm count. Arginine is available in turkey, chicken, and other meats, and as L-arginine in supplements. Babies born without the enzyme phosphate synthetase have arginine deficiency syndrome; adding arginine to their diets permits normal growth and development.

**argyria** Silver poisoning, resulting in ashen, gray, discolored skin, and damage to other tissues of the body. Caused by long-term use of silver salts or other preparations containing silver.

**arm** In popular usage, the appendage that extends from the shoulder to the hand. However, the medical definition refers to the upper extremity extending from the shoulder only to the portion of the elbow, excluding the forearm, which extends from the elbow to the wrist. The arm contains one bone: the humerus.

**arm, wrist, and hand bones** See *bones of the arm, wrist, and hand*.

**armed tapeworm** See *Taenia solium*.

**Arnold Chiari malformation** See *Chiari malformation*.

**aromatherapy** A form of alternative medicine in which essential oils or other scents are inhaled to achieve therapeutic benefit. The mechanism of action in aromatherapy is unknown, but recent studies have shown that aromatherapy may be beneficial for some health problems.

**arrector pili** A microscopic band of muscle tissue that connects a hair follicle to the dermis. When stimulated, the arrector pili contracts and causes the hair to become more perpendicular to the skin surface, thereby erecting the hair (causing the hair to stand on end). The arrector pili muscle plays a key role in forming goose bumps. See also *goose bumps*.

**arrhythmia** An abnormal heart rhythm. With an arrhythmia, the heartbeats may be irregular or too slow (bradycardia), too rapid (tachycardia), or too early. When a single heartbeat occurs earlier than normal, it is called a premature contraction. See also *bradycardia*; *tachycardia*.

**arrhythmia, atrial** An abnormal heart rhythm due to electrical disturbances in the upper chambers of the heart (atria) or the atrioventricular (AV) node "relay station," leading to fast heart beats. Examples of atrial arrhythmias include atrial fibrillation, atrial flutter, and paroxysmal atrial tachycardia.

**arrhythmia, ventricular** An abnormally rapid heart rhythm that originates in the lower chambers of the heart (ventricles). Ventricular arrhythmias include ventricular tachycardia and ventricular fibrillation. Both are life-threatening arrhythmias, and they are most commonly associated with heart attacks or scarring of the heart muscle from previous heart attacks.

**arterial anastomosis** A joining of two arteries. See also *anastomosis*.

**arterial aneurysm** See *aneurysm, arterial*.

**arterial blood gas** See *ABG*.

**arterial pressure** The pressure of the blood within an artery. Also known as arterial tension and intra-arterial pressure.

## arterial tension

**arterial tension** See *arterial pressure*.

**arteriogram** An X-ray in which an injection of dye shows blood vessels.

**arteriole** A small branch of an artery that leads to a capillary. The oxygenated hemoglobin (oxyhemoglobin) makes the blood in arterioles (and arteries) look bright red.

**arteriosclerosis** Hardening and thickening of the walls of the arteries. Arteriosclerosis leads to heart attacks and strokes, as well as to peripheral vascular disease. Arteriosclerosis can be categorized as atherosclerosis, medial calcification, hypertensive, or arteriolar sclerosis. See also *atherosclerosis*; *heart attack*; *stroke*; *peripheral vascular disease*.

**arteriosclerotic aneurysm** See *aneurysm, arteriosclerotic*.

**arteriovenous malformation** See *malformation, arteriovenous*.

**arteritis, cranial** A serious disease characterized by inflammation of the walls of arteries, particularly those that supply blood to the head. Symptoms include headache, pain in the jaw when repetitively chewing, and tenderness of the scalp, usually over the inflamed arteries of the sides of the head (temporal area). Less specific symptoms include fatigue, low-grade fever, and weight loss. The muscle aching of polymyalgia rheumatica is seen in one-fourth of patients with cranial arteritis. When the arteries affected by cranial arteritis become inflamed, they can narrow to the degree that the blood flow through them is limited. This can cause serious deficiency of oxygen supply to the tissues that are normally supplied by these arteries. Deficient oxygenation of the eyes or brain can lead to impaired or double vision, blindness, or stroke. Patients with cranial arteritis are usually over 50 years of age. The disease is detected by a biopsy of an artery and treated with high dose cortisone-related medications. Also known as temporal arteritis and giant cell arteritis. See also *polymyalgia rheumatica*.

**arteritis, giant cell** See *arteritis, cranial*.

**arteritis, temporal** See *arteritis, cranial*.

**artery** A blood vessel that carries blood, rich in oxygen, away from the heart to the body. The oxygenated hemoglobin (oxyhemoglobin) in arterial blood makes it look bright red. See also *aorta*; *carotid artery*; *ophthalmic artery*; *radial artery*; *splenic artery*; *vertebral artery*.

**artery, coronary** See *coronary artery*.

**artery spasm, coronary** See *coronary artery spasm*.

**arthralgia** Pain in a joint.

**arthritis** Inflammation of a joint. When joints are inflamed, they can develop stiffness, warmth, swelling, redness, and pain. There are more than 100 types of arthritis. See also *ankylosing spondylitis*; *arthritis, degenerative*; *arthritis, gouty*; *arthritis, Lyme*; *psoriatic arthritis*; *arthritis, Reiter*; *arthritis, rheumatoid*; *arthritis, spondylitis*; *gout*; *lupus*; *pseudogout*.

**arthritis, degenerative** A type of arthritis caused by inflammation, breakdown, and eventual loss of the cartilage of the joints. Degenerative arthritis is the most common form of arthritis, usually affecting the hands, feet, spine, and large weight-bearing joints, such as the hips and knees. Also known as osteoarthritis and degenerative joint disease.

**arthritis, gouty** See *gouty arthritis*.

**arthritis, Lyme** Joint inflammation associated with Lyme disease, a bacterial disease spread by ticks. See also *Lyme disease*.

**arthritis, psoriatic** See *psoriatic arthritis*.

**arthritis, Reiter** The joint component of a syndrome of inflammation of the joints (arthritis), eyes (conjunctivitis), and the genitourinary and/or gastrointestinal systems. See also *Reiter syndrome*.

**arthritis, rheumatoid** An autoimmune disease characterized by chronic inflammation of joints. Rheumatoid disease can also involve inflammation of tissues in other areas of the body, such as the lungs, heart, and eyes. Because it can affect multiple organs of the body, rheumatoid arthritis is referred to as a systemic illness. Although rheumatoid arthritis is a chronic illness, patients may experience long periods without symptoms. Also known as rheumatoid disease.

**arthritis, septic** Joint inflammation caused by infection from blood poisoning (sepsis) or from infection within the affected joint itself, or as a side effect of infection in other body tissues. Treatment includes antibiotic medications and surgical drainage. Also known as pyarthrosis and suppurative arthritis.

**arthritis, spondylitis** A form of arthritis that causes chronic inflammation of the spine.

**arthritis, systemic-onset chronic rheumatoid**  
See *arthritis, systemic-onset juvenile rheumatoid*.

**arthritis, systemic-onset juvenile rheumatoid**  
A form of joint disease in children whose systemic signs and symptoms include high intermittent fever, a salmon-colored skin rash, swollen lymph glands, enlargement of the liver and spleen, inflammation of the lungs (pleuritis), and inflammation around the heart (pericarditis). The arthritis itself may not be immediately apparent, but in time it surfaces and may persist after the systemic symptoms are long gone. Also known as systemic-onset chronic arthritis or Still's disease.

**arthritis in children** Arthritis in children, usually in the form of juvenile/pediatric arthritis or rheumatoid arthritis. See also *arthritis, systemic-onset juvenile rheumatoid*.

**arthritis mutilans** An extremely severe form of chronic rheumatoid or psoriatic arthritis characterized by resorption of bones and the consequent collapse of soft tissue. When this affects the hands, it can cause a phenomenon sometimes referred to as "telescoping fingers."

**arthrocentesis** A procedure in which a sterile needle and syringe are used to drain fluid from the joint. This is usually done as an office procedure or at the bedside in the hospital. For certain conditions, medication is put into the joint after fluid removal. The needle is then removed, and a bandage or dressing is applied over the entry point. Joint fluid can be examined to determine the cause of the joint swelling, such as infection, gout, or rheumatoid disease. Arthrocentesis can be helpful in relieving joint swelling and pain. Also known as joint aspiration.

**arthrogryposis** Joint contractures that develop before birth and are evident at birth. With arthrogryposis there is a lack of the normal range of motion in one or more joints. In normal embryonic development, joints can be seen moving by 8 weeks of gestation. This motion of joints is essential to the proper development of the joints and structures around them. Limitation of joint motion before birth leads to joint contractures and arthrogryposis. Prenatal limitation of joint mobility can result from neurologic deficits, muscle defects, connective tissue defects, and fetal crowding (in which there is not enough room for the fetus to move around freely in the womb).

**arthropathy** Joint disease.

**arthroscope** A thin, flexible fiberoptic scope that is introduced into a joint space through a small incision in order to carry out diagnostic and treatment procedures within the joint. An arthroscope is fitted with a miniature camera, a light source, and precision tools at the end of flexible tubes. See also *arthroscopy*.

**arthroscopic** Related to arthroscopy.

**arthroscopy** A surgical technique in which a tube-like instrument is inserted into a joint to inspect, diagnose, and repair tissues. It is most commonly performed in patients with diseases of the knees or shoulders.

**arthrosis** See *joint*.

**articulation** **1** In medicine, the joint where bones come together. See also *joint*. **2** In dentistry, the occlusal surfaces of the teeth, where the teeth come together. **3** In speech, the production of intelligible words and sentences by joining together the lips, tongue, palate, and other structures.

**articulation disorder** A speech disorder involving difficulties in articulating specific types of sounds. Articulation disorders often involve substitution of one sound for another, slurring of speech, or indistinct speech. Treatment is speech therapy.

**artificial heart** A human-made heart. An artificial heart is a mechanical pump that is used to replace a damaged heart temporarily or permanently.

**artificial insemination** A procedure in which a fine catheter (tube) is inserted through the cervix into the uterus to directly deposit a sperm sample. The purpose of this relatively simple procedure is to achieve fertilization and pregnancy. Also known as intrauterine insemination (IUI).

**artificial insemination by donor** A procedure in which a fine catheter (tube) is inserted through the cervix into the uterus to directly deposit a sperm sample from a donor other than the woman's mate. The purpose of this procedure is to achieve fertilization and pregnancy. Abbreviated AID. Also known as heterologous insemination.

**artificial insemination by partner** A procedure in which a fine catheter (tube) is inserted through the cervix into the uterus to deposit a sperm sample from the woman's mate directly into the uterus. The purpose of this procedure is to achieve fertilization and pregnancy. Abbreviated AIH. Also known as homologous insemination.

**artificial pacemaker** A device that uses electrical impulses to regulate the heart rhythm or reproduce it. An internal pacemaker is one in which the electrodes to the heart, the electronic circuitry, and the power supply are all implanted internally, within the body. Although there are different types of pacemakers, all are designed to treat a heart rate that is too slow (bradycardia). Pacemakers may function continuously and stimulate the heart at a fixed rate, or they may function at an increased rate during exercise. A pacemaker can also be programmed to detect an overly long pause between heartbeats and then stimulate the heart.

**artificial pancreas** A machine that constantly measures glucose (sugar) in the blood and, in response to an elevated level of glucose, releases an appropriate amount of insulin. In this respect, an artificial pancreas functions like a natural pancreas.

**asbestos** A natural material made up of tiny fibers that is used as thermal insulation. Inhalation of asbestos fibers can lead to asbestosis and mesothelioma.

**asbestosis** Scarring of the lungs caused by inhalation of asbestos fibers. When asbestos fibers lodge in the lungs, they promote the development of cancer, such as mesothelioma of the pleura (the lining of the lung) and bronchogenic carcinoma (cancer of the lung). See also *mesothelioma*.

**ascaris** Intestinal roundworms. Infection with ascaris is referred to as ascariasis.

**ascending aorta** The first section of the aorta, which starts from the left ventricle of the heart and extends to the aortic arch. The right and left coronary arteries that supply blood to the heart muscle arise from the ascending aorta.

**ascites** An abnormal accumulation of fluid within the abdomen. There are many causes of ascites, including cirrhosis of the liver, cancer within the abdomen, congestive heart failure, and tuberculosis.

**ascorbic acid** Vitamin C, an essential nutrient found mainly in fruits and vegetables. The body requires ascorbic acid in order to form and maintain bones, blood vessels, and skin. Ascorbic acid also promotes the healing of cuts, abrasions and wounds; helps fight infections; inhibits conversion of irritants in smog, tobacco smoke, and certain foods into cancer-causing substances; appears to lessen the risk of developing high blood pressure and heart disease; helps regulate cholesterol levels; prevents the development of scurvy; appears to lower the risk of developing cataracts; and aids in

iron absorption. Ascorbic acid can cause adverse reactions when taken with some drugs.

**ASCUS** An acronym for Atypical Squamous Cells of Undetermined Significance. This term is used in the Bethesda System for reporting Pap smear findings, and indicates that some flat (squamous) cells look unusual and may or may not be pre-malignant or malignant.

**ASD** Atrial septal defect.

**aseptic** Free from infection, sterile. See also *antiseptic*.

**aseptic necrosis** See *avascular necrosis*.

**ASO** Antistreptolysin-O, a blood test that looks for antibodies to the streptococcus A bacteria. Also abbreviated ASLO.

**aspartate aminotransferase** An enzyme that is normally present in liver and heart cells that is released into the blood when the liver or heart is damaged. Abbreviated AST. Some medications can also raise blood AST levels. Also known as serum glutamic oxaloacetic transaminase (SGOT).

**Asperger syndrome** A disorder related to autism characterized by obsessive interests and behavior, but without speech delay or mental retardation. Other features of Asperger syndrome include physical clumsiness, and/or moderate to severe social deficits. Asperger syndrome is the mildest of and at the highest functioning end of the spectrum of pervasive developmental disorders (the autism spectrum). Persons with Asperger syndrome have deviations or abnormalities in three broad aspects of development: social relatedness and social skills, the use of language for communicative purposes, and certain behavioral and stylistic characteristics that involve repetitive or perseverative features and a limited but intense range of interests. See also *autism*.

**aspergillosis** Infection with the fungus *Aspergillus*, seen especially in people with compromised immune systems in whom there may be invasive lung infection and sometimes spread to other tissues, including the brain, the skin, and bones. Aspergillosis also causes allergic sinusitis and allergic bronchopulmonary disease.

**Aspergillus** A family of fungal organisms and molds, some of which can cause disease.

**asphyxia** Impaired breathing.



**aspirate** To suck in. For example, a person may aspirate by accidentally drawing material from the stomach into the lungs, and a physician can aspirate fluid from a joint. See also *arthrocentesis*; *aspiration*.

**aspiration** **1** Removal of a sample of fluid and cells through a needle. **2** The accidental sucking of food, fluid, vomit, or other foreign material into the lungs.

**aspiration, joint** See *arthrocentesis*.

**aspiration pneumonia** Inflammation of the lungs due to aspiration.

**aspirin** Once the Bayer trademark for acetylsalicylic acid, now the common name for this anti-inflammatory pain reliever.

**assay** **1** An analysis done to determine the presence and amount of a substance. An assay may be done, for example, to determine the level of thyroid hormones in the blood. **2** An analysis done to determine the biologic or pharmacologic potency of a drug. For example, an assay may be done of a vaccine to determine its potency. **3** As a verb, to try or attempt. For example, "She assayed this operation for the first time and was understandably nervous." **4** The act of analyzing a mixture for one or more of its components. **5** The act of judging the value or worth of something.

**assistant, physician** See *physician assistant*.

**assisted living** A type of long-term care facility for elderly or disabled people who are able to get around on their own but who may need help with some activities of daily living or simply prefer the convenience of having their meals in a central cafeteria and having nursing staff on call.

**assisted suicide** Deliberate hastening of death performed by a terminally ill patient, with assistance from a physician, a family member, or another individual. See also *active euthanasia*.

**assistive device** A device that is designed, made, or adapted to help a person perform a particular task. For example, canes, crutches, walkers, wheelchairs, and shower chairs are all assistive devices. See also *assistive technology*.

**assistive technology** An assistive device or, more commonly, some kind of electronic or computerized device that helps a disabled person to function more easily in the world. Examples of assistive technology include devices that allow people to control a computer with the mouth, keyboards that can "speak"

for mute individuals, and closed-captioning systems that help the hearing impaired enjoy television shows and videos. See also *augmentative communication device*.

**association** **1** In the study of birth defects (dysmorphology), the nonrandom occurrence in two or more individuals of a pattern of multiple anomalies not known to be a malformation syndrome (such as Down syndrome), a malformation sequence of events, or a field defect, in which all the defects are concentrated in one particular area of the body. An example of an association in dysmorphology is the VATER association. **2** In genetics, the occurrence together of two or more characteristics more often than would be expected by chance alone. Association is to be distinguished from linkage. An example of association involves a feature on the surface of white blood cells, the human leukocyte antigen (HLA) type. HLA type B-27 is associated with an increased risk for a number of diseases, including ankylosing spondylitis.

**association, VACTERL** See *VACTERL association*.

**Association of American Medical Colleges** A nonprofit association of accredited medical schools in the US and Canada that is responsible for the Medical College Admission Test (MCAT), an entrance examination for medical schools.

**AST** Aspartate aminotransferase.

**asthenia** Weakness. Lack of strength.

**asthenic** **1** Having a slender, light body. Ectomorphic. **2** Weak. Lacking in strength.

**asthma** A common lung disorder in which inflammation causes the bronchi to swell and narrow the airways, creating breathing difficulties that may range from mild to life-threatening. Symptoms include shortness of breath, cough, wheezing, and chest tightness. The diagnosis of asthma is based on evidence of wheezing and is confirmed with breathing tests. Many allergens and irritants can precipitate attacks of asthma. Avoidance of precipitating factors can be helpful. Treatment may include lifestyle changes, activity reduction, allergy shots, and medications to prevent or reverse the bronchospasm.

**asthma, exercise-induced** Asthma triggered by vigorous physical activity. It primarily affects children and young adults because of their high levels of physical activity, but it can occur at any age. Exercise-induced asthma is initiated by the fall in airway temperature during rapid breathing followed

by rapid reheating with lowered ventilation. The more heat that is transferred, the cooler the airways become, and the more rapidly the airways rewarm, the more the bronchi are narrowed. Acute attacks can be minimized by warming up before strenuous activity. An inhalator may also be used before exertion. Also known as exercise-induced bronchospasm and thermally induced asthma.

**asthma, thermally induced** See *asthma, exercise-induced*.

**astigmatism** A common form of visual impairment in which part of an image is blurred due to an irregularity in the dome-shaped curvature of the front surface of the eye, the cornea. With astigmatism, light rays entering the eye are not uniformly focused on the retina. The result is blurred vision at all distances. Significant astigmatism can cause headaches, eye strain, and seriously blurred vision. Astigmatism is often not detected during routine eye screening in schools. It may coexist with other refractive errors such as nearsightedness and farsightedness. Astigmatism is corrected with slightly cylindrical lenses that have greater light-bending power in one direction than the other. Use of these lenses elongates objects in one direction and shortens them in the other, much like looking into a distorting wavy mirror.

**astrocytoma** A tumor that begins in the brain or spinal cord in small, star-shaped cells called astrocytes. The location of the tumor depends on the age of the person. In adults, astrocytomas most often arise in the cerebrum, whereas in children, they may arise in the brain stem, cerebrum, and cerebellum.

**asymptomatic** Without symptoms. For example, an asymptomatic infection is an infection with no symptoms.

**asystole** A dire form of cardiac arrest in which the heart stops beating and there is no electrical activity in the heart. As a result, the heart is at a total standstill.

**ataxia** Poor coordination and unsteadiness due to the brain's failure to regulate the body's posture and regulate the strength and direction of limb movements. Ataxia is usually due to disease in the cerebellum of the brain, which lies beneath the back part of the cerebrum.

**ataxia-telangiectasia** A progressive disease characterized by degeneration of the nervous system manifest by poor coordination and balance (cerebellar ataxia), red eyes due to widening of small blood vessels in the conjunctiva (ocular telangiectasia), and

recurrent sinus and lung infections. Abbreviated AT. Patients with AT have a striking predisposition to leukemia and lymphoma and are extremely sensitive to radiation. Other features include difficulty swallowing and slowed growth. AT is inherited as an autosomal recessive trait.

**ATCC** American Type Culture Collection.

**atelectasis** Failure of full expansion of the lung at birth, or lung collapse thereafter. Also known as collapsed lung.

**atelectasis, primary** Failure of full expansion of the lung at birth.

**atelectasis, secondary** Partial or complete collapse of a previously expanded lung. Secondary atelectasis may occur when full chest expansion is difficult, such as after chest surgery.

**athelia** Absence of the nipple. Athelia tends to occur on one side (unilaterally) in children with the Poland syndrome and on both sides (bilaterally) with certain types of ectodermal dysplasia. Athelia also occurs in association with progeria (premature aging). See also *amastia*; *amazia*; *Poland syndrome*; *progeria*.

**atherectomy** A procedure to remove plaque (atheroma) from the inside of a blood vessel. Atherectomy is done most often in major arteries, such as the coronary, carotid, and vertebral arteries, that have experienced the occlusive effects of atherosclerosis. Atherectomy may be accomplished by various means, including angioplasty, laser surgery, conventional surgical incision, or use of a small drill-tipped catheter. In the US, atherectomy is nicknamed the "Rotorooter" procedure, after a company that cleans out drainage pipes.

**atheroma** A fatty deposit in the inner lining (intima) of an artery, resulting from atherosclerosis. Also called an atherosclerotic plaque, an arterial plaque, or a plaque.

**atherosclerosis** The presence of fatty lipid deposits in the lining (intima) of an artery. Atherosclerosis is a form of arteriosclerosis. See also *arteriosclerosis*.

**atherosclerotic** Pertaining to atherosclerosis. Atherosclerotic heart disease is the leading cause of death in the US. See *atherosclerosis*.

**athetosis** Involuntary writhing movements, particularly of the arms and hands. Athetosis is associated with several neurological disorders, such as cerebral palsy and Rett syndrome.

**athlete's foot** A skin infection caused by a fungus called *Trichophyton* that thrives within the upper layer of the skin when it is moist, warm, and irritated. The fungus can be found on floors and in socks and clothing, and it can be spread from person to person through contact with these objects. However, without proper growing conditions, athlete's foot fungus will not infect the skin. It can be treated with topical antifungal preparations. Also known as *tinea pedis*, athlete's foot is a form of ringworm.

**atlantoaxial joint** The joint between the first (atlas) and second (axis) vertebrae of the neck beneath the skull. The axis features a bony prominence called the odontoid process, about which the atlas rotates. The atlantoaxial joint is a pivot type of joint. It allows the head to turn from side to side. The atlantoaxial joint is supported and strengthened by the capsular, anterior, and posterior atlantoaxial and by the transverse ligaments. Also known as *atloaxoid joint*.

**atlas** The first vertebra in the neck. It supports the head at the base of the skull. Also known as first cervical vertebra.

**atonic** Without normal muscle tone or strength. An atonic seizure is one in which the person suddenly loses muscle tone and strength; the person cannot sit or stand upright and, unless supported, falls down.

**atopic dermatitis** A skin disease characterized by areas of severe itching, redness, scaling, and loss of the surface of the skin. Atopic dermatitis is the most common of the many types of eczema. Atopic dermatitis is frequently associated with other allergic disorders, especially asthma and hay fever. A defect of the immune system within the skin has been detected in patients who have atopic dermatitis, but the reason for the defect is unknown.

**ATP** 1 Acute thrombocytopenic purpura. 2 Adenosine triphosphate.

**atresia** Absence of a normal opening, or failure of a structure to be tubular. Atresia can affect many structures in the body. For example, esophageal atresia is a birth defect in which part of the esophagus is not hollow, and with anal atresia, there is no hole at the bottom end of the intestine.

**atria** The plural of atrium.

**atrial arrhythmia** See *arrhythmia*, *atrial*.

**atrial fibrillation** See *fibrillation*, *atrial*.

**atrial septal defect** A hole in the wall (septum) between the upper chambers of the heart (atria). Abbreviated ASD. ASD is a major class of heart malformation. Usually, when clots in veins break off (embolize), they travel first to the right side of the heart and then to the lungs, where they lodge. When there is an ASD, however, a clot can cross from the right to the left side of the heart, and then pass into the arteries as a paradoxical embolism. Once a clot is in the arterial circulation, it can travel to the brain, block a vessel there, and cause a stroke. ASDs are surgically closed.

**atrial septum** The wall between the right and left atria of the heart.

**atrioventricular** Pertaining to the upper chambers of the heart (atria) and the lower chambers of the heart (ventricles).

**atrioventricular node** The electrical relay station between the upper and lower chambers of the heart. Abbreviated AV node. Electrical signals from the atria must pass through the AV node to reach the ventricles. The AV node, which controls the heart rate, is one of the major elements in the cardiac conduction system. The AV node serves as an electrical relay station, slowing the electrical current sent by the sinoatrial (SA) node before the signal is permitted to pass down through to the ventricles. This delay ensures that the atria have an opportunity to fully contract before the ventricles are stimulated. After passing the AV node, the electrical current travels to the ventricles, along special fibers embedded in the walls of the lower part of the heart.

**atrium** An entry chamber. On both sides of the heart, the atrium is the chamber that leads to the ventricle.

**atrophic vaginitis** Thinning of the lining (endothelium) of the vagina due to decreased production of estrogen. Atrophic vaginitis may occur with menopause.

**atrophy** A wasting away or diminution. Muscle atrophy is a decrease in muscle mass, often due to extended immobility.

**atropine** A drug, made from the belladonna plant, that is administered via injection, eye drops, or in oral form to relax muscles by inhibiting nerve responses.

**atropine psychosis** A syndrome characterized by dry mouth, blurred vision, forgetfulness, and difficulty with urination that can be caused by the anticholinergic effects of some drugs, particularly antipsychotic medications. Treatment requires

reducing or stopping the medication. See also *anticholinergic*.

**attack, vasovagal** See *vasovagal reaction*.

**attention** The act of attending to discrete stimuli in the environment. Learning is most efficient when a person is paying attention. Poor attention can be a key sign of behavior disorders in children, stress, or depression. See also attention deficit hyperactivity disorder.

**attention deficit disorder** See *attention deficit hyperactivity disorder*.

**attention deficit hyperactivity disorder** A disorder in which a person is unable to control behavior due to difficulty in processing neural stimuli, accompanied by an extremely high level of motor activity. Abbreviated ADHD. ADHD can affect children and adults, but it is easiest to perceive during schooling. A child with ADHD may be extremely distractible, unable to remain still, and very talkative. ADHD is diagnosed by using a combination of parent and/or patient interview, observation of the patient, and sometimes use of standardized screening instruments. Treatments include making adjustments to the environment to accommodate the disorder, behavior modification, and the use of medications. Stimulants are the most common drugs used, although certain other medications can be effective.

**attenuate** To weaken, or to make or become thin.

**attenuated virus** A weakened, less vigorous virus. An attenuated virus may be used to make a vaccine that is capable of stimulating an immune response and creating immunity, but not of causing illness.

**atypical** Unusual, or not fitting a single diagnostic category.

**atypical measles syndrome** The modified expression of measles, as may occur in persons who were incompletely immunized against measles or who have compromised immune systems. Abbreviated AMS. AMS begins suddenly with high fever, headache, cough, and abdominal pain. A rash may appear 1 to 2 days later, often beginning on the limbs. Swelling (edema) of the hands and feet may occur. Pneumonia is common. See also *measles*.

**audiogram** A test of hearing at a range of sound frequencies.

**audiology** The study of hearing.

**audiometry** The measurement of hearing.

**auditory acuity** The clarity or clearness of hearing, a measure of how well a person hears. Auditory acuity is measured in order to determine a person's need for a hearing aid.

**auditory tube** See *Eustachian tube*.

**augmentative communication device** A physical, mechanical, or electronic device that helps a person with a speech impairment to communicate. Augmentative communication devices range from books of pictures or words that the patient can show to express thoughts, to computers that are capable of synthesizing complex speech.

**aura** A sensation perceived by a patient that precedes a condition affecting the brain. An aura often occurs before a migraine or seizure. It may consist of flashing lights, a gleam of light, blurred vision, an odor, the feeling of a breeze, numbness, weakness, or difficulty in speaking.

**aural vertigo, recurrent** See *Ménière's disease*.

**auricle** **1** The principal projecting part of the ear, also known as pinna. **2** A structure that is ear-shaped, like the atrium of the heart, which is also referred to as the auricle of the heart.

**auricular** Of or pertaining to the outer ear, or to something else that is ear-shaped, such as the atrium of the heart.

**auricular fibrillation** See *fibrillation, atrial*.

**auscultate** To listen, for diagnostic purposes, to the sounds made by the internal organs of the body. For example, nurses and physicians auscultate the lungs and heart of a patient by using a stethoscope placed on the patient's chest or back.

**autism** A spectrum of neuropsychiatric disorders characterized by deficits in social interaction and communication and by unusual and repetitive behavior. Some, but not all, people with autism are nonverbal. Autism is normally diagnosed before age 6, and it may be diagnosed in infancy in some cases. The cause of autism is currently unknown, although it is believed to involve an inherited or acquired genetic defect involving multiple chromosomes, possibly including chromosomes 6, 15, 17, and/or the X chromosome. Autism is not caused by emotional trauma, as was once theorized. Autistic or autistic-like behavior may be caused by other

neurological conditions—particularly the seizure disorder Landau-Kleffner syndrome—certain forms of encephalitis, and several genetic disorders, including Angelman syndrome and Rett syndrome. Also known as Kanner syndrome or infantile autism. See also *Asperger syndrome*; *elective mutism*; *fragile X syndrome*; *Landau-Kleffner syndrome*; *Prader-Willi syndrome*; *Rett syndrome*.

**autistic disorder** Autism, particularly the most serious form of autism.

**autoantibody** An antibody that is directed against the patient's own body. Autoantibodies play a causative role in a number of diseases, such as rheumatoid arthritis, systemic lupus erythematosus, and Hashimoto disease. See also *autoimmune disorder*.

**autoclave** A chamber for sterilizing with steam under pressure. The original autoclave was essentially a pressure cooker in which steam tightened the lid.

**autogenous** Self-produced.

**autograft** Tissue transplanted from one part of the body to another in the same individual. Also known as an autotransplant.

**autoimmune disorder** A condition characterized by autoimmunity in which a misdirected immune system acts against the tissues of one's own body. Autoimmune disorders typically feature inflammation of various tissues of the body and are associated with antinuclear antibodies (ANAs) in the blood. Examples of autoimmune disorders include systemic lupus erythematosus, Sjogren's syndrome, rheumatoid arthritis, polymyositis, scleroderma, Hashimoto disease, juvenile (type 1) diabetes mellitus, Addison disease, vitiligo, pernicious anemia, glomerulonephritis, and pulmonary fibrosis. Autoimmune disorders are more frequent in women than in men. It is thought that the estrogen of females may influence the immune system to predispose some women to autoimmune disorders. Furthermore, the presence of one autoimmune disorder increases the chance for developing another simultaneous autoimmune disorder. See also *antinuclear antibody*.

**autoimmune hemolytic anemia** A condition in which the immune system destroys red blood cells, resulting in fewer of these oxygen-transporting cells. See also *hemolytic anemia*.

**autoimmune thyroiditis** See *Hashimoto disease*.

**autoimmunity** The state of being attacked by one's own immune system. Patients whose misdirected immune systems attack their own body tissues are said to have autoimmunity. See also *antinuclear antibody*; *autoimmune disorder*.

**autologous** In blood transfusion and transplantation, a situation in which the donor and recipient are the same person. Patients scheduled for non-emergency surgery may be autologous donors by donating blood for themselves that will be stored until the surgery. An autologous graft is a graft (such as a graft of skin) that is provided for oneself.

**automated external defibrillator** A device that automatically analyzes the heart rhythm and that—if it detects a problem that may respond to an electrical shock—delivers a shock to restore a normal heart rhythm. Thanks to their small size and ease of use, AEDs have been installed in many settings (such as schools and airports), and serve a role in expanding the number of opportunities for life-saving defibrillation. Abbreviated AED.

**automatism** A behavior that is performed without conscious knowledge and that does not appear to be under conscious control. This curious type of behavior occurs in a number of neurological and psychiatric disorders. The neurologic disorders associated with automatism include narcolepsy and some forms of epilepsy. The psychiatric conditions associated with automatism include schizophrenia and fugue states. Automatism involves doing something “automatically” and not remembering afterward how one did it or even that one did it. Also known as automatic behavior. See also *epilepsy*; *seizure disorders*.

**autonomic nervous system** A part of the nervous system that regulates key involuntary functions of the body, including the activity of the heart muscle; the smooth muscles, including the muscles of the intestinal tract; and the glands. The autonomic nervous system has two divisions: the sympathetic nervous system, which accelerates the heart rate, constricts blood vessels, and raises blood pressure, and the parasympathetic nervous system, which slows the heart rate, increases intestinal and gland activity, and relaxes sphincter muscles.

**autopsy** A postmortem examination. Also known as necropsy.

**autosomal** Pertaining to a chromosome that is not a sex chromosome. People normally have 22 pairs of autosomes (44 autosomes) in each cell, together with 2 sex chromosomes, X and Y in a male and X and X in a female.



**autosomal dominant trait** A genetic trait that appears in patients who have received one copy of a specific autosomal (nonsex) gene for that particular trait. For example, achondroplasia, Marfan syndrome, and Huntington disease are autosomal dominant traits.

**autosomal recessive trait** A genetic trait that appears only in patients who have received two copies of a specific autosomal (nonsex) gene for that particular trait, one from each parent. For example, sickle cell anemia and cystic fibrosis are autosomal recessive traits.

**autosome** Any chromosome other than the X and Y sex chromosomes. People normally have 22 pairs of autosomes (44 autosomes) in each cell.

**aux** Prefix indicating growth or increase.

**AV 1** Atrioventricular. Relating to the atrium(atria) and ventricle(s) of the heart. **2** Arteriovenous. Relating to an artery(ies) and a vein(s).

**AV node** Atrioventricular node.

**avascular necrosis** A condition in which poor blood supply to an area of bone leads to bone death. Abbreviated AVN. Also known as aseptic necrosis and osteonecrosis.

**avian influenza** A highly contagious viral disease with up to 100 percent mortality in domestic fowl. Caused by influenza A virus subtypes H5 and H7. All types of birds are susceptible to the virus, but outbreaks occur most often in chickens and turkeys. The infection may be brought by migratory wild birds which can carry the virus, but show no signs of disease. Humans are only rarely affected. Also known as fowl plague, avian flu, and bird flu.

**AVM** Arteriovenous malformation. See *malformation*, *arteriovenous*.

**avulsion** Tearing away. A nerve can be avulsed by an injury, as can part of a bone.

**axilla** Armpit.

**axillary** Pertaining to the armpit, the cavity beneath the junction of the arm and the body.

**axillary dissection** Removal of a portion of the lymph nodes under the arm.

**axis** The second cervical vertebra. The first cervical vertebra (atlas) rotates around the odontoid process of the axis. See also *atlas*; *atlantoaxial joint*.

**axon** A long fiber of a nerve cell (neuron) that acts somewhat like a fiber-optic cable to carry outgoing messages. The neuron sends electrical impulses from its cell body through the axon to target cells. Each nerve cell has one axon. An axon can be over a foot in length. See also *dendrite*; *neuron*.

**Ayurveda** India's traditional, natural system of medicine that has been practiced for more than 5,000 years. Ayurveda provides an integrated approach to preventing and treating illness through lifestyle interventions and natural therapies. Ayurvedic theory states that all disease begins with an imbalance or stress in the individual's consciousness. Lifestyle intervention is a major ayurvedic preventive and therapeutic approach.

**azotemia** A higher-than-normal blood level of urea or other nitrogen-containing compounds. The hallmark test for azotemia is the serum blood urea nitrogen (BUN) level. Azotemia is usually caused by the inability of the kidneys to excrete these compounds.

**AZT** Azidothymidine, now renamed zidovudine, but still best known by the abbreviation AZT. This antiviral drug is prescribed, usually in combination with protease inhibitors and other drugs, to treat HIV infection in patients with AIDS.

# Bb

**B cell** A type of white blood cell that has an important role in producing antibodies for the immune system. B cells are lymphocytes that mature in the bone marrow (as opposed to T cells, lymphocytes that mature in the thymus). Many B cells go on to become plasma cells and produce antibodies (immunoglobulins); some B cells mature into memory B cells. See also *memory B cell*; *plasma cell*.

**B variant GM2-gangliosidosis** See *Tay-Sachs disease*.

**B. quintana** See *Bartonella quintana*.

**Babinski reflex** A reflex used to determine adequacy of the higher (central) nervous system. The Babinski reflex is obtained by stimulating the outside of the sole of the foot, causing extension of the big toe while fanning the other toes. The examiner begins the stimulation at the heel and goes forward to the base of the toes. Most newborn babies and young infants are not neurologically mature, and they therefore show a Babinski reflex. A Babinski reflex in an older child or an adult is abnormal and is a sign of a problem in the brain or spinal cord. A Babinski reflex that is present on one side but not the other is also abnormal, and it can indicate which side of the brain is involved. Also known as plantar response, big toe sign, and Babinski phenomenon, response, or sign.

**baby teeth** See *primary teeth*.

**bacillus** A large family of bacteria that are rod-like in shape. They include the bacteria that cause food to spoil, as well as those that are responsible for some diseases. Helpful members of the bacillus family are used to make antibiotics or colonize the human intestinal tract and aid with digestion.

**back pain** Pain felt in the low or upper back. Causes of pain in the low and upper back include conditions affecting the bony spine; discs between the vertebrae; ligaments around the spine and discs; spinal inflammation; spinal cord and nerves; muscles; internal organs of the pelvis, chest, and abdomen; tumors; and the skin.

**back pain, low** Pain in the lower back area that can be caused by problems with the lumbar spine, the discs between the vertebrae, the ligaments around the spine and discs, the spinal cord and nerves, muscles of the low back, internal organs of the pelvis and abdomen, or the skin covering the lumbar area. See also *sciatica*.

**backbone** The spine, a flexible row of bones stretching from the base of the skull to the tailbone. See also *vertebral column*.

**bacteremia** The presence of live bacteria in the bloodstream. Also known as bacilemia. See also *blood culture*; *septicemia*.

**bacteria** Single-celled microorganisms that can exist either as independent (free-living) organisms or as parasites (dependent on another organism for life). The plural of bacterium. Examples of bacteria include *Acidophilus*, a normal inhabitant of yogurt; *Gonococcus* which causes gonorrhea; *Clostridium welchii*, the most common cause of gangrene; *E. coli*, which lives in the colon and can cause disease elsewhere; and *Streptococcus*, the bacterium that causes the common throat infection called strep throat.

**bacteria, flesh-eating** See *necrotizing fasciitis*.

**bacterial** Of or pertaining to bacteria, as in a bacterial lung infection.

**bacterial vaginosis** A vaginal condition characterized by an abnormal vaginal discharge due to an overgrowth of normal bacteria in the vagina. Women with bacterial vaginosis also have fewer than the usual population of vaginal bacteria, called lactobacilli. Symptoms of bacterial vaginosis are vaginal discharge and sometimes a fishy odor. A microscopic sign of bacterial vaginosis is an unusual vaginal cell called a clue cell. Treatment options include oral antibiotics and vaginal gels. Bacterial vaginosis can cause premature labor and delivery, as well as infection of the amniotic fluid and of the uterus after delivery. Therefore, screening and treatment for bacterial vaginosis during pregnancy may be done.

**bacteriocidal** Capable of killing bacteria. Antibiotics, antiseptics, and disinfectants can all be bacteriocidal.

**bacteriophage** A virus that lives within a bacterium, replicating itself and eventually destroying the bacterial cell. Bacteriophages have been very helpful in the study of bacterial and molecular genetics. They are sometimes simply called phages.

**bacteriostatic** Capable of inhibiting the growth or reproduction of bacteria. See also *bacteriocidal*.

**bacterium** Singular of bacteria. See also *bacteria*.

**bag of waters** The amniotic sac and amniotic fluid.

**Baker cyst** A swelling in the space behind the knee (the popliteal space) that is composed of a membrane-lined sac filled with synovial fluid that has escaped from the joint. Also known as synovial cyst of the popliteal space.

**balanitis** Inflammation of the rounded head (the glans) of the penis. Inflammation of the foreskin is called posthitis. In the uncircumcised male, balanitis and posthitis generally occur together as balanoposthitis: inflammation of both the glans and foreskin.

**balanitis, circinate** A skin inflammation around the penis in males with Reiter syndrome. With circinate balanitis, the skin around the shaft and tip of the penis can become inflamed and scaly. Cortisone creams can be used as treatment. See also *balanitis; keratoderma blennorrhagicum; Reiter syndrome*.

**balanoposthitis** Inflammation of both the glans penis and foreskin. An uncircumcised boy should be taught to clean his penis with care to prevent infection and inflammation of the foreskin and the glans. Cleaning of the penis is done by gently retracting the foreskin, only to the point where resistance is met. Full retraction of the foreskin may not be possible until after age 3. See also *balanitis; posthitis*.

**baldness** Lack or loss of hair on the scalp. Also known as alopecia. There are many types of baldness, each with a different cause. Baldness may be localized to the front and top of the head, as in the very common type of male-pattern baldness; baldness may be patchy, a condition called alopecia areata; or it may involve the entire head, as in alopecia capitis totalis. See *alopecia; alopecia areata; alopecia capitis totalis; alopecia, traumatic; alopecia universalis*.

**ball-and-socket joint** A joint in which the round end of a bone fits into the cavity of another bone. The hip joint is a ball-and-socket joint.

**balloon angioplasty** Coronary angioplasty that is accomplished by using a balloon-tipped catheter inserted through an artery in the groin or arm, to enlarge a narrowing in a coronary artery. Angioplasty is commonly successful in opening coronary arter-

ies. Recurrent narrowing at the site of balloon inflation can still develop following successful coronary angioplasty. See also *coronary artery disease*.

**balloon tamponade** A procedure in which a balloon is inflated within the esophagus or stomach, to apply pressure on bleeding blood vessels, compress the vessels, and stop the bleeding. It is used in the treatment of bleeding veins in the esophagus (esophageal varices) and stomach. Also known as esophagogastric tamponade.

**banding of chromosomes** Treatment staining of chromosomes to reveal characteristic patterns of horizontal bands. Thanks to these banding patterns, which resemble bar codes, each human chromosome is distinctive and can be identified without ambiguity. Banding also permits the detection of chromosome deletions (lost segments), duplications (extra segments), and other structural abnormalities.

**barbiturate** A class of drugs that depresses activity in the brain and spinal cord (central nervous system), including many sleeping pills, sedatives, antispasmodics, and anesthetics. Barbiturates are addictive, carry a high risk of overdose, and should never be used with alcohol or with other nervous system depressants.

**bariatric surgery** Surgery on the stomach and/or intestines to help a person with extreme obesity lose weight. Bariatric surgery is an option for people who have a body mass index (BMI) above 40. It is also an option for people with a BMI between 35 and 40 who have health problems like type 2 diabetes or heart disease. Types of bariatric surgery include gastric banding and gastric bypass. See also *bariatrics*.

**bariatrician** A physician who specializes in bariatrics. See *bariatrics*.

**bariatrics** The field of medicine that focuses on persons who are overweight using a comprehensive program including diet and nutrition, exercise, behavior modification, lifestyle changes, and, when indicated, the prescription of appetite suppressants and other appropriate medications. Bariatrics also includes research into overweight, as well as its causes, prevention, and treatment. See also *bariatric surgery*.

**barium enema** An enema using a white, chalky solution containing barium, in preparation for series of X-ray images of the lower intestine (colon). The barium outlines the colon on the X-ray film.

**barium solution** A liquid that contains barium sulfate, which produces a visible image on X-ray film. Barium solution outlines organs of the body so they can be seen as images on X-ray film.

**barium sulfate** An odorless, flavorless barium salt. Barium is a metallic chemical element. See also *barium enema*; *barium solution*; *barium swallow*.

**barium swallow** A test that involves filling the esophagus, stomach, and small intestines with a barium solution in preparation for an X-ray, to define the anatomy of the upper digestive tract. Also known as upper gastrointestinal series.

**barosinusitis** See *aerosinusitis*.

**barotitis** See *aerotitis*.

**Barr body** A microscopic feature of female cells that is due to the presence of two X chromosomes, one of which is inactive and crumples up.

**Barrett esophagus** A complication of chronic severe gastrointestinal reflux disease (GERD) that involves a change in the type of cells that line the inner wall of the lower esophagus. There is a small but definite increased risk of cancer of the esophagus (adenocarcinoma) in people with Barrett esophagus. The diagnosis of Barrett esophagus is made on seeing (through endoscopy) a pink esophageal lining (mucosa) that extends a short distance (usually less than 2.5 inches) up the esophagus from the gastroesophageal junction and finding cell changes on biopsy of the lining. Treatment involves acid-suppression drugs and followup monitoring of the esophagus is advised.

**barrier method** A birth control method that employs a barrier which prevents sperm from entering the cervix, thereby preventing conception. Condoms and diaphragms are examples of a barrier method. See also *cervical cap*; *condom*; *condom, female*; *diaphragm*.

**Bartholin gland** One of a pair of glands between the vulva and the vagina that produce lubrication in response to stimulation. Along with a second pair of nearby glands, called the lesser vestibular glands, the Bartholin glands act to aid in sexual intercourse. Also known as greater vestibular gland.

**Bartonella henselae** See *cat scratch disease*.

**Bartonella quintana** A parasitic microorganism in the rickettsiae family that can multiply within the gut of a louse and can then be transmitted to humans and cause trench fever. Transmission occurs when infected louse feces are rubbed into

abraded skin or into the whites of the eyes. Trench fever was first recognized in the trenches of World War I, and it now occurs among homeless people, injection drug users, street alcoholics, and others who live in cramped, unhygienic quarters. *B. quintana* is also responsible for a disease called bacillary angiomatosis in people infected with HIV, and for infection of the heart and great vessels (endocarditis) in people with bloodstream infection (bacteremia). Also known as *Rochalimaea quintana*. See also *trench fever*.

**basal cell** A small, round cell found in the lower part, or base, of the epidermis.

**basal cell carcinoma** The most common type of skin cancer, which commonly presents as a sore that seems to get better and then recurs and may start to bleed. Basal cell carcinoma often occurs on the face and neck, where the skin is exposed to sunlight. These tumors are locally invasive and tend to burrow in but not metastasize (spread) to distant locations.

**basal ganglia** A region of the base of the brain that consists of three clusters of neurons (caudate nucleus, putamen, and globus pallidus) that are responsible for involuntary movements such as tremors, athetosis, and chorea. The basal ganglia are abnormal in a number of important neurologic conditions, including Parkinson's disease and Huntington's disease.

**basal metabolic rate** The rate of metabolism, as measured by the amount of heat given off when a person is at rest; it is expressed as calories of energy per hour per square meter of skin. The basal metabolic rate can offer clues about underlying health problems. For example, a person with an overly active thyroid has an elevated basal metabolic rate.

**basal temperature** **1** Usually, a person's temperature on awakening in the morning. Because changes in basal temperature accompany ovulation, basal temperature is often tracked by women who want to ensure or avoid pregnancy. **2** A crude measure of thyroid function that is achieved by taking and comparing basal temperatures. This measure is now superseded by modern thyroid function blood tests. Also known as Broda test.

**base** A unit of DNA. There are four bases in DNA: adenine (A), guanine (G), thymine (T), and cytosine (C). The sequence of bases (for example, CAG) constitutes the genetic code.

**base pair** Two DNA bases that are complementary to one another (A and T, or G and C) and join

in strands to form the double-helix that is characteristic of DNA.

**base sequence** The particular order of nucleotide bases in a DNA molecule.

**baseline** Information or data gathered at the beginning of a period from which variations that subsequently develop are compared.

**basement membrane** A thin membrane that is composed of a single layer of cells.

**basophil** A type of white blood cell (leukocyte) with coarse, bluish-black granules of uniform size within the cytoplasm. Basophils are so named because their cytoplasmic granules stain with basic dyes. Basophils normally constitute 0.5 to 3 percent of the peripheral blood leukocytes, and contain histamine and serotonin. Also known as a basophilic leukocyte.

**basophilic leukocyte** See *basophil*.

**battered child syndrome** A condition in which a person has skeletal fractures, especially multiple injuries of various ages, that result from child abuse. All states in the US have adopted laws mandating the reporting of suspected instances of child abuse. See also *child abuse*.

**battle fatigue** The World War II name for what is known today as post-traumatic stress disorder (PTSD). See also *post-traumatic stress disorder*.

**BCG** Bacille Calmette Guérin, a weakened (attenuated) version of a bacterium called *Mycobacterium bovis* that is closely related to *Mycobacterium tuberculosis*, the agent responsible for tuberculosis. See *tuberculosis vaccination*.

**Beau's lines** Transverse lines or grooves across the fingernails, or transverse depressions in the nail plate, from temporary disturbance of cell division where the nail develops. The condition may be caused by local disease or injury of the nail fold, or from a generalized condition such as an illness or a drug, for example, chemotherapy.

**bedbug** A blood-sucking bug in the Cimex family that lives hidden in bedding or furniture and comes out at night to bite its victims.

**bedsore** A painful, often reddened area of degenerating, ulcerated skin that is caused by pressure and lack of movement and is worsened by exposure to urine or other irritating substances. Untreated bedsores can become seriously infected or gangrenous. Bedsores are a major problem for patients

who are confined to a bed or wheelchair, and they can be prevented by moving the patient frequently, changing bedding, and keeping the skin clean and dry. Also known as pressure sore, decubitus sore, and decubitus ulcer.

**bedwetting** Involuntary urination in bed after the usual age of toilet training. Also known as nighttime enuresis and nocturnal enuresis. It may be caused by incomplete development of bladder control, a sleep or arousal disorder, bladder or kidney disease, neurological problems, or psychological causes (such as fear of the dark that prevents the child from leaving the bed). About 20 percent of 5-year-olds wet the bed at least once a month; surprisingly, bedwetting can persist into teenage. Treatment depends on the cause and may include education, behavior modification techniques, the use of alarms, bladder-retention training, and medication. See also *enuresis*.

**bee sting** An area of skin affected by piercing from the stinger of a bee. A bee sting can trigger an allergic reaction, including life-threatening anaphylactic shock. Avoidance and prompt treatment are essential for those who are allergic to bee stings. Self-injectible adrenaline can be carried by persons known to be allergic when in risk areas. Hikers should wear long pants and shirts in risk areas. If a person is attacked, he or she should run for shelter, covering the face to prevent airway stings. Treatment depends on the severity of symptoms. Stingers should be removed promptly, and the area should be cleansed with soap and water. Ice packs, pain medications, and anti-itching medications can be helpful in treating local reactions. Victims with more serious symptoms can require intravenous fluids, oxygen, cortisone medicine, or epinephrine, as well as medications to open the breathing passages. In selected cases, allergy injection therapy is highly effective for prevention. For those who are not allergic, stings are a minor nuisance unless they occur in multiples.

**bee sting, Africanized** A sting from an Africanized ("killer") bee, a species of large honey bees found in South and Central America, as well as in some parts of the US. This species of bees has an unusual and dangerous natural defense mechanism when disturbed. A loud noise or vibration, such as a barking dog or lawn mower, near a hive may cause the bees to display aggressive behavior. They attack in large numbers and for a longer period of time than is typical of the common European honey bee. As a result, Africanized bees inflict more stings, injecting a higher dosage of bee venom into their victims. See also *bee sting*.



**beef tapeworm** The most common of the large tapeworms that parasitize people. Beef tapeworm can be contracted from infected beef that is raw or rare. Also known as *Taenia saginata*.

**behavior modification** The use of rewards and/or punishments to encourage desirable behavior.

**behavioral disorder** A condition characterized by undesirable behavior that is within the patient's control (for example, substance abuse and antisocial behavior).

**behavioral medicine** An interdisciplinary field of research and practice that focuses on how people's thoughts and behavior affect their health. Behavioral medicine is concerned, for example, with undesirable behaviors such as drug abuse, and utilizes behavior therapy techniques such as biofeedback, relaxation training, and hypnosis.

**behaviorism** The science of studying and modifying animal or human behavior, often through behavior modification techniques.

**Behcet's syndrome** A chronic disease featuring inflammation of small blood vessels and characterized by a triad of features: ulcers in the mouth, ulcers of the genitalia, and inflammation of the eye (uveitis). The mouth ulcers typically present as recurring crops of aphthous ulcers. Arthritis is also commonplace. The cause of Behcet's syndrome is not known. It is more frequent and severe in patients from the Eastern Mediterranean and Asia than in those of European descent.

**belching** A normal process of releasing through the mouth air that accumulates in the stomach, thereby relieving distention. Upper abdominal discomfort associated with excessive swallowed air may extend into the lower chest, producing symptoms that suggest heart or lung disease.

**Bell's palsy** Paralysis of the nerve that supplies the facial muscles on one side of the face (the seventh cranial nerve, or facial nerve). Bell's palsy often starts suddenly. The cause may be a viral infection. Treatment includes protecting the eye on the affected side from dryness during sleep. Massage of affected muscles can reduce soreness. Sometimes cortisone medication, such as prednisone, is given to reduce inflammation during the first weeks of illness. The outlook is generally good; the vast majority of patients recover within weeks or months.

**belly** See *abdomen*.

**belly button** The navel or umbilicus; the former site of attachment of the umbilical cord.

**benign** Not malignant. A benign tumor is one that does not invade surrounding tissue or spread to other parts of the body; it is not a cancer.

**benign intracranial hypertension** See *pseudotumor cerebri*.

**benign partial epilepsy with centro-temporal spikes** See *epilepsy, benign rolandic*.

**benign prostatic hyperplasia** A common, non-cancerous enlargement of the prostate gland. The enlarged prostate may compress the urinary tube (urethra), which courses through the center of the prostate, impeding the flow of urine from the bladder through the urethra to the outside. Abbreviated BPH. If BPH is severe enough, complete blockage can occur. BPH generally begins after age 30, evolves slowly, and causes symptoms only after age 50. Half of men over age 50 develop symptoms of BPH, but only a minority need medical or surgical intervention. Medical therapy includes drugs such as finasteride and terazosin. Prostate surgery has traditionally been seen as offering the most benefits—and the most risks—for BPH. BPH is not a sign of prostate cancer. Also known as benign prostatic hypertrophy and nodular hyperplasia of the prostate.

**benign rolandic epilepsy of childhood** See *epilepsy, benign rolandic*.

**bereavement** The period after a loss during which grief is experienced and mourning occurs. The duration of bereavement depends on both how attached the person was to the person (or pet) who died, and the amount of preparation time anticipating the loss.

**beriberi** Inflammation of multiple nerves (polyneuritis), heart disease (cardiopathy), and edema (swelling) due to a deficiency of thiamine (vitamin B1) in the diet.

**Bernard-Soulier syndrome** A disorder in which the platelets crucial to normal blood clotting lack the ability to adequately stick to injured blood vessel walls, leading to abnormal bleeding. Bernard-Soulier syndrome usually appears in the newborn period, infancy, or early childhood, with bruises, nosebleeds, and gum bleeding. Bernard-Soulier syndrome is an inherited disease, transmitted as an autosomal recessive trait. There is no specific treatment. Bleeding episodes may require platelet transfusions. Specific platelet function tests, as well as tests for the glycoproteins common to Bernard-Soulier syndrome, can confirm the diagnosis. Also known as giant platelet syndrome.

**Bernstein test** A test to find out if heartburn is caused by acid in the esophagus, and so to diagnose GERD (gastroesophageal reflux disease). The test involves dripping a mild acid, similar to stomach acid, through a tube placed in the esophagus. Also known as esophageal acid infusion test.

**berry aneurysm** See *aneurysm, berry*.

**beta blocker** A class of drugs that block the effect of beta-adrenergic substances such as adrenaline (epinephrine), that play a key role in the sympathetic portion of the involuntary nervous system. By blocking the action of the sympathetic nervous system on the heart, they slow the heartbeat and relieve stress on the heart. Beta blockers are used to treat abnormal heart rhythms, specifically to prevent abnormally fast heart rates (tachycardias) or irregular heart rhythms, such as premature ventricular beats. Because beta blockers reduce the demand of the heart muscle for oxygen, they can be useful in treating angina. They have also become important drugs in improving survival after a heart attack. Due to their effect on blood vessels, beta blockers can lower the blood pressure and are of value in the treatment of hypertension. Other uses include the prevention of migraine headaches and the treatment of familial or hereditary essential tremors. Beta blockers reduce pressure within the eye and they are therefore used to lessen the risk of damage to the optic nerve and loss of vision in patients with glaucoma. Beta blockers include acebutolol (brand name: Sectral), atenolol (brand name: Tenormin), bisoprolol (brand name: Zebeta), metoprol (brand names: Lopressor, Lopressor LA, Toprol XL), nadolol (brand name: Corgard), and timolol (brand name: Blocadren). Topical beta blockers for the eye include timolol ophthalmic solution (brand name: Timoptic) and betaxolol hydrochloride (brand name: Betoptic).

**beta carotene** A protective antioxidant vitamin that is a natural component of carrots. See also Appendix C, "Vitamins."

**beta cell, pancreatic** A cell that makes insulin and is found in the areas of the pancreas called the islets of Langerhans. Destruction of beta cells causes type 1 (insulin-dependent) diabetes mellitus. See also *diabetes mellitus*.

**beta error** The statistical error (said to be "of the second kind," or type II) that is made in testing when it is concluded that something is negative when it really is positive. Also known as false negative.

**beta-2 microglobulin** A nonspecific test that measures the amount of cell destruction present. It is considered to be one of the best ways to measure

the progression of HIV-related disease, although it may also indicate cell destruction due to cytomegalovirus or other causes.

**beta-adrenergic blocking drug** See *beta blocker*.

**bezoar** A clump or wad of swallowed food or hair. Bezoars can block the digestive system, especially the exit of the stomach. A bezoar composed of hair is called a trichobezoar. A bezoar composed of vegetable materials is called a phytobezoar. A bezoar composed of hair and food is called a trichophytobezoar.

**BF** Physician's shorthand for black female.

**bi-** Prefix indicating two, as in biceps (a muscle with two heads) or bicuspid (having two flaps or cusps).

**bias** In a clinical research trial, the effects that may cause an incorrect conclusion. Common examples of bias include advanced knowledge of the treatment being given, strong desire of the researcher for a specific outcome, or improper study design. To avoid bias, a blinded study may be done. See also *blinded study*; *double-blinded study*.

**bicarbonate** In medicine, bicarbonate usually refers to bicarbonate of soda (sodium bicarbonate, baking soda), a white powder that is a common ingredient in antacids. Also, the bicarbonate level is an indirect measure of the acidity of the blood that is determined when electrolytes are tested. The normal serum range for bicarbonate is 22–30 mmol/liter.

**biceps** A muscle that has two heads, or origins. There is more than one biceps muscle. The biceps brachii is the well-known flexor muscle in the upper arm; it bulges when the arm is bent in a C-shape with the fist toward the forehead. The biceps femoris is in the back of the thigh.

**bicornuate** Having two horns or horn-shaped branches. The uterus is normally unicornuate, but it can sometimes be bicornuate.

**bicuspid** Having two flaps or cusps.

**bicuspid aortic valve** An aortic valve in the heart that has two flaps (cusps) that open and close. A normal aortic valve in the heart has three flaps. There may be no symptoms of bicuspid aortic valve in childhood, but in time the valve may become narrowed, making it harder for blood to pass through it, or blood may start to leak backward through the

valve (regurgitate). Treatment depends on how the valve is working. For a severely deteriorated valve, replacement surgery may be necessary.

**bicuspid valve** See *mitral valve*.

**b.i.d.** An abbreviation commonly used on prescriptions that means twice a day. See also Appendix A, "Prescription Abbreviations."

**bifid** Split in two.

**bifid uvula** See *uvula*.

**big toe sign** See *Babinski reflex*.

**bilateral** Affecting both sides. For example, bilateral arthritis affects joints on both the left and right sides of the body.

**bile** A yellow-green fluid that is made by the liver and stored in the gallbladder. Bile passes through the common bile duct into the duodenum, where it helps digest fat. The principal components of bile are cholesterol, bile salts, and the pigment bilirubin. Cholesterol is normally kept in liquid form by the dissolving action of the bile salts. An increased amount of cholesterol in the bile overwhelms the dissolving capacity of the bile salts and leads to the formation of cholesterol gallstones. Similarly, a deficiency of bile salts promotes cholesterol gallstone formation. See also *gallstone*.

**bile acid resin** A substance that binds in the intestine with bile acids that contain cholesterol and is then eliminated in the stool. The major effect of bile acid resin is to lower LDL-cholesterol. Bile acid resin may be prescribed, together with a statin medication, for patients with heart disease, to reduce cholesterol. Cholestyramine (brand name: Questran) and colestipol (Colestid) are examples of bile acid resins. Side effects may include constipation, bloating, nausea, and gas. Although bile acid resin is not absorbed, it may interfere with the absorption of other medicines if taken at the same time as the other medicines. See also *statin*.

**bile sludge** See *biliary sludge*.

**bilharzia** A schistosome, a trematode worm parasite. Three main species of these worms—*Schistosoma haematobium*, *S. japonicum*, and *S. mansoni*—cause disease in humans. Larval forms of the parasite live in freshwater snails. When the parasite is liberated from the snail, it burrows into the skin, transforms to the schistosomulum stage, and migrates to the urinary tract (*S. haematobium*), or liver or intestine (*S. japonicum* or *S. mansoni*), where the adult worms develop. Eggs are shed into

the urinary tract or the intestine, where they hatch to form another form of the parasite, called miracidia, that can then infect snails again, completing the parasite's life cycle. Also known as schistosomiasis.

**biliary** Having to do with the gallbladder, bile ducts, or bile. The biliary system consists of the gallbladder, bile ducts, and bile. See also *bile*.

**biliary cirrhosis, primary** See *cirrhosis, primary biliary*.

**biliary sand** A term used by surgeons to describe small particles in bile that are visible to the naked eye and are large enough to be counted easily in a gallbladder that has been removed. Biliary sand may be looked upon as a stage of growth between biliary sludge, which is made up of microscopic particles, and gallstones. The composition of biliary sand varies but is similar to that of gallstones, the most common components being cholesterol crystals and calcium salts. Biliary sand may cause no symptoms, or it may cause intermittent symptoms, including pain in the abdomen, nausea, and vomiting, particularly after a fatty meal. Biliary sand can cause complications, including inflammation of the pancreas (pancreatitis) and inflammation of the gallbladder (cholecystitis). Biliary sand can often be detected by an ultrasound of the abdomen. If patients with biliary sand develop symptoms or complications, gallbladder removal (cholecystectomy) is performed. See also *gallstone*.

**biliary sludge** Microscopic particulate matter in bile. The composition of biliary sludge varies. The most common particulate components are cholesterol crystals and calcium salts. Biliary sludge has been associated with certain conditions, including rapid weight loss, fasting, pregnancy, the use of certain medications (for example, ceftriaxone, octreotide), and bone marrow or solid organ transplantation. However, it most commonly occurs in individuals with no identifiable conditions. Biliary sludge can be considered microscopic gallstones. Biliary sludge usually causes no symptoms, and it may appear and disappear over time. It may, however, cause intermittent pain in the abdomen, often with nausea and vomiting. Biliary sludge may also cause more serious complications, including inflammation of the pancreas (pancreatitis) and inflammation of the gallbladder (cholecystitis). Biliary sludge can be detected with ultrasound of the abdomen, or by directly examining bile content under a microscope. If patients with biliary sludge develop symptoms or complications, the gallbladder may be removed. See also *gallstone*.

**bilirubin** A yellow-orange compound that is produced by the breakdown of hemoglobin from red blood cells.

**binaural** Relating to both ears. While hearing aids may be binaural (in both ears) or monaural (in just one ear), binaural aids are generally considered to be superior. Synonymous with stereophonic.

**binge drinking** The dangerous practice of consuming large quantities of alcoholic beverages in a single session. Binge drinking carries a serious risk of harm, including alcohol poisoning. See also *alcohol poisoning*.

**binge eating disorder** An eating disorder characterized by periods of extreme overeating, but not followed by purging behaviors, as in bulimia. Binge eating disorder can occur alone or in association with abnormality of the brain's hypothalamus gland, Prader-Willi disorder, or other medical conditions. It can contribute to high blood pressure, weight gain, diabetes, and heart disease. Treatment may include therapy, dietary education and advice, and medication.

**binocular vision** The ability to maintain visual focus on an object with both eyes, creating a single visual image. Lack of binocular vision is normal in infants. Adults without binocular vision experience distortions in depth perception and visual measurement of distance.

**bio-** Prefix indicating living plants or creatures, as in biology (the study of living organisms).

**biofeedback** A method of treatment that uses a monitor to measure patients' physiologic information of which they are normally unaware. By watching a monitor, patients can learn by trial and error to adjust their thinking and other mental processes in order to control "involuntary" bodily processes such as blood pressure, temperature, gastrointestinal functioning, and brain wave activity. Biofeedback is now used to treat a wide variety of conditions and diseases, including stress, alcohol and other addictions, sleep disorders, epilepsy, respiratory problems, fecal and urinary incontinence, muscle spasms, partial paralysis, muscle dysfunction caused by injury, migraine headaches, hypertension, and a variety of blood vessel conditions, including Raynaud's phenomenon.

**bioflavonoid** An antioxidant compound that is found in various plants and is available in supplement form. Once known as vitamin P.

**biologic evolution** A process mediated by genes that shows a slow rate of change and uses mutations

and selection as agents of change. New variants in biologic evolution are often harmful, and when these new variants are transmitted from parents to offspring, this occurs according to classical genetics. Humans require cultural as well as biological evolution. See also *cultural evolution*.

**biological response modifier** A substance that stimulates the body's response to infection and disease. Abbreviated BRM. The body naturally produces small amounts of certain BRMs. Some BRMs are made in the laboratory in large amounts for use in treating cancer, rheumatoid arthritis, Crohn's disease, hepatitis, and other diseases. BRMs used in biological therapy include monoclonal antibodies, interferon, interleukin-2 (IL-2), and colony-stimulating factor. Also known as biologics.

**biological therapy** Treatment to stimulate or restore the ability of the immune system to fight infection and disease. Biological therapy is thus any form of treatment that uses the body's natural abilities to cause the immune system to fight infection, treat disease, or to protect the body from side effects of treatment. For example, biological therapy to block the action of a messenger of inflammation, called tumor necrosis factor (TNF), is being used to treat conditions such as Crohn's disease and rheumatoid arthritis. Also known as biotherapy or immunotherapy. See also *biological response modifier*.

**biomarker** A biologic feature that can be used to measure the presence or progress of disease or the effects of treatment. For example, prostate specific antigen (PSA) is a biomarker for cancer of the prostate.

**biopsy** The removal of a sample of tissue for examination under a microscope to check for cancer cells or other abnormalities.

**biopsy, endometrial** A procedure for sampling the lining of the uterus (the endometrium). Endometrial biopsy is usually done to detect the cause of abnormal uterine bleeding, but it may be used to determine the cause of infertility, test for uterine infections, and even monitor responses to certain medications. The procedure can be done in a physician's office. There are few risks, the most common being cramping and pain. Oral pain medications taken beforehand may help reduce cramping and pain. See also *biopsy*.

**biopsy, excisional** A surgical procedure in which an entire abnormal area is removed for diagnostic examination under a microscope.

**biopsy, incisional** A surgical procedure in which only a portion of an abnormal area is



removed for diagnostic examination under a microscope. An incisional biopsy is used when the abnormal area is too large for excisional biopsy or when excision would destroy important tissue or pose a cosmetic problem. See also *biopsy*, *excisional*.

**biopsy, needle** A procedure in which a small amount of tissue is taken for examination by using a hollow needle. See also *biopsy*; *biopsy*, *stereotactic needle*.

**biopsy, punch** See *punch biopsy*.

**biopsy, sentinel-lymph-node** Examination of the first lymph node that receives lymphatic drainage from a tumor to learn whether that node has tumor cells in it. The sentinel node's identity is determined by injecting around the tumor a tracer substance that travels through the lymphatic system to the first draining node, thereby identifying it. If the sentinel node contains tumor cells, removal of more nodes in the area may be warranted. If the sentinel node is normal, extensive dissection of the regional lymphnode basin is generally not required. See also *biopsy*.

**biopsy, stereotactic needle** A procedure in which the spot to be biopsied is located three-dimensionally, the information is entered into a computer, and then the computer calculates the information and positions a needle to remove the biopsy sample. Stereotactic needle biopsy can be done in a properly equipped physician's office, and it carries a minimal amount of pain and risk compared to other types of biopsy. See also *biopsy*.

**biotechnology** The fusion of biology and technology, the application of biological techniques to product research and development. In particular, biotechnology involves the use by industry of recombinant DNA, cell fusion, and new bioprocessing techniques to produce large molecules useful in treating and preventing disease. Slang *biotech*.

**bioterrorism** Terrorism using biologic agents that are harmful to humans. Biological diseases and the agents that might be used for terrorism have been listed by the US Centers for Disease Control and Prevention (CDC). These agents include viruses, bacteria, rickettsiae (microorganisms that have traits common to both bacterial and viruses), fungi, and biological toxins. The biological disease agents are classified into three categories, according to the degree of danger each agent is felt to pose. Category A poses high risk to national security because they can be easily disseminated or transmitted from person to person; cause high mortality, with the potential for major public health impact; might cause public panic and social disruption; and

require special action for public health preparedness. Examples of Category A diseases include anthrax, botulism, the plague, smallpox, tularemia, and hemorrhagic fever due to the Ebola and Marburg viruses. Category B agents are moderately easy to disseminate; cause moderate morbidity and low mortality; and require specific enhancements of the CDC's diagnostic capacity and enhanced disease surveillance. Examples of Category B diseases include Q fever, Brucellosis, Glanders, Ricin toxin, epsilon toxin of the gas gangrene bacillus, and Staphylococcus enterotoxin B. Category C agents are emerging pathogens that could be engineered for mass dissemination in the future because of their availability; ease of production and dissemination; and potential for high morbidity and mortality and major health impact. Examples of Category C diseases include Nipah virus, Hantavirus, tickborne hemorrhagic fever and encephalitis viruses, Yellow fever, and Tuberculosis (multi-drug-resistant TB).

**bipolar disorder** A disorder, formerly called manic-depressive illness, in which the patient cycles through uncontrollable mood states. Less prevalent than simple clinical depression, bipolar disorders involve cycles of depression, hypomania (elevated mood), mania (extremely elevated mood), and in some cases psychosis. Sometimes the mood switches are dramatic and rapid, but most often they are gradual. Both depression and mania affect thinking, judgment, and social behavior in ways that cause serious problems. For example, unwise business, financial, and personal decisions may be made when an individual is in a manic phase. Bipolar disorder is usually a chronic recurring condition, with serious impairment and suicide common in untreated cases. The cause is as yet unknown, although bipolar disorders appear to have a strong genetic basis and may be influenced by seasonal patterns, hormones, or viral infection. A strategy that combines medication and psychosocial treatment is optimal for managing bipolar disease. Also known as manic-depressive disease and manic depression. See also *cyclothymia*; *seasonal affective disorder*; *depression*; *mania*; *mixed mania*.

**birth** The process of delivering a fetus from the uterus. Normally, the fetus is expelled through the cervix and birth canal with the assistance of rhythmic muscle contractions. Birth may instead be a surgical procedure: a Caesarean section. See also *caesarean section*.

**birth control** The practice of exercising some level of control over contraception. Birth control methods are many, and they vary in effectiveness. The most effective method is abstinence from sex, followed by oral, injectable, or implanted contraceptives; barrier methods used consistently and



with spermicidal gel; and the basal temperature method, if used carefully and consistently. See also *barrier method*; *cervical cap*; *coitus interruptus*; *condom*; *condom, female*; *contraceptive*; *contraceptive, emergency*; *contraceptive, implanted*; *Depo-Provera*; *diaphragm*; *intrauterine device*; *natural family planning*; *oral contraceptive*.

**birth control pill** See *oral contraceptive*.

**birth defect** Any defect present in a baby at birth. Birth defects involve many different tissues, including the brain, heart, lungs, liver, bones, and intestinal tract. These defects can occur for many reasons, including genetic conditions and toxic exposures of the fetus (for example, to alcohol). All parents are at risk of having a baby with a birth defect. Birth defects are now the leading cause of infant mortality (death) in the US and many other developed nations. Infrequent, but significant, birth defects include heart defects, cleft lip and palate, Down syndrome, and spina bifida. Also known as congenital malformation or congenital anomaly. See also *dysmorphology*.

**birthmark** A discoloration of the skin that may or may not be raised and is present at birth. Most birthmarks are harmless. Occasionally a specific type of birthmark can be a visible marker for a more serious health problem. See also *café au lait*; *port-wine stain*.

**birthrate** The number of live births divided by the average population, or by the population at midyear. Also known as crude birthrate.

**bisexual** **1** An individual who engages in both heterosexual and homosexual sexual relations. Bisexual can also refer to the corresponding lifestyle. **2** In physical biology, bisexual refers to an individual who was born with gonadal tissue of both sexes (that is, both testicular and ovarian tissue). Also known as true hermaphrodite.

**bisphosphonate** A class of drugs used to strengthen bone. Bisphosphonates are used to treat osteoporosis and the bone pain from diseases such as metastatic breast cancer, multiple myeloma, and Paget's disease. Bone is in a constant state of remodeling, whereby new bone is laid down by cells called osteoblasts, while old bone is removed by cells called osteoclasts. Bisphosphonates inhibit bone removal (resorption) by the osteoclasts. The bisphosphonates include Fosamax (alendronate), Actonel (risedronate), Boniva (ibandronate), and Reclast (zoledronate).

**bite** In dental terms, how well the teeth fit together (occlude) in the mouth.

**bitewing X-ray** A dental X-ray that depicts how the teeth fit together on one side of the mouth.

**BKA** Below-the-knee amputation. See *amputation*.

**Black Death** See *bubonic plague*.

**black eye** Bruising of the eyelid and/or the area around the eye as a result of trauma to the eye. Colloquially known as a shiner.

**black lung disease** A disease of the lungs that is caused by inhaling coal dust, which in some patients can lead to progressive massive fibrosis of the lungs and severely impaired lung function. Also known as anthracosis and coal miner's pneumoconiosis.

**Black Plague** See *bubonic plague*.

**blackhead** A familiar term for what is medically called an open comedo. A comedo, the primary sign of acne, consists of a widened hair follicle filled with skin debris, bacteria, and oil called sebum. A blackhead has a wide opening to the skin and is capped with a blackened mass of skin debris. In contrast, a closed comedo, commonly called a whitehead, has an obstructed opening to the skin and may rupture to cause a low-grade skin inflammatory reaction in the area.

**bladder** A hollow organ in the lower abdomen that stores urine. The kidneys filter waste from the blood and produce urine, which enters the bladder through two tubes, called ureters. Urine leaves the bladder through another tube, the urethra. In women, the urethra is a short tube that opens just in front of the vagina. In men, it is longer, passing through the prostate gland and then the penis. Also known as urinary bladder and vesical.

**bladder, overactive** A condition in which sudden involuntary contractions of the muscular wall of the bladder cause urinary urgency, immediate and unstoppable needs to urinate. Overactive bladder is a form of urinary incontinence (the unintentional loss of urine) and is relatively common, particularly in older adults. Treatment may include pelvic muscle strengthening, behavioral therapy, and medications. Also called urge incontinence.

**bladder cancer** A common form of cancer that begins in the lining of the bladder. The most common warning sign is blood in the urine. Symptoms include pain during urination, frequent urination, and feeling the need to urinate without results. A diagnosis of bladder cancer is supported by findings in the medical history, physical examination, examination of the urine, and intravenous pyelogram

(IVP). Confirmation of the diagnosis requires a biopsy, usually using a cystoscope. The bladder is lined with cells called transitional cells and squamous cells. A tumor may grow through the lining into the muscular wall of the bladder and extend into nearby organs such as the uterus or vagina (in women) or the prostate gland (in men). When bladder cancer spreads beyond the bladder, the malignant cells are frequently found in nearby lymph nodes and may have spread to other lymph nodes or other places, including the lungs, liver, or bones. Risk factors for bladder cancer include age over 40 years, race (Caucasians are at twice the risk of African-Americans and Hispanic-Americans, with Asian-Americans at least risk), gender (men are two to three times more likely to get bladder cancer), family history of bladder cancer, use of tobacco (which is a major risk factor), occupational exposures (for example, workers in the rubber, chemical, and leather industries, hairdressers, machinists, metal workers, printers, painters, textile workers, and truck drivers), and prior treatment with cyclophosphamide or arsenic exposure. Treatment depends on the growth, size, and location of the tumor. Surgical operations are commonly needed. Chemotherapy, biological therapy, or radiotherapy may also be used.

**bladder infection** Infection of the urinary bladder. Some people are at greater risk for bladder infections and other urinary tract infections (UTIs) than others. Women are at greater risk than men; one woman in five develops a UTI during her lifetime. Not everyone with a UTI has symptoms. Common symptoms include a frequent urge to urinate and a painful burning when urinating. Underlying conditions that impair the normal urinary flow can lead to more complicated UTIs. Also known as bacterial cystitis. See also *bladder pain*.

**bladder inflammation** Inflammation of the urinary bladder. Also called cystitis. Can be due to infection from bacteria that ascend the urethra to the bladder or for unknown reasons, such as with interstitial cystitis. Symptoms include a frequent need to urinate, often accompanied by a burning sensation. As bladder inflammation progresses, blood may be observed in the urine and the patient may suffer cramps after urination. In young children, attempts to avoid the pain of cystitis can be a cause for daytime wetting (enuresis). Treatment includes avoiding irritants, such as perfumed soaps, near the urethral opening; increased fluid intake; and, for infectious cystitis, antibiotics. Untreated bladder inflammation can lead to scarring and the formation of stones when urine is retained for long periods of time to avoid painful urination.

**bladder pain** Pain from the urinary bladder. Among the symptoms of bladder infection are feelings of pain, pressure, and tenderness around the bladder, pelvis, and perineum (the area between the anus and vagina or anus and scrotum), which may increase as the bladder fills and decrease as it empties; decreased bladder capacity; an urgent need to urinate; painful sexual intercourse; and, in men, discomfort or pain in the penis and scrotum.

**Blalock-Taussig operation** A pioneering operation to treat children born with the heart malformation tetralogy of Fallot named for the US surgeon Alfred Blalock and the US pediatric cardiologist Helen B. Taussig.

**blast** An immature blood cell.

**blast crisis** A phase of advanced leukemia, usually chronic myelogenous leukemia (CML), in which the number of immature, abnormal white blood cells (blasts) in the bone marrow and blood is extremely high. Also known as the blast phase. See also *leukemia*.

**blastoma** A tumor thought to arise in embryonic tissue. This term is commonly used as part of the name for a tumor, as in glioblastoma and medulloblastoma (types of brain tumors), hepatoblastoma (a liver tumor), nephroblastoma (a Wilms tumor of the kidney), neuroblastoma (a childhood tumor of neural origin), osteoblastoma (a bone tumor), and retinoblastoma (a tumor of the retina in the eye).

**bleb** See *blister*.

**bleeding** Hemorrhaging. Losing blood, typically because of injury to blood vessels. With simple bleeding, cleaning the site of injury and applying mild pressure or a bandage is sufficient treatment. If bleeding is caused by injury to a major blood vessel, emergency care is necessary. Spontaneous bleeding in the skin can represent a serious underlying illness and requires medical evaluation. Menstrual bleeding involves the normal expulsion of uterine tissue. See also *hemorrhage*; *menstruation*.

**blepharitis** Inflammation of the eyelids. Blepharitis occurs in two forms, anterior and posterior. Anterior blepharitis affects the outside front of the eyelid, where the eyelashes are attached. The two most common causes of anterior blepharitis are bacteria (*Staphylococcus*) and scalp dandruff. Posterior blepharitis affects the inner eyelid (the moist part that makes contact with the eye) and is caused by problems with the oil (meibomian) glands in this part of the eyelid. Two skin disorders can cause this form of blepharitis: rosacea and seborrheic dermatitis.

**blepharospasm** The involuntary, forcible closure of the eyelids. The first symptoms may be uncontrollable blinking. Only one eye may be affected initially, but eventually both eyes are usually involved. The spasms may leave the eyelids completely closed, causing functional blindness even though the eyes and vision are normal. Blepharospasm is a form of focal dystonia.

**blighted ovum** A fertilized ovum (egg) that did not develop or whose development ceased at an early stage, before 6 or 7 weeks of gestation. On the ultrasound examination of a blighted ovum, only the gestational sac that normally surrounds the embryo can be seen. There is usually no embryo inside the gestational sac. A blighted ovum is a form of early spontaneous abortion (miscarriage).

**blind** Unable to see. See also *blindness*.

**blinded study** A clinical trial of drugs in which the test participants do not know whether they are receiving the product being tested or a placebo (dummy). This blinding is intended to ensure that the study results are not affected by the power of suggestion (the placebo effect). See also *double-blinded study*.

**blindness** Loss of useful sight. Blindness can be temporary or permanent, and there are many causes of blindness. Damage to any portion of the eye, the optic nerve, or the area of the brain that is responsible for vision can lead to blindness. Also known as visually handicapped, visually impaired, and visually challenged. See also *blindness, legal*.

**blindness, legal** A degree of blindness that entitles a person to certain benefits according to the law. The definition of legal blindness varies from country to country. In the US, the definition of legal blindness that is used to determine eligibility for government disability benefits is as follows: **1** visual acuity of 20/200 or worse in the better eye with corrective lenses (20/200 means that a person must be at 20 feet from an eye chart to see what a person with normal vision can see at 200 feet); or **2** visual field restriction to 20 degrees diameter or less (tunnel vision) in the better eye. Note that these criteria do not necessarily indicate a person's ability to function.

**blindness, night** See *nyctanopia*.

**blindness, river** See *river blindness*.

**blister** A collection of fluid underneath the top layer of skin (epidermis). There are many causes of blisters, including burns, friction forces, and diseases of the skin. Also known as bleb and bulla.

**Bloch-Sulzberger syndrome** See *incontinentia pigmenti*.

**blocker, beta** See *beta blocker*.

**blood** The red fluid in the body that contains white and red blood cells, platelets, proteins, and other elements. Blood is transported throughout the body by the circulatory system. Blood flows in two directions: away from the heart (arterial blood) and toward the heart (venous blood). Arterial blood has a high concentration of oxygen and nutrients for body tissues, and venous blood is the means by which carbon dioxide is transported to the lungs for removal from the body. See also *blood cell*.

**blood cell** One of several different types of cells that make up the blood. The red blood cells (erythrocytes) contain hemoglobin, which carries oxygen in the blood. The white blood cells (leukocytes) are a blood-borne part of the immune system. The platelets help blood to clot. Together, these three types of cells make up about half of the volume of blood. The remainder is made up of plasma. See also *erythrocyte; leukocyte; plasma; platelet*.

**blood clot** A mass of coagulated blood. A blood clot can block a major blood vessel, causing stroke or other problems.

**blood clot, estrogen-associated** A blood clot associated with estrogen therapy. Blood clots are occasional but serious side effects of estrogen therapy. They occur most frequently with high doses of estrogen. Cigarette smokers on estrogen therapy are at a higher risk for blood clots than nonsmokers are. Therefore, patients requiring estrogen therapy are strongly encouraged to quit smoking. See also *estrogen; estrogen replacement therapy*.

**blood coagulation** The aggregation of blood platelets and other blood elements to form a semi-solid clot. Coagulation occurs under the influence of the clotting factors fibrinogen, prothrombin, and thrombin, which are normally activated in response to injury. Working together, these substances thicken the blood and produce fibrin, a substance that closes off the wound. When blood coagulates abnormally, dangerous blood clots can enter the bloodstream.

**blood conservation** Actions taken during medical treatment and surgery to limit the amount of donor blood needed.

**blood count, complete** See *CBC*.

**blood culture** A test that is designed to detect microorganisms, such as bacteria and fungi, in

blood. A sample of blood obtained using a sterile technique is placed in a culture medium and incubated in a controlled environment. If microorganisms grow, their type can be identified, and they can be tested against different antibiotics for proper treatment of the infection. Because microorganisms may be only intermittently present in blood, a series of blood cultures is often done before the result is considered negative. See also *bacteremia*; *sepsis*; *septicemia*.

**blood group** An inherited feature on the surface of the red blood cells. A series of related blood types constitutes a blood group system, such as the Rh or ABO system. The frequencies of the ABO and Rh blood types vary from population to population. In the US, the most common type is O+ (meaning O in the ABO system and positive in the Rh system), which is present in 37.4 percent of the population. The frequencies in the US (in descending order) are O+ (37.4 percent), A+ (35.7 percent), B+ (8.5 percent), O- (6.6 percent), A- (6.3 percent), AB+ (3.4 percent), B- (1.5 percent), and AB- (0.6 percent).

**blood group, ABO** See *ABO blood group*.

**blood in the urine** Blood that appears in the urine. Also known as hematuria. Gross hematuria refers to blood that is so plentiful in the urine that the blood is visible with just the naked eye. Microhematuria refers to blood in urine that is visible only under a microscope; there is so little blood that it cannot be seen without magnification. Hematuria, whether gross or microscopic, is abnormal and should be further investigated. It may or may not be accompanied by pain. Painful hematuria can be caused by a number of disorders, including infections and stones in the urinary tract. Painless hematuria can also be due to a large number of causes, including cancer.

**blood marker** A sign of a disease or condition that can be isolated from a blood sample. For example, the monoclonal antibody D8/17 is a diagnostic sign of pediatric autoimmune disorders associated with streptococcus.

**blood poisoning** A bacterial infection of the blood. See also *bacteremia*; *sepsis*; *septicemia*.

**blood pressure** The pressure of the blood within the arteries. Blood pressure is produced primarily by the contraction of the heart muscle. The traditional measurement of blood pressure is recorded by two numbers. The first number (the systolic pressure) is measured after the heart contracts, and it is the higher number. The second number (the diastolic pressure) is measured before the heart contracts, and it is the lower number. A

blood pressure cuff is used to measure pressure. See also *hypertension*; *hypotension*; *sphygmomanometer*.

**blood pressure, high** See *hypertension*.

**blood pressure, low** See *hypotension*.

**blood sugar, high** See *hyperglycemia*.

**blood sugar, low** See *hypoglycemia*.

**blood test** A test that requires a sample of blood. Some blood tests require only a finger stick, and others require a venipuncture (blood taken from a vein) or blood withdrawn from an artery.

**blood thinner** An anticoagulant agent; a medication that works against coagulating process of blood.

**blood titer** A blood test that tests for the level, or amount (titer), of something in the blood. For example, a strep titer looks for the level of streptococcus antibodies in the blood.

**blood transfusion** The transfer of blood or blood components from one person (the donor) into the bloodstream of another person (the recipient). Blood transfusion may be done as a lifesaving maneuver to replace blood cells or blood products lost through bleeding or due to depression of the bone marrow. Transfusion of one's own blood (autologous) is the safest method but requires advanced planning, and not all patients are eligible for it. Directed donor blood allows the patient to receive blood from known donors. Volunteer donor blood is usually most readily available and, when properly tested, has a low risk of side effects.

**blood urea nitrogen** A measure of the urea level in blood. Abbreviated BUN. Diseases that compromise the function of the kidney frequently lead to increased BUN levels.

**blood, urinary** See *blood in the urine*.

**blood-brain barrier** A protective network of blood vessels and cells that filters blood flowing to the brain. The blood-brain barrier normally prevents infectious agents and foreign substances from getting into the brain. Medications designed to work within the brain and spinal fluid must cross the blood-brain barrier to be effective.

**bloody nose** See *nosebleed*.

**bloody show** Literally, the appearance of blood, a classic sign of impending labor. The bloody show



consists of blood-tinged mucus created by extrusion and passage of the mucous plug that filled the cervical canal during pregnancy.

**bloody sputum** Coughed up blood or bloody mucus. Bloody sputum can be caused by infection in the lungs and airways, such as acute bronchitis or pneumonia, or cancer. Whenever bloody sputum is present and cannot be attributed to a curable infectious condition, a complete lung evaluation is warranted, including bronchoscopy, to be certain cancer is not present. Also known as hemoptysis.

**blot, Western** A technique in molecular biology that is used to separate and identify proteins. It is called a Western blot merely because it is similar to a Southern blot, which was named after its inventor, the British biologist M.E. Southern. For example, the Western blot assay method is commonly used to diagnose Lyme disease.

**Blount disease** See *tibia vara*.

**blue baby** See *cyanosis*.

**blush** Redness of the skin as a result of dilated capillaries, typically over the cheeks or neck. Blushing is an involuntary response of the nervous system that leads to widening of the capillaries in the involved skin. A blush is temporary, and it may be brought on by excitement, exercise, fever, or embarrassment. Also known as flush.

**BM** Physician's shorthand for black male.

**BMD** See *bone mineral density*.

**BMI** Body mass index.

**BMJ** *British Medical Journal*, one of the major general medical journals in the world. *BMJ* states that it "aims to help doctors everywhere practice better medicine and to influence the debate on health."

**BNP** See *B-type natriuretic peptide*.

**board certified** In medicine, a description for a physician who has taken and passed a medical specialty examination by one of several recognized boards of specialists. Before obtaining board certification, the physician must become board eligible.

**board eligible** In medicine, a description for a physician who has completed the requirements for admission to a medical specialty board examination but has not passed that examination. For example, a physician must have 3 years of training in an approved pediatric residency to be eligible for certification by the American Board of Pediatrics.

**body dysmorphic disorder** A psychiatric disorder characterized by excessive preoccupation with imagined defects in physical appearance. It is classified as an anxiety disorder, and it is believed to be a variant of obsessive-compulsive disorder. Also known as somatoform disorder and dysmorphophobia.

**body mass index** A key index for relating weight to height. Abbreviated BMI. BMI is a person's weight in kilograms (kg) divided by his or her height in meters squared. The National Institutes of Health (NIH) now defines normal weight, overweight, and obesity according to BMI rather than the traditional height/weight charts. Overweight is a BMI of 27.3 or more for women and 27.8 or more for men. Obesity is a BMI of 30 or more for either sex (about 30 pounds overweight). A very muscular person might have a high BMI without health risks.

**body surface area** The total surface area of the human body. The BSA is used in many measurements in medicine, including the calculation of drug dosages and the amount of fluids to be administered intravenously. Abbreviated BSA.

**body type** A somewhat old-fashioned term used to classify the human shape into three primary types: ectomorphic, mesomorphic, or endomorphic.

**bodywork** Any of a number of therapeutic or simply relaxing practices that involve the manipulation, massage, or regimented movement of body parts. Examples include massage, craniosacral therapy, and Pilates. Bodywork may be used as an adjunct to medical treatment, or it may be prescribed as a form of physical therapy for certain conditions.

**boil** A skin abscess that forms at a hair follicle infected with pus-forming bacteria. The main treatments include hot packs and draining (lancing) the boil when it is soft. Antibiotics are usually not very helpful in treating boils. A person who has a fever or long-term illness, such as cancer or diabetes, or is taking medications that suppress the immune system should contact a health care practitioner on developing a boil. Also known as furuncle.

**bone** The hard connective tissue that forms the skeleton of the body. It is composed chiefly of collagen fibers that contain calcium phosphate and calcium carbonate. Bones also serve as a storage area for calcium, playing a large role in calcium balance in the blood. The 206 bones in the human body serve a wide variety of purposes. They support and protect internal organs; for example, the ribs protect the lungs. Muscles pull against bones to make the body move. See also *bone marrow*.



**bone, breast** See *sternum*.

**bone, cuboid** The outer bone in the instep of the foot. It is called the cuboid bone because it is shaped like a cube. The cuboid bone is jointed in back with the heel bone (calcaneus) and in front with the bones just behind the fourth and fifth toes (metatarsals).

**bone, heel** See *calcaneus*.

**bone, sesamoid** A little bone that is embedded in a joint capsule or tendon; for example, the kneecap (patella).

**bone, shin** The larger of the two bones in the lower leg. The shin bone is anatomically known as the tibia. Its smaller companion is the fibula.

**bone cancer** A malignancy of bone. Primary bone cancer (cancer that begins in bone) is rare, but it is not unusual for cancers to metastasize (spread) to bone from other parts of the body, such as the breast, lung, and prostate. The most common type of primary bone cancer is osteosarcoma, which develops in new tissue in growing bones. Another type of cancer, chondrosarcoma, arises in cartilage. Ewing's sarcoma begins in immature nerve tissue in bone marrow. Osteosarcoma and Ewing's sarcoma tend to occur in children and adolescents, and chondrosarcoma occurs most often in adults. Pain is the most frequent symptom of primary and metastatic cancer in bone. Bone cancer can also interfere with normal movements and can weaken the bones, leading to fractures. Diagnosis of bone cancer is supported by findings of the medical history and examination, blood tests (including measuring the level of the enzyme for the enzyme alkaline phosphatase), and X-ray studies, and it is confirmed by a biopsy. Treatment depends on the type, location, size, and extent of the tumor. Surgery is often the primary treatment. Although amputation of a limb is sometimes necessary for primary bone cancer, chemotherapy has made limb-sparing surgery possible in many cases. Radiation may also be used.

**bone cyst, aneurysmal** A benign lesion in a bone that contains connective tissue and blood inside a thin bony shell. Aneurysmal bone cysts act like tumors and expand the bone, and they typically occur in the second decade of life. They can affect any bone in the arms, legs, trunk, or skull.

**bone cyst, simple** A solitary fluid-filled cavity (cyst) in a bone, usually in the shaft of a long bone, especially the humerus, in a child. A simple bone cyst can cause pain in or near the bone. Also known as unicameral bone cyst and solitary bone cyst.

**bone density** See *bone mineral density*.

**bone marrow** The soft blood-forming tissue that fills the cavities of bones and contains fat and immature and mature blood cells, including white blood cells, red blood cells, and platelets. Diseases or drugs that affect the bone marrow can affect the total counts of these cells.

**bone marrow aspiration** The removal of a small amount of liquid bone marrow through a needle. The needle is placed through the top layer of bone, and a liquid sample containing bone marrow cells is obtained through the needle by sucking (aspirating) it into a syringe. The suction causes pain for a few moments. Bone marrow aspiration is done to diagnose and follow the progress of various conditions, including anemia and cancer, and to obtain marrow for transplantation.

**bone marrow biopsy** The removal of a sample of bone marrow and a small amount of bone through a large needle. Two samples are taken. The first is bone marrow by aspiration (suction with a syringe). The second is a core biopsy to obtain bone marrow along with bone fibers. After the needle is removed, this solid sample is pushed out of the needle with a wire. Both samples are examined under a microscope to examine the cells and the architecture of the bone marrow.

**bone marrow transplant** A procedure in which diseased or damaged bone marrow is replaced with healthy bone marrow. The bone marrow to be replaced may be deliberately destroyed by high doses of chemotherapy and/or radiation therapy. Replacement marrow may come from another person, or the patient's own marrow may be removed and stored before treatment for later use. When marrow from an unrelated donor is used, the procedure is referred to as allogeneic. If the marrow is from an identical twin, it is termed syngeneic. Autologous bone marrow transplantation uses the patient's own marrow. Abbreviated BMT. See also *transplant*.

**bone mineral density** Also known as BMD and bone density. A measure of bone density, reflecting the strength of bones as represented by calcium content. The BMD test detects osteopenia (mild bone loss, usually without symptoms) and osteoporosis (more severe bone loss, which may cause symptoms). See also *osteopenia*; *osteoporosis*.

**bone scan** A nuclear medicine technique for creating images of bones on a computer screen or on film. A small amount of radioactive material is injected into a vein and travels through the bloodstream. It collects in the bones, especially in

abnormal areas of the bones, and is detected by an instrument called a scanner. Bone scans are used for the detection and monitoring of disorders that affect the bones, including Paget disease, cancer, infections, and fractures. Bone scanning is also helpful in evaluating and measuring the activity of certain joint diseases.

**bones, appendicular** See *bones of the arm, wrist, and hand*.

**bones, axial** See *bones of the head*.

**bones, lower extremity** See *bones of the leg, ankle, and foot*.

**bones of the arm, wrist, and hand** There are 64 bones in the upper extremities. They consist of 10 shoulder and arm, 16 wrist, and 38 hand bones. The 10 shoulder and arm bones are the clavicle, scapula, humerus, radius, and ulna on each side. The 16 wrist bones are the scaphoid, lunate, triquetrum, pisiform, trapezium, trapezoid, capitate, and hamate on each side. The 38 hand bones are the 10 metacarpal bones and 28 finger bones (phalanges). Also known as appendicular bones.

**bones of the head** There are 29 bones in the human head. They include 8 cranial bones, 14 facial bones, the hyoid bone, and 6 ear (auditory) bones. The 8 cranial bones are the frontal, 2 parietal, occipital, 2 temporal, sphenoid, and ethmoid bones. The 14 facial bones are the 2 maxilla, the mandible, 2 zygoma, 2 lacrimal, 2 nasal, 2 turbinate, vomer, and 2 palate bones. The hyoid bone is the horseshoe-shaped bone at the base of the tongue. The 6 small auditory bones (ossicles) are the malleus, incus, and stapes in each ear. Along with the bones of the trunk, also known as axial bones. See also *bones of the trunk*.

**bones of the leg, ankle, and foot** There are 62 lower extremity bones. They consist of 10 hip and leg, 14 ankle, and 38 foot bones. The 10 hip and leg bones are the innominate, or hip, bone (which is a fusion of the ilium, ischium, and pubis), and the femur, tibia, fibula, and patella (kneecap) on each side. The 14 ankle bones are the talus, calcaneus (heel bone), navicular, cuboid, internal cuneiform, middle cuneiform, and external cuneiform on each side. The 38 foot bones are the 10 metatarsals and 28 toe bones (phalanges).

**bones of the skeleton** The human body has 206 bones. These consist of 80 axial (head and trunk) bones and 126 appendicular (upper and lower extremity) bones. See also *bones of the arm, wrist, and hand; bones of the head; bones of the leg, ankle, and foot; bones of the trunk*.

**bones of the trunk** The 51 trunk bones consist of 26 vertebrae, 24 ribs, and the sternum. The 26 vertebrae comprise 7 cervical, 12 thoracic, and 5 lumbar vertebrae, plus the sacrum and the coccyx. The 24 ribs comprise 14 true ribs, 6 false ribs, and 4 floating ribs. The sternum is the breastbone. Along with the bones of the head, also known as axial bones.

**bony syndactyly** A condition in which the bones of the fingers or toes are joined together. Bony syndactyly is not the same as cutaneous syndactyly, which only involves webbing of the skin between the digits.

**bony tarsus** A structure that is made up of seven bones situated between the bones of the lower leg and the metatarsus bones of the feet. The seven bones of the bony tarsus are the calcaneus, talus (astragalus), cuboid, and navicular (scaphoid), plus the first, second, and third cuneiform bones. The bony tarsus contributes to the broad, flat framework of the foot.

**booster shot** An additional dose of a vaccine needed periodically to “boost” the immune system. For example, a booster shot of the tetanus and diphtheria (Td) vaccine is recommended for adults every 10 years.

**borborygmus** A gurgling, rumbling, or squeaking noise from the abdomen that is caused by the movement of gas through the bowels. Also known as stomach rumbling. The plural is borborygmi.

**borderline personality disorder** A personality type characterized by difficulty forming and keeping stable relationships, highly emotional or aggressive behavior, impulsivity, and rapid shifts in values, self-image, mood, and behavior.

**Bornholm disease** A viral infection that is most commonly caused by an enterovirus called Coxsackie B. Symptoms include fever, intense abdominal and chest pain, and headache. The chest pain is caused by inflammation of the tissue lining the lungs, and it is typically worsened by breathing or coughing. The illness usually lasts from 3 to 14 days. Also known as epidemic myalgia and pleurodynia.

**botox** A highly purified preparation of botulinum toxin A, a toxin produced by the bacterium *Clostridium botulinum*. Botox is injected, in very small amounts, into specific muscles, as a treatment. It acts by blocking the transmission of nerve impulses to muscles and so paralyzes (relaxes) the muscles. Botox treatment has found a growing number of uses from easing muscle spasms (as, for

example, in spastic cerebral palsy) to its increasingly widespread cosmetic use in flattening wrinkles.

**bottlefeeding** The practice of feeding an infant a substitute for breast milk. Pediatricians generally advise exclusively breastfeeding (that is, breastfeeding with no supplementary formula) for all full-term, healthy infants for the first 6 months of life. However, many infants are bottlefed today, at least in part. For infants to achieve normal growth and maintain normal health, infant formulas must include proper amounts of water, carbohydrate, protein, fat, vitamins, and minerals.

**botulinum toxin** A toxin produced by the bacterium *Clostridium botulinum*, which is the most poisonous biological substance known. Botulinum toxin is toxic to nerves. It binds to the nerve ending at the point where the nerve joins a muscle, blocking the release by the nerve of the chemical acetylcholine (the principal neurotransmitter at the neuromuscular junction), preventing the muscle from contracting. The result is weakness and paralysis of the muscle. Purified botulinum toxin A was the first bacterial toxin to be used as a medicine. It is marketed under the trade name Botox. See also *botox*; *botulism*.

**botulism** An uncommon but potentially very serious type of food poisoning that produces paralysis of muscles, from a nerve toxin called botulinum toxin that is produced by the bacteria *Clostridium botulinum*. There are various types of botulism, including food-borne, wound, infant intestinal, and adult intestinal botulism. The symptoms of botulism can range from mild, including transient nausea and vomiting, to severe that progress to heart and lung failure and death. Food-borne botulism occurs typically in unrefrigerated or poorly refrigerated foods and foods without preservatives, especially uncooked or half-cooked meats. It can be prevented by careful use of refrigeration and preservative techniques, and the toxin can be destroyed with heat. *Clostridium botulinum* and botulinum toxin might, it is feared, be misused as agents of bioterrorism. See also *bioterrorism*; *food poisoning*; *botox*.

**boutonneuse** See *typhus*, *African tick*.

**bowel** The small and large intestine.

**bowel disease, inflammatory** A group of chronic intestinal diseases characterized by inflammation of the bowel (the small and large intestine). Abbreviated IBD. The most common types of IBD are ulcerative colitis and Crohn's disease. The portion of the intestine that is affected becomes irritated and swollen, and ulcers may form. IBD can be lim-

ited to the intestine or associated with disease involving the skin, joints, spine, liver, eyes, and other organs. The cause is not always known, although it can be caused or made worse by infection. Symptoms include abdominal pain and diarrhea. Symptoms tend to wax and wane, and long remissions and even spontaneous resolution of symptoms are well known. Although people of any age can be affected, IBD is most common in young adults. Treatment involves dietary changes, the use of medicines, and sometimes surgery, depending on the type and course of the disease under care. Effective therapy exists for the majority of cases. Narcotics, codeine, and antidiarrheal medications should be avoided during severe episodes of IBD because they may cause dangerous colon swelling (toxic megacolon). See also *Crohn's disease*; *colitis*, *ulcerative*.

**bowel disorders and fiber** High-fiber diets help delay the progression of and number of bouts with diverticulosis. In many cases, high-fiber diets help reduce the symptoms of irritable bowel syndrome (IBS). It is generally accepted that a diet high in fiber is protective or at least reduces the incidence of colon polyps and colon cancer.

**Bowen's disease** See *cancer*; *skin*.

**bowlegs** A condition in which the legs curve out, leaving a gap between the knees, after infancy. Bowlegs can be corrected with surgery or casting. Also known as genu varum and tibia vara.

**BP** In general medicine, blood pressure. On a medical chart, you might see "BP90/60 T98.6 Ht60/reg R15," which signifies that the blood pressure (BP) is 90/60 mm Hg, the temperature (T) is 98.6° Fahrenheit, the heart rate (Ht) is 60 beats per minute and regular, and respirations are occurring at 15 per minute.

**BPH** Benign prostatic hyperplasia, benign prostatic hypertrophy.

**brace, foot drop** See *ankle-foot orthosis*.

**braces, dental** Devices used by orthodontists to move the position teeth or adjust underlying bone. Temporomandibular joint (TMJ) problems can also sometimes be corrected with dental braces. Teeth can be moved by removable appliances or by fixed braces. If there is crowding of teeth, some teeth may need to be extracted before braces are applied. Retainers may be necessary long after dental braces are placed, especially in orthodontic treatment of adults.

**brachial artery** The artery that runs from the shoulder down to the elbow. See also *brachial vein*.

**brachial plexus** A bundle of nerves that begins in the back of the base of the neck and extends through the armpit. It is formed by the union of portions of the fifth through eighth cervical spinal nerves and the first thoracic spinal nerve. Damage to the brachial plexus can affect nerves responsible for muscle function and sensation of the arm and chest.

**brachial vein** A vein that accompanies the brachial artery between the shoulder and the elbow. The route of the brachial vein is from the elbow up to the shoulder. See also *brachial artery*.

**brachy-** Prefix indicating short, as in brachycephaly (short head) and brachydactyly (short fingers and toes).

**brachycephaly** A condition in which the head is unusually short in diameter from front to back. Brachycephaly is frequently a feature in congenital malformation syndromes, including Down syndrome (trisomy 21).

**brachydactyly** A condition in which the fingers and toes are short and stubby. Brachydactyly is a common finding in malformation syndromes, such as Down syndrome (trisomy 21).

**brachytherapy** Radiation treatment given by placing radioactive material directly in or near the target, which is often a tumor. Brachytherapy for prostate cancer, for example, is also called interstitial radiation therapy or seed implantation. In brachytherapy for prostate cancer, radioactive seeds are implanted in the prostate. The seeds might be titanium-encased pellets that contain the radioisotope iodine-125.

**brady-** Prefix indicating slow, as in bradycardia (slow heart rate), bradykinesia (slow movement), and bradyphrenia (slow thought processes).

**bradycardia** A slow heart rate, usually defined as less than 60 beats per minute.

**bradykinesia** Slow movement. Bradykinesia is often associated with an impaired ability to adjust the body's position. Bradykinesia can be a symptom of nervous system disorders, particularly Parkinson's disease, or a side effect of medications.

**bradyphrenia** A slow thought process. Bradyphrenia can be a side effect of certain psychiatric medications.

**bradypnea** Abnormally slow breathing. A respiratory rate that is too slow. The normal rate of respirations (breaths per minute) depends on a number of

factors, including the age of the individual and the degree of exertion.

**Braille** A system of raised-dot writing for the blind in which each letter is represented as a raised pattern that can be read by touching it with the fingers. In Braille, dot patterns are assigned to letters of the alphabet, punctuation marks, and other symbols. Braille was devised by Louis Braille.

**brain** The portion of the central nervous system that is located within the skull. It functions as a primary receiver, organizer, and distributor of information for the body. It has a right half and a left half, each of which is called a hemisphere.

**brain, fornix of the** One of a pair of arching fibrous bands in the brain that connects the two lobes of the cerebrum.

**brain, water on the** See *hydrocephalus*.

**brain aneurysm** See *aneurysm, brain*.

**brain cancer** A malignant growth of the brain. See also *brain tumor*.

**brain death** The permanent, irreversible cessation of all brain functions. Brain death is not the same thing as a coma or vegetative state. The presence of brain death is legally synonymous with death itself in most US states.

**brain freeze** A headache that occurs when one puts ice, a cold food, or a chilled beverage in the mouth, chilling the roof of the mouth. Ice cream is by far the most frequent offender. Brain freeze is characterized by a stabbing, aching pain that begins a few seconds after ingestion of something cold. The pain peaks in 30 to 60 seconds. No treatment is required. Also known as an ice cream headache.

**brain malleability** See *brain plasticity*.

**brain plasticity** The phenomenon of change and learning in the adult brain. Also known as brain malleability.

**brain stem** The stem-like part of the base of the brain that is connected to the spinal cord. The brain stem controls the flow of messages between the brain and the rest of the body, and it also controls basic body functions such as breathing, swallowing, heart rate, blood pressure, consciousness, and whether one is awake or sleepy. The brain stem consists of the midbrain, pons, and medulla oblongata.

**brain stem glioma** A type of brain tumor that involves the glial cells.



**brain tumor** A benign or malignant growth in the brain. Primary brain tumors initially form in brain tissue. Secondary brain tumors are cancers that have spread (metastasized) to the brain tissue from tissue elsewhere in the body. Brain tumors can occur in people of any age.

**brain ventricle** One of the communicating cavities within the brain. There are four ventricles: two lateral ventricles, the third ventricle, and the fourth ventricle. The lateral ventricles are in the cerebral hemispheres. Each lateral ventricle consists of a triangular central body and four horns. The lateral ventricles communicate with the third ventricle through the interventricular foramen (opening). The third ventricle is a median (midline) cavity in the brain, bounded by the thalamus and hypothalamus on either side. In front, the third ventricle communicates with the lateral ventricles, and in back it communicates with the aqueduct of the midbrain (the aqueduct of Sylvius). The fourth ventricle is the most inferior of the four ventricles of the brain. It extends from the aqueduct of the midbrain to the central canal of the upper end of the spinal cord, with which it communicates by the two foramina (openings) of Luschka and the foramen of Magendie. The ventricles are filled with cerebrospinal fluid, which is formed by structures, called choroid plexuses, that are located in the walls and roofs of the ventricles.

**branchial cleft cyst** A cavity that is a remnant from embryologic development and is still present at birth in one side of the neck, just in front of the large angulated muscle on either side (the sternocleidomastoid muscle). The cyst may not be recognized until adolescence, when it enlarges its oval shape. Sometimes a branchial cleft cyst develops a sinus or drainage pathway to the surface of the skin, from which mucus can be expressed. Total surgical excision is the treatment of choice. Also known as branchial cyst.

**branchial cyst** See *branchial cleft cyst*.

**Braxton Hicks contraction** An irregular contraction of the womb (uterus) that occurs toward the middle of a woman's first pregnancy and earlier, and more intensely, in her subsequent pregnancies. Braxton Hicks contractions tend to occur during physical activity. The uterus tightens for 30 to 60 seconds, beginning at the top of the uterus, and the contraction gradually spreads downward before the uterus relaxes. Braxton Hicks contractions may be quite uncomfortable and sometimes difficult to distinguish from the contractions of true labor.

**BRCA1** A tumor suppressor gene that normally acts to restrain the growth of cells. Mutated forms of

BRCA1 and BRCA2 are responsible for about half the cases of inherited breast cancer, especially those that occur in relatively young women. From the words *breast* and *cancer*. See also *breast cancer susceptibility gene*.

**BRCA2** A tumor suppressor gene that normally acts to restrain the growth of cells. Mutations of BRCA2, like those of BRCA1, are responsible mainly for hereditary breast cancer. They seldom appear to be involved in sporadic, noninherited breast cancer—the 95 percent of breast cancer that does not run in families. Both BRCA1 and BRCA2 are large, complex genes. From the words *breast* and *cancer*. See also *breast cancer susceptibility gene*.

**breadbasket** A popular term for the stomach.

**breakbone fever** See *dengue fever*.

**breast** The front of the chest or the mammary gland. The mammary gland is a milk-producing gland that is largely composed of fat. Within the mammary gland are sac-like structures called lobules, which produce the milk, as well as a complex network of branching ducts. These ducts exit from the lobules at the nipple. The lobules and ducts are supported in the breast by surrounding fatty tissue and ligaments. The breast contains blood vessels and lymphatics, but no muscles. The lymphatics are thin channels similar to blood vessels; they do not carry blood, but they collect and carry tissue fluid, which ultimately reenters the bloodstream. Breast tissue fluid drains through the lymphatics into the lymph nodes located in the armpit and behind the breastbone (sternum). The appearance of the normal female breast differs greatly among individuals and at different times during a woman's life: before, during, and after adolescence; during pregnancy; during the menstrual cycle; and after menopause. The nipple of the breast becomes erect because of cold, breastfeeding, and sexual activity. The pigmented area around the nipple is called the areola. See also *gland, mammary*.

**breast, infiltrating ductal carcinoma of the** One of several recognized specific patterns of breast cancer that begins in the cells that form the ducts of the breast. The most common form of breast cancer, it may appear as a smooth-edged lump in the breast. On physical examination, this lump usually feels much harder or firmer than benign lumps in the breast.

**breast, infiltrating lobular carcinoma of the** The second most common invasive breast cancer. Infiltrating lobular carcinoma starts in the lobules, the glands that secrete milk, and then infiltrates surrounding tissue. Lobular carcinoma can occur in



more than one site in the breast or in both breasts at the same time (a bilateral lobular carcinoma).

**breast, Paget's disease of** The combination of scaly skin on the nipple that resembles eczema and an underlying cancer of the breast. The nipple is inflamed because of the presence of Paget's cells, large, irregular cells that are almost always associated with cancer in the breast. In Paget's disease, the nipple and areola (the area surrounding the nipple) are typically red, inflamed, and itchy. There may be crusting, bleeding, or ulceration. The nipple may be inverted (turned inward), and there may be a discharge from the nipple. Paget's disease of the breast accounts for a small but significant minority of all breast tumors. It usually occurs in women in their 50s, but it can occur at a later age. It is very rare in men. Also called Paget's disease of the nipple.

**breast absence** See *amastia*.

**breast augmentation** Artificial enlargement of the breasts. Breast augmentation may be done by insertion of a silicone bag (prosthesis) under the breast (submammary) or under the breast and chest muscle (subpectoral), after which the bag is filled with saline solution. This prosthesis expands the breast area to give the appearance of a fuller breast (increased cup size).

**breast cancer** A common form of cancer that begins in the breast. There are many types of breast cancer, and they differ in their capability of spreading to other body tissues (metastasis). Breast cancer can occur in both men and women, although it is more common in women. Some forms of breast cancer are genetic (inherited), and others are linked to exposure to cancer-causing substances, but most cases of breast cancer occur for unknown reasons. Risk factors for breast cancer may include genetic predisposition, as indicated by a history of breast cancer in close relatives; overexposure of the chest to radiation, smoking, childlessness, induced abortion, obesity and diet, and exposure to carcinogenic substances. Breast cancer is diagnosed with self-examination and physician examination of the breasts, mammography, ultrasound testing, and biopsy. Treatment depends on the type and location of the breast cancer, as well as the age and health of the patient. Options may include lumpectomy (removal of the small, cancerous area only), chemotherapy, radiation, and partial or total mastectomy. The American Cancer Society recommends that all women should perform regular breast self-exams and that women should have a baseline mammogram done between the ages of 35 and 40 years. After age 40, yearly mammograms are recommended. Breast cancer prevention includes diet changes, avoiding carcinogens when possible, and

screening. Most breast cancers are treatable when caught early, and survival rates are high. See also *breast cancer susceptibility gene*; *breast cancer, familial*; *breast, infiltrating ductal carcinoma of the*; *breast, infiltrating lobular carcinoma of the*; *mastectomy*.

**breast cancer, familial** A form of breast cancer that tends to occur in members of the same family. A number of factors have been identified as increasing the risk of breast cancer. One of the strongest is a family history of breast cancer in a relative. About 15 to 20 percent of women with breast cancer have such a family history of the disease, clearly reflecting the participation of inherited (genetic) components in the development of some breast cancers. Dominant breast cancer susceptibility genes, including BRCA1 and BRCA2, appear to be responsible for about 5 percent of all breast cancer. See also *BRCA1*; *BRCA2*; *breast cancer susceptibility gene*.

**breast cancer, male** Breast cancer in men. Male breast cancer is much less common than breast cancer in women. Fewer than 1 percent of persons with breast cancer are male. However, breast cancer is no less dangerous in males than in females. After the diagnosis of breast cancer is made, the mortality rates are virtually the same for men and for women.

**breast cancer susceptibility gene** An inherited factor that predisposes an individual to breast cancer. Two of these genes, BRCA1 and BRCA2, have been identified. Several other genes (those for Li-Fraumeni syndrome, Cowden disease, Muir-Torre syndrome, and ataxia-telangiectasia) are also known to predispose women to breast cancer. However, because all these known breast cancer susceptibility genes together do not account for more than a minor fraction of breast cancer that clusters in families, it is clear that more breast cancer genes remain to be discovered. See also *BRCA1*; *BRCA2*.

**breast implant** See *breast augmentation*.

**breast milk** Milk from the breast. Human milk contains a balance of nutrients that closely matches infant requirements for brain development, growth, and a healthy immune system. Human milk also contains immunologic agents and other compounds that act against viruses, bacteria, and parasites.

**breast reduction** Surgical reduction of breast size in order to reduce the weight of the breasts and relieve symptoms from unusually large, pendulous breasts. Breast reduction can relieve skin irritation of the chest, and pain in the back and shoulders. Also known as reduction mammoplasty.

**breastbone** See *sternum*.

**breastfeeding** The highly recommended practice of feeding an infant with the mother's natural milk. Breast milk contains vitamins, minerals, and enzymes that aid the baby's digestion, and immunity factors in breast milk can help infants fight off infections. Breast milk can be expressed, manually or with the assistance of a breast pump, for use while the mother is away, or breastfeeding and formula-feeding can be used together. The activity of breastfeeding has strong benefits for mothers as well as infants: It encourages the release of hormones that improve uterine muscle tone, and it may help to prevent breast cancer. The ability of the breast to produce milk diminishes soon after childbirth without the stimulation of breastfeeding. Also known as nursing. See also *lactation*.

**breathing** The process of respiration, during which air is inhaled into the lungs through the mouth or nose due to muscle contraction and then exhaled due to muscle relaxation.

**breech** The buttocks.

**breech birth** Birth of a baby with the buttocks, rather than the head, emerging first. Breech birth is more likely to cause injury to the mother or the infant than head-first birth. In many cases a baby in the breech position can be turned before delivery by using repeated, gentle massage.

**Brenner tumor** A tumor of the surface of the ovary. Brenner tumors are usually benign, but in rare cases, they are cancerous.

**bridge** **1** A set of one or more false teeth that is supported by a metal framework and used to replace one or more missing teeth. **2** A form of treatment that serves as a transition from a previous form of treatment and is followed with another form, such as in "bridge therapy." **3** Tissue that forms an arc over adjacent tissue(s). For example, heart tissue that has formed over a coronary artery, sometimes physically pinching the artery, is referred to as a myocardial bridge.

**Brill-Zinsser disease** Reactivation of epidemic typhus years after an earlier attack of the disease. *Rickettsia prowazekii*, the agent that causes epidemic typhus, remains viable for many years. When the host's defenses are down, it can be reactivated. See also *rickettsial diseases*; *typhus*, *epidemic*.

**brittle bone disease** See *osteogenesis imperfecta*.

**BRM** See *biological response modifier*.

**Broca area** An area of the cerebral motor cortex in the frontal lobe of the brain that is responsible for speech development. Damage to the Broca area can cause speech disorders, including aphasia, apraxia, and dyspraxia. See also *aphasia*; *apraxia of speech*; *dyspraxia of speech*.

**Broda test** See *basal temperature*.

**bronchi** The plural of bronchus.

**bronchiectasis** Permanent abnormal widening of the bronchi (air tubes that branch deep into the lungs). Bronchiectasis can cause recurrent lung infections, a disabling cough, shortness of breath, and coughing up blood.

**bronchiole** The tiny branch of air tubes within the lungs that is a continuation of the bronchus. The bronchioles connect to the alveoli (air sacs).

**bronchiolitis** Inflammation of the bronchioles, usually due to viral infections.

**bronchitis** Inflammation and swelling of the bronchi. Bronchitis can be acute or chronic.

**bronchitis, acute** An infection of the bronchi of recent origin, typically characterized by cough, chest discomfort, and production of mucus (sputum). Acute bronchitis is treated with antibiotics.

**bronchitis, chronic** Inflammation and swelling of the lining of the airways, leading to narrowing and obstruction generally resulting in daily cough. The inflammation stimulates production of mucus, which can cause further blockage of the airways. Obstruction of the airways, especially with mucus, increases the likelihood of bacterial lung infection. Chronic bronchitis is common in persons who have smoked for extended periods.

**bronchopulmonary dysplasia** A chronic lung disease in infants who received mechanical respiratory support with high oxygenation in the neonatal period.

**bronchopulmonary segment** A subdivision of one lobe of a lung, based on the connection to the segmental bronchus. For example, the right upper lobe of the lung has apical, anterior, and posterior segments.

**bronchoscope** A thin, flexible instrument with a lighted viewing tube that is used to visualize the air passages to the lungs.

**bronchoscopy** A procedure using a bronchoscope to diagnose and treat lung conditions and disease. See also *bronchoscope*.

**bronchospasm** A temporary narrowing of the airways in the lung. Bronchospasm causes the breathing difficulties seen in asthma. See also *asthma*.

**bronchospasm, exercise-induced** See *asthma, exercise-induced*.

**bronchus** A large air tube that begins at the end of the trachea and branches into the lungs. The supporting walls of the bronchus are made up in part of cartilage.

**Brown's syndrome** An eye abnormality that can present at birth characterized by an inability to elevate the eyeball when trying to move the eyeball to the outside. Brown's syndrome can also be caused by other conditions that affect the normal function of the eye muscles, such as nodules from rheumatoid arthritis or rare tumors in the eye muscle.

**Brucellosis** An infectious disease characterized by rising and lowering (undulant) fever, sweating, muscle and joint pains, and weakness. Brucellosis is caused by the bacterium *Brucella*, which can be transmitted in unpasteurized milk from cattle, sheep, and goats; cheese made from this unpasteurized milk; and contact with diseased animals. Antibiotics are used to treat Brucellosis. Also known as undulant fever.

**bruise** Injury of the soft tissues that results in breakage of the local capillaries and leakage of red blood cells. In the skin it can be seen as a reddish-purple discoloration that does not blanch when pressed. When a bruise fades, it becomes green and brown, as the body metabolizes the blood cells in the skin. It is best treated with local application of a cold pack immediately after injury. Also known as contusion.

**bruit** A sound heard over an artery or vascular channel, reflecting turbulence of flow. Most commonly, a bruit is caused by abnormal narrowing of an artery. Listening for a bruit in the neck with a stethoscope is a simple way to screen for narrowing (stenosis) of the carotid artery, which can be a result of cholesterol plaque accumulation.

**Brushfield spot** A little white spot on the surface of the iris. Brushfield spots are arranged in a ring, concentric with the pupil. These spots occur in normal children but are far more frequent in those with Down syndrome. Also called speckled iris.

**bruxism** Grinding and gnashing of the teeth. Bruxism is due to clenching of the teeth other than in chewing and is associated with forceful lateral or protrusive jaw movements. This results in the grind-

ing or rubbing together of the teeth. Bruxism can injure teeth and cause local pain in the mouth or jaw and may contribute to temporomandibular joint (TMJ) syndrome.

**BSA** See *body surface area*.

**B-type natriuretic peptide** A 32-amino-acid polypeptide secreted by the ventricles of the heart in response to excessive stretching of heart muscle cells. The levels of B-type natriuretic peptide are elevated in patients with congestive heart failure, and correlate with both the severity of symptoms and the prognosis. Also known as BNP.

**bubo** An enlarged lymph node that is tender and painful. Buboes particularly occur in the groin and armpit (the axillae). These swollen glands are seen in a number of infectious diseases, including gonorrhea, syphilis, tuberculosis, and the eponymous bubonic plague.

**bubonic plague** An infectious disease that is caused by the bacterium *Yersinia pestis* and is transmitted to humans from infected rats by the oriental rat flea. It is named for the characteristic feature of buboes (painfully enlarged lymph nodes) in the groin, armpits, neck, and elsewhere. Other symptoms of bubonic plague include headache, fever, chills, and weakness. Bubonic plague can lead to gangrene (tissue death) of the fingers, toes, and nose. Also called Black Death and Black Plague.

**buccal mucosa** The inner lining of the cheeks and lips.

**bulbourethral gland** A pea-sized gland in the male located behind and to the side of the urethra that discharges a component of seminal fluid into the urethra. There are two bulbourethral glands, one on each side. Also known as the Cowper's gland.

**bulimia** An eating disorder characterized by periods of extreme overeating, often interrupted by periods of anorexia. Bulimia is usually accompanied by self-induced vomiting or other forms of purging, including the use of laxatives, obsessive exercise, or fasting. Bulimia can be life-threatening due to dehydration, and it can cause permanent damage to the bowels, liver, kidney, teeth, and heart. It also raises a person's risk of seizures. It is believed to be closely related to obsessive-compulsive disorder. Treatment may include cognitive behavior therapy, dietary and health education, and antidepressant medication. Also known as bulimia nervosa. See also *anorexia nervosa*; *body dysmorphic disorder*; *obsessive-compulsive disorder*.

**bulla** See *blister*.

**bullous** Characterized by blistering, such as a second-degree burn.

**bullous pemphigoid** A disease characterized by tense, blistering eruptions of the skin caused by inflammation associated with antibodies in the basement membrane layer of skin. It is diagnosed by skin biopsy showing the abnormal antibodies deposited in the skin layer. Treatment is with topical cortisone creams but sometimes requires high doses of cortisone (steroids) or other medicines taken internally.

**bump** A raised area resulting from blood and serum leaking from injured blood vessels into the tissues, as well as from the body's inflammatory response to the injury. A purplish, flat bruise that occurs when blood leaks out into the top layers of skin is referred to as an ecchymosis.

**BUN** Blood urea nitrogen.

**bunion** A localized, painful swelling at the base of the big toe due to new bone formation. The affected toe is often curved outward. Bunions are frequently associated with inflammation of the nearby bursa (bursitis) and degenerative joint disease (osteoarthritis). Bunions most commonly affect women, particularly those who wear tight-fitting shoes and high heels. Treatment includes rest, a change in shoes, foot supports, medications, or surgery.

**Burkitt lymphoma** A type of non-Hodgkin lymphoma that most often occurs in young people between the ages of 12 and 30. Burkitt lymphoma usually causes a rapidly growing tumor in the abdomen and, less often, tumors in the testis, sinuses, bone, lymph nodes, skin, bone marrow, or central nervous system. Burkitt lymphoma is a tumor of B cell origin. See also *lymphoma, non-Hodgkin's*.

**burn** Damage to the skin or other body parts caused by extreme heat, flame, contact with heated objects, or chemicals. Burn depth is generally categorized as first, second, or third degree. The treatment of burns depends on the depth, area, and location of the burn, as well as additional factors, such as material that may be burned onto or into the skin. Treatment options range from simply applying a cold pack to emergency treatment to skin grafts.

**burn, first degree** A superficial burn with similar characteristics to a typical sunburn. The skin is red in color, without blistering, sensation is intact, and the burn is usually somewhat painful.

**burn, second degree** A burn severe enough to cause blistering of the skin. The pain of a second-degree burn is usually somewhat more intense than the pain of a first-degree burn.

**burn, third degree** A burn in which the damage has progressed to the point of skin death. The skin is white and without sensation. In extreme cases damage may extend beyond the skin and into underlying tissue. In these cases the skin may be blackened or burned away. Unless skin grafts are feasible, loss of the affected limb, permanent disfigurement, and even death are likely in such severe cases.

**burning mouth syndrome** An intense burning sensation on the tongue, often at the tip of the tongue. Burning mouth syndrome tends to develop in "supertasters"—people with an unusually large density of taste buds, each surrounded by pain fibers—and in postmenopausal women, who may lose their ability to sense bitter tastes as a result of burning mouth syndrome.

**burp** **1** Gas brought up from the stomach through the mouth, producing a guttural noise. **2** As a verb, to bring up gas from the stomach through the mouth. Also, to help a baby bring up gas after feeding, by rubbing or patting its back. Also known as eructation.

**bursa** A closed, fluid-filled sac that functions as a gliding surface to reduce friction between tissues of the body. When a bursa becomes inflamed, the condition is known as bursitis.

**bursitis** Inflammation of a bursa, causing pain and tenderness. See also *bursa*; *bursitis, aseptic*; *bursitis, calcific*; *bursitis, elbow*; *bursitis, hip*; *bursitis, knee*; *bursitis, septic*; *bursitis, shoulder*.

**bursitis, aseptic** Bursitis that is not due to an infectious condition. Treatment of noninfectious bursitis includes rest, ice, and medications for inflammation and pain. Sometimes local cortisone injections are given to quiet inflammation.

**bursitis, calcific** Chronic bursitis with calcification of the bursa. The calcium deposition can occur as long as the inflammation is present.

**bursitis, elbow** Inflammation of the bursa at the tip of the elbow, called the olecranon bursa. The olecranon bursa is a common site of bursitis.

**bursitis, hip** Inflammation of a bursa of the hip. There are two major bursae of the hip, which is a common location for bursitis.

**bursitis, knee** Inflammation of a bursa of the knee. There are three major bursae of the knee, which is a common site for bursitis.

**bursitis, septic** Inflammation of a bursa due to infection, usually with bacteria. Septic bursitis is treated with antibiotics, aspiration, and surgery. Also known as infectious bursitis.

**bursitis, shoulder** Inflammation of a bursa of the shoulder. There are two major bursae of the shoulder, which is a common location for bursitis.

**butterfly rash** A red, flat, butterfly-shaped facial rash over the bridge of the nose. More than half of patients with systemic lupus erythematosus develop this characteristic rash. The butterfly rash of lupus is typically painless and does not itch. Along with inflammation in other organs, the rash can be precipitated or worsened by exposure to sunlight. This photosensitivity can be accompanied by a worsening of inflammation throughout the body, causing a flare-up of the disease. A somewhat similar rash can also occur in other conditions, such as rosacea. Also known as a malar rash. See also *lupus*; *lupus, discoid*; *lupus erythematosus, systemic*.

**bypass** An operation in which a new pathway is created for the transport of substances in the body.

**bypass, cardiopulmonary** A bypass of the heart and lungs as, for example, in open heart surgery. In this procedure, blood returning to the heart is diverted through a heart-lung machine (a pump-oxygenator) before being returned to the arterial circulation.

**bypass, coronary** A form of bypass surgery that can create new routes around narrowed and blocked arteries, permitting increased blood flow to deliver oxygen and nutrients to the heart muscles. Also known as coronary artery bypass graft (CABG) surgery, it is an option for selected patients with significant narrowings and blockages of the heart arteries. The bypass graft for a CABG can be a vein from the leg or an inner chest-wall artery. CABG surgery is one of the most commonly performed major operations. Coronary artery disease develops because of hardening of the arteries (atherosclerosis) that supply blood to the heart muscle. Diagnostic tests include electrocardiograms (EKGs), stress tests, echocardiograms, and coronary angiographies.



# Cc

**C** **1** In genetics, cytosine, a member of the G-C (guanine-cytosine) base pair in DNA. **2** In bio-science, carbon, an essential element in the basic structure of living things.

**C1 through C7** The seven cervical vertebrae of the neck. C1 supports the head and is named atlas, for the Greek god who supported the world. C2 is called the axis because the atlas rotates about the odontoid process, a bony projection of the axis. C7 is sometimes called the prominent vertebra because of its long spine that projects from the back of the vertebral body at the base of the neck.

**CA 19-9** A tumor marker found in patients with colorectal, pancreatic, stomach, and bile duct cancer.

**CA 125** Cancer antigen 125, a protein normally made by certain cells in the body, including those of the ovaries, Fallopian tubes, uterus, cervix, and lining of the chest and abdominal cavities (the pleura and peritoneum). When CA 125 is found in higher than normal amounts (more than 35 kU/ml), it is considered a marker for cancer. Benign conditions that can raise CA 125 include infections of the lining of the abdomen and chest, menstruation, pregnancy, endometriosis, and liver disease. Benign tumors of the ovaries can also cause abnormal test results.

**CABG** Coronary artery bypass graft. See *bypass*, *coronary*.

**cachetic** Having cachexia. Patients with cancer, AIDS, and other serious chronic diseases may appear cachetic. See also *cachexia*.

**cachexia** General physical wasting with loss of weight and muscle mass due to a disease. Also known as marasmus.

**CAD** Coronary artery disease.

**caduceus** A staff with two snakes entwined about it, topped by a pair of wings. The caduceus was carried by the Greek messenger god Hermes, whose Roman counterpart was Mercury, and is therefore the sign of a herald. By a curious misconception, the caduceus also became the insignia of the US

Army Medical Corps and a well-known symbol of physicians and medicine. The Corps should have chosen the symbol of medicine: the rod of Aesculapius, which has only one snake and no wings. No wings were necessary because the essence of medicine was not speed. The single serpent that could shed its skin and emerge in full vigor represented the renewal of youth and health.

**caesarean section** A procedure in which an infant is surgically removed from the uterus rather than being born vaginally. Caesarean sections were performed in ancient civilizations to salvage babies upon the death of nearly full-term pregnant women. Julius Caesar is said to have been born by this procedure, hence the name. The term section in surgery refers to the division of tissue. In the case of a caesarean section, the abdominal wall of the mother and the wall of the uterus are divided in order to extract the baby. Also known as C-section.

**caesarean section, lower segment** A caesarean section in which the surgical incision is made in the lower segment of the uterus. Abbreviated LSCS.

**caesarean section, vaginal birth after** A vaginal delivery for a woman who previously had a caesarean section. It was once the rule that after a caesarean section, the next delivery also had to be by caesarean section. Now vaginal delivery after caesarean section is sometimes feasible. Age is one of the factors that need to be considered because women over 30 who try a vaginal delivery after a caesarean section are more likely than younger women to have a uterine rupture. Abbreviated VBAC.

**café au lait spot** A flat spot on the skin that has a color similar to that of coffee with milk (café au lait) in persons with light skin or that has a darker appearance than the surrounding skin in persons with dark skin. About 10 percent of the general population has café au lait spots, which can be removed with a Yag laser technique. Café au lait spots are normally harmless, but in some cases they are a sign of neurofibromatosis. The presence of six or more café au lait spots, each of which is 1.5 cm or more in diameter, is diagnostic of neurofibromatosis. See also *neurofibromatosis*; *Yag laser surgery*.

**caffeine** A stimulant compound found naturally in coffee, tea, cocoa (chocolate), and kola nuts (cola) and added to soft drinks, foods, and medicines. Caffeine can cause anxiety, insomnia, nervousness, and hypertension. Caffeine is a diuretic and increases urination. It can decrease a person's ability to lose weight because it stimulates insulin secretion, which reduces blood sugar, which increases hunger. Caffeine can help to relieve headaches, so a number of over-the-counter and

prescription pain relievers include it as an ingredient, usually with aspirin or another analgesic.

**Caffey disease** An inflammatory bone disorder seen only in newborn and very young babies, characterized by swelling of soft tissues, irritability, fever, and paleness. Also known as infantile cortical hyperostosis.

**calamine** An astringent made from zinc carbonate or zinc oxide, customarily used in lotion form to treat skin problems or insect bites that cause itching or discomfort.

**calcaneal spur** A bony spur, also known as a heel spur, that projects from the back or underside of the heel bone (the calcaneus) and that may make walking painful. Calcaneal spurs are associated with inflammation of the Achilles tendon (Achilles tendinitis), and cause tenderness and pain at the back of the heel, which is made worse by pushing off the ball of the foot. Spurs under the sole (the plantar area) are associated with inflammation of the plantar fascia, which is the bowstring-like tissue that stretches from the heel underneath the sole. These spurs can cause localized tenderness and pain that is made worse by stepping down on the heel. Calcaneal spurs and plantar fasciitis can occur alone, or they can be related to underlying diseases that cause arthritis, such as reactive arthritis and ankylosing spondylitis. Treatment is designed to decrease the inflammation and avoid reinjury. Heel lifts reduce stress on the Achilles tendon and relieve painful spurs at the back of the heel. Donut-shaped shoe inserts take pressure off plantar spurs. Infrequently, surgery is done on chronically inflamed spurs.

**calcaneocuboid joint** The joint located in the foot between the calcaneus bone and the cuboid bone. It is a gliding type of joint. The ligaments that serve to support and strengthen this joint are called the capsular, dorsal calcaneocuboid, bifurcated, long plantar, and plantar calcaneocuboid ligaments.

**calcaneus** The heel bone, a more or less rectangular bone at the back of the foot. Also known as os calcis.

**calcific bursitis** Chronic inflammation of a bursa (bursitis) that leads to calcium deposits in the bursa. The calcification can occur as long as the inflammation is present. See also *bursa*; *bursitis*.

**calcification** The process of suffusing tissues with calcium salts.

**calcified granuloma** A node-like type of tissue inflammation that has a specific appearance under

a microscope (granuloma) and contains calcium deposits. Because it usually takes some time for calcium to be deposited in a granuloma, it is generally assumed that a calcified granuloma is an old granuloma, or an old area of inflammation. For example, a calcified granuloma in the lung may be due to tuberculosis contracted years earlier that is now inactive and dormant.

**calcinosis** An abnormal deposit of calcium salts in body tissues. Examples include the calcifications in the skin from scleroderma and in the muscle from polymyositis.

**calcitonin** A hormone produced by the thyroid gland that lowers the levels of calcium and phosphate in the blood and promotes the formation of bone. Bone is in a constant state of remodeling. Old bone is removed by cells called osteoclasts, and new bone is added by cells called osteoblasts. Calcitonin inhibits bone removal by the osteoclasts and at the same time promotes bone formation by the osteoblasts. Calcitonin is given in hypercalcemia (high blood calcium) to lower the calcium level; in osteoporosis to increase bone density and decrease the risk of a fracture; and in Paget disease to decrease bone turnover and bone pain. Also known as thyrocalcitonin.

**calcium** A mineral found mainly in the hard part of bones, where it is stored. Calcium is added to bone by cells called osteoblasts and removed from bone by cells called osteoclasts. Calcium is essential for healthy bones and is also important for muscle contraction, heart action, and normal blood clotting. Food sources of calcium include dairy foods; some leafy green vegetables, such as broccoli and collards; canned salmon; clams; oysters; calcium-fortified foods; and soy foods, such as tofu. According to the National Academy of Sciences, adequate intake of calcium is 1 gram daily for both men and women. The upper limit for calcium intake is 2.5 grams daily.

**calcium deficiency** A low blood level of calcium (hypocalcemia), which can make the nervous system highly irritable, causing spasms of the hands and feet (tetany), muscle cramps, abdominal cramps, overly active reflexes, and so on. Chronic calcium deficiency contributes to poor mineralization of bones, soft bones (osteomalacia) and osteoporosis, and, in children, rickets and impaired growth.

**calcium excess** An elevated blood calcium level (hypercalcemia), which can cause muscle weakness and constipation, affect the conduction of electrical impulses in the heart (heart block), lead to calcium stones in the urinary tract, impair kidney

function through nephrocalcinosis, and interfere with the absorption of iron, predisposing the person to iron deficiency.

**calculus** A stone, as in the urinary tract, or calcium salt deposits on the teeth. In Latin, the word calculus means “a pebble.” Pebbles were once used for counting, from which came the mathematical field of calculus.

**calculus, renal** See *kidney stones*.

**calf** The belly or fleshy hind part of the back of the leg below the knee. The calf is made up mainly of the gastrocnemius muscle. Pain in the calf is commonly caused by muscle strain, but can be caused by blood clots in veins of the legs.

**caliper** **1** A metal or plastic instrument used to measure the diameter of an object. The skin-fold thickness in several parts of the body can be measured with calipers, as can fat deposits. This measurement is done in medicine, especially in the diagnosis and treatment of obesity, and in physical anthropology. Calipers are also used to measure the diameter of the pelvis in pregnant women to ensure that it is large enough to permit birth. **2** A type of leg splint.

**callus** **1** A localized, firm thickening of the superficial layer of skin as a result of repetitive friction. A callus on the skin of the foot may have become thick and hard from rubbing against an ill-fitting shoe. Calluses of the feet may lead to other problems, such as serious infections. Shoes that fit well can keep calluses from forming on the feet. Also known as keratoma. **2** Hard new bone substance that forms in an area of a bone fracture. It is part of the natural process of bone repair.

**calor** Heat, one of the four classic signs of inflammation together with dolor, rubor, and tumor (pain, redness, and swelling, respectively).

**calorie** A unit of food energy. The word calorie is ordinarily used instead of the more precise, scientific term kilocalorie. A kilocalorie represents the amount of energy required to raise the temperature of a liter of water 1° centigrade at sea level. Technically, a kilocalorie represents 1,000 true calories of energy.

**Campylobacter jejuni** A bacterium that typically infects the bowels. Now the leading cause of bacterial food poisoning, *Campylobacter jejuni* is most often spread by contact with raw or undercooked poultry. A single drop of juice from a contaminated chicken is enough to make someone sick. Symptoms tend to start 2 to 5 days after exposure

and typically last a week. They resemble the symptoms of viral gastroenteritis—diarrhea, fever, abdominal pain, cramping, nausea, and vomiting—but with *campylobacter*, fever is typical and the diarrhea is often bloody. Antibiotics can be helpful treatment. Most people recover completely. However, some suffer long-term consequences, such as arthritis or Guillain-Barré syndrome. Both are thought to occur when a person's immune system is activated by the *Campylobacter jejuni* and misdirected to attack the person's own body.

**Canavan disease** A progressive, inherited disorder of the central nervous system that is caused by a deficiency of the enzyme aspartoacylase. Signs appearing in children between 3 and 6 months of age include developmental delay, significant motor slowness, enlargement of the head (macrocephaly), loss of muscle tone (hypotonia), poor head control, and severe feeding problems. As the disease progresses, seizures, shrinkage of the nerve to the eye (optic atrophy), and often blindness develop, as do heartburn (gastrointestinal reflux) and deterioration of the ability to swallow. Canavan disease is inherited as an autosomal recessive condition, with both parents silently carrying a single Canavan gene and each of their children running a 25 percent risk of receiving both genes and having the disease. Canavan disease is more prevalent among individuals of Eastern European Jewish (Ashkenazi) background than in others. There is currently no effective treatment and affected children die in the first decade of life. Also known as spongy degeneration of the central nervous system and Canavan-Van Bogaert-Bertrand disease.

**cancer** An abnormal growth of cells that tend to proliferate in an uncontrolled way and, in some cases, to metastasize (spread) to other areas of the body. Cancer is not one disease; rather, it is a host of more than 100 different and distinctive diseases. A tumor can involve any tissue of the body. Most types of cancer are named for the type of cell or organ in which they start. If a cancer metastasizes, the new tumor bears the same name as the original primary tumor. Skin cancer is the most common type of cancer in both men and women. The second most common types of cancer are prostate cancer in men and breast cancer in women. Lung cancer is the leading cause of death from cancer for both men and women in the US. Cancer is not contagious. Also known as malignancy, malignant tumor, and malignant neoplasm. See also *cancer, causes*.

**cancer, bladder** See *bladder cancer*.

**cancer, bone** See *bone cancer*.

**cancer, brain** See *brain cancer*.

**cancer, breast** See *breast cancer*.

**cancer, breast, familial** See *breast cancer, familial*.

**cancer, breast, susceptibility gene** See *breast cancer susceptibility gene*.

**cancer, causes** Causes of cancer. In most individual cases, the exact cause of cancer is unknown. It's likely that each case represents an interplay of several factors, which may include increased genetic susceptibility; environmental insults, such as chemical exposure or smoking cigarettes; lifestyle factors, including diet; and damage caused by infectious disease. Although they are not causes per se, a number of factors—including gender, race, age, and the health of the patient's immune system—can influence the development of cancer. When common causes for a type of cancer are discovered, this information can be very helpful in prevention and sometimes in treatment. For example, the link between overexposure to the sun and skin cancer is well known, and individuals can easily reduce their risk of skin cancer by avoiding sun tanning and sunburns. Alcohol is associated with an increased risk of cancer of the esophagus, mouth, pharynx, larynx, liver, breast, rectum, and pancreas.

**cancer, cervical** A malignant tumor of the cervix, the lowest part of the uterus, which forms a canal that opens into the vagina. Regular pelvic exams and Pap tests are of great importance and can detect precancerous changes in the cervix. The most common symptom is abnormal bleeding. Cancer of the cervix can be diagnosed by using a Pap test or other procedures that sample the cervix tissue. Precancerous changes in the cervix may be treated with cryosurgery, cauterization, or laser surgery. Women who begin having sexual intercourse before age 18 and have many sexual partners are at increased risk. Furthermore, women whose partners begin having sexual intercourse at a young age and have many sexual partners, especially one who had cervical cancer, are at increased risk. The human papillomavirus (HPV) is a sexually transmitted virus that is a known cause of cervical cancer. Other risk factors include exposure before birth to the drug diethylstilbestrol (DES), smoking, and immunodeficiency. See also *Pap test*.

**cancer, colon** A malignant tumor arising from the inner wall of the large intestine (the colon). In the US, colon cancer is the third leading type of cancer in males and the fourth in females. Risk factors for cancer of the colon and rectum (colorectal cancer) include colon polyps, long-standing ulcerative colitis, and genetic family history. Most colorectal cancers develop from polyps. Removal of colon polyps

can prevent colorectal cancer. Colon polyps and early colon cancer can have no symptoms. Therefore, regular screening is important, starting at age 50 (or earlier, if added risk factors are present). Diagnosis can be made by barium enema or by colonoscopy, with biopsy confirmation of cancer tissue. Surgery is the most common treatment for colorectal cancer.

**cancer, colorectal** See *cancer, colon*.

**cancer, esophagus** See *esophageal cancer*.

**cancer, gastric** A malignant tumor of the stomach. Gastric cancer can develop in any part of the stomach and can spread from the stomach to other organs. Symptoms of stomach cancer are often vague, such as loss of appetite and weight. Gastric cancer is diagnosed via a biopsy of stomach tissue during an endoscopy. Also called stomach cancer.

**cancer, Hodgkin's lymphoma** A type of lymphoma (cancer of the lymphatic system). Also known as Hodgkin's disease. The most common symptom is painless swelling of the lymph nodes in the neck, underarm, or groin. Most patients are in their teens or 20s. It is diagnosed with a biopsy of an enlarged lymph node. Treatment usually includes radiation therapy or chemotherapy. Patients treated for Hodgkin's disease have an increased risk of developing other types of cancer, especially leukemia, later in life. See also *Hodgkin's disease*.

**cancer, kidney** A malignant tumor of the kidney. Childhood kidney cancer is different from adult kidney cancer. The most common type of childhood kidney cancer is Wilms tumor. The most common type of adult kidney cancer is renal cell cancer (also known as renal adenocarcinoma). A frequent sign of kidney cancer is blood in the urine. The diagnosis of kidney cancer is supported by findings of the medical history and examination, blood, urine, and X-ray tests, and is confirmed with biopsy. Kidney cancer is treated with surgery, embolization, radiation therapy, hormone therapy, biological therapy, or chemotherapy. See also *cancer, renal cell; Wilms tumor*.

**cancer, laryngeal** A malignant tumor of the voice box (larynx), which is located at the top of the windpipe (trachea). Cancer of the larynx occurs most often in people over the age of 55, especially those who have been heavy smokers. People who stop smoking can greatly reduce their risk. Hoarseness without pain can be a symptom of cancer of the larynx. The larynx can be examined with a viewing tube called a laryngoscope. Cancer of the larynx is usually treated with radiation therapy or surgery. Chemotherapy can also be used for laryngeal cancers that have spread.



**cancer, lung** A malignant tumor of the lung, the major organ of respiration. Lung cancer kills more men and women than any other form of cancer. Eight out of 10 lung cancers are due to damage caused by tobacco smoke. Persistent cough and bloody sputum can be symptoms of lung cancer. Diagnosis of lung cancer can be based on examination of sputum or on tissue examination with biopsy, using bronchoscopy, a needle through the chest wall, or surgical excision.

**cancer, male breast** See *breast cancer, male*.

**cancer, melanoma** A skin cancer that begins in cells called melanocytes, which normally grow together to form benign (noncancerous) moles. A change in size, shape, or color of a mole can be a sign of melanoma. Melanoma can be cured if it is detected early. If it is not detected early, however, it may spread to other areas of the body, and that can cause death. Diagnosis is confirmed with a biopsy of the abnormal skin. Sun exposure can cause skin damage, which can in turn lead to melanoma. See also *melanoma*.

**cancer, multiple myeloma** See *multiple myeloma*.

**cancer, myeloma** See *multiple myeloma*.

**cancer, non-Hodgkin's lymphoma** See *lymphoma, non-Hodgkin's*.

**cancer, oral** A malignant tumor of the mouth area. A sore in the mouth that does not heal can be a warning sign of oral cancer. A biopsy is the only way to determine whether an abnormal area in the oral cavity is cancerous. Oral cancer is almost always caused by tobacco (smoking and chewing) or alcohol use. Surgery to remove the tumor in the mouth is the usual treatment.

**cancer, ovarian** A malignant tumor of the ovary, the egg sac in a female. Women who have a family history of ovarian cancer are at an increased risk of developing ovarian cancer. Hereditary ovarian cancer makes up a small percentage of all cases of ovarian cancer. Three hereditary patterns have been identified: ovarian cancer alone, ovarian and breast cancers, and ovarian and colon cancers. Ovarian cancer is difficult to detect early because there usually are no symptoms and the symptoms that do occur tend to be vague. Detection involves physical examination (including pelvic exam), ultrasound, X-ray tests, CA 125 test, and biopsy of the ovary. Most ovarian growths in women under age 30 are benign (noncancerous), fluid-filled cysts.

**cancer, pancreatic** A malignant tumor of the pancreas. Pancreatic cancer has been called a "silent" disease because early pancreatic cancer usually does not cause symptoms. If the tumor blocks the common bile duct, and bile cannot pass into the digestive system, the skin and whites of the eyes may become yellow (jaundiced), and the urine may become darker as a result of accumulated bile pigment (bilirubin).

**cancer, penis** A malignant tumor in which cancer cells develop in the tissues of the penis. It is rare in the US. A physician should be consulted for growths or sores on the penis, any unusual discharge from the penis, or bleeding. If warranted, a biopsy is performed. If cancer is found, more tests are done to find out whether the cancer has spread to other parts of the body (staging). Treatment options include surgery, radiation therapy, chemotherapy, and biological therapy. The chance of recovery and choice of treatment depend on the stage of the cancer and the patient's general state of health. Men who are not circumcised at birth may have a higher risk of getting cancer of the penis.

**cancer, prostate** A malignant tumor of the prostate, the gland that produces some of the components of semen. Prostate cancer is the second leading cause of death of males in the US. It is often first detected as a hard nodule found during a routine rectal examination. The PSA blood test is a screening test for prostate cancer. Diagnosis of prostate cancer is established when cancer cells are identified in prostate tissue obtained via biopsy. In some patients, prostate cancer is life threatening. In many others, prostate cancer can exist for years without causing any health problems. Treatment options for prostate cancer include observation, radiation therapy, surgery, hormone therapy, and chemotherapy.

**cancer, rectal** A malignant tumor arising from the inner wall of the end of the large intestine (rectum). In the US, it is the third leading cause of cancer in males and the fourth in females. Risk factors include heredity, colon polyps, and long-standing ulcerative colitis. Most rectal cancers develop from polyps in the colon. Removal of these polyps can prevent cancer. Colon polyps and early rectal cancer can have no symptoms, so regular screening is important. Diagnosis can be made by barium enema or by colonoscopy, with biopsy confirmation of cancer tissue. Surgery is the most common treatment.

**cancer, renal cell** A malignant tumor that develops in the lining of the kidney tubules that filter the blood and produce urine. Also known as renal cell carcinoma and renal adenocarcinoma. See also *cancer, kidney*.



**cancer, skin** A malignant tumor of the outer surface of the body. Skin cancer is the most common cancer in the US. There are many types of skin cancer; the three most common types are basal cell carcinoma, squamous cell carcinoma, and the most deadly, melanoma. The main cause of skin cancer is ultraviolet light from sunlight. Tanning lamps are a hazard in this regard. Unexplained changes in the appearance of the skin that last longer than 2 weeks should be evaluated by a physician. The cure rate for skin cancer could be 100 percent if all skin cancers were brought to a physician's attention before they had a chance to spread. See also *basal cell carcinoma*; *squamous cell carcinoma*; *melanoma*.

**cancer, stomach** See *cancer*; *gastric*.

**cancer, testicular** A malignant tumor of the male sex organ (testicle) that normally produces the hormone testosterone. It is one of the most common cancers in young men. Most testicular cancers are found by men themselves, as lumps in the testicles. The risk of testicular cancer is increased in males whose testicles did not move down normally into the scrotum during childhood (undescended testicles). When a growth in a testicle is detected, cancer is confirmed after surgical removal of the affected testicle (orchiectomy) and examination of the tissue under a microscope. Testicular cancer is almost always curable if it is found early.

**cancer, thyroid** A malignant tumor of the gland in front of the neck that normally produces thyroid hormone, which is important to the normal regulation of the metabolism in the body. There are four major types of cancer of the thyroid gland: papillary, follicular, medullary, and anaplastic. Persons who received radiation to the head or neck in childhood should be examined by a physician for thyroid cancer every 1 to 2 years. The most common symptom of thyroid cancer is a lump, or nodule, that can be felt in the neck. The only certain way to tell whether a thyroid lump is cancer is by examining thyroid tissue obtained via biopsy.

**cancer, uterine** A malignant tumor of the uterus (womb), which occurs most often in women between the ages of 55 and 70. Abnormal bleeding after menopause is the most common symptom. Cancer of the uterus is diagnosed based on the results of a pelvic examination, Pap test, biopsy of the uterus, and/or dilation and curettage (D & C).

**cancer antigen 125** See *CA 125*.

**cancer survivor** Someone who has received the diagnosis of a potentially fatal form of cancer and is thereby forced to face his or her own mortality.

**cancer symptoms** Symptoms that may be associated with cancer, including changes in bowel or bladder habits, a sore that does not heal, unusual bleeding or discharge, thickening or a lump in the breast or any other part of the body, indigestion or difficulty swallowing, obvious change in a wart or mole, and a nagging cough or hoarseness. These symptoms are not always signs of cancer; they can result from less serious conditions. Some forms of cancer cause little or no discomfort until the disease is far advanced, so it is important to see a physician for regular checkups rather than wait for problems to occur.

**Candida albicans** A yeast-like fungal organism found in small amounts in the normal human intestinal tract. Normally kept in check by the body's own helpful bacteria, *C. albicans* can increase in numbers when this balance is disturbed causing candidiasis of the intestinal tract or yeast infections of other parts of the body. See also *candidiasis*.

**candidiasis** Disease caused by the yeast *Candida albicans*. *Candida albicans* can cause vaginal yeast infections, diaper rash, skin rashes that emerge in moist, warm folds of skin, and thrush (white patches inside the mouth and throat). Candidiasis tends to develop when the normal balance of bacteria is upset, as sometimes occurs with the use of antibiotics. Prevention measures include the use of probiotics, and in some cases, dietary changes. Candidiasis can be treated with antifungal medications. Candidiasis is usually a minor and easily addressed problem, but it can be an important problem for those with immune-system disorders, such as AIDS.

**canker sore** A common small, frequently painful and sensitive crater in the lining of the mouth. Also known as aphthous ulcer. Sores typically last for 10 to 14 days and generally heal without scarring.

**cannabis** Marijuana (*Cannabis sativa*), a drug derived from the family of plants that includes hemp. Cannabis can be smoked or eaten. Use of cannabis produces a mild sense of euphoria, as well as impairments in judgment and lengthened response time. Although cannabis use is illegal in most parts of the world, the plant appears to have some potential for medical use, particularly as a palliative for glaucoma and disease-related loss of appetite and wasting, as is often seen in cancer, AIDS, and other illnesses. In some areas of the US, individuals whose physicians recommend the medical use of cannabis can obtain special permission.

**cannula** A hollow tube with a sharp, retractable inner core that can be inserted into a vein, an artery, or another body cavity.

**capillary** A tiny blood vessel that connects an arteriole (the smallest division of an artery) with a venule (the smallest division of a vein). Although tiny, the capillary plays an important role in the circulatory system. The walls of capillaries act as semipermeable membranes that permit the exchange of various substances, including fluids and the gases oxygen and carbon dioxide, between the blood stream and the tissues of the body.

**capillary hemangioma** See *hemangioma, capillary*.

**capitation** In US health services, a fixed "per capita" amount that is paid to a hospital, clinic, or physician for each person served. If that person uses few services, the excess amount paid is potential profit for the payee. If the person uses many services, the payee may lose money.

**caps** Abbreviation for capsules.

**carbohydrate** One of the three nutrient compounds, along with fat and protein, used as energy sources (calories) by the body. Carbohydrates take the form of simple sugars or of more complex forms, such as starches and fiber. Complex carbohydrates come naturally from plants. Intake of complex carbohydrates, when they are substituted for saturated fat, can lower blood cholesterol. Carbohydrates produce 4 calories of energy per gram. When eaten, all carbohydrates are broken down into the sugar glucose.

**carbon monoxide poisoning** A potentially deadly condition caused by breathing carbon monoxide gas, which prevents oxygenation of the blood. Common causes of carbon monoxide poisoning include malfunctioning furnaces and the use of kerosene heaters or similar devices in unventilated indoor spaces. Carbon monoxide is also emitted by automobile and other engines, so these should not be run in unventilated spaces, such as closed garages. Inexpensive alarms are available that can detect dangerous buildups of carbon monoxide. The treatment for carbon monoxide poisoning is immediate reoxygenation of the blood in a hospital.

**carboxyhemoglobin** Hemoglobin that has carbon monoxide instead of the normal oxygen bound to it. Carbon monoxide has a much stronger binding to hemoglobin than oxygen. Carboxyhemoglobin is formed in carbon monoxide poisoning and leads to oxygen deficiency in the body. The source of the carbon monoxide may be exhaust (such as from a car, truck, boat, or generator), smoke from a fire, or tobacco smoke. The level of carboxyhemoglobin is a measure of the degree of carbon monoxide exposure.

**carbuncle** A skin abscess (boil) that extends into subcutaneous layers of skin, usually caused by local infection with the bacteria *Staphylococcus aureus*. Treatment includes antibiotics (typically in the form of topical creams) and, in severe cases, surgical drainage. See also *abscess*.

**carcinoembryonic antigen** A protein found in many types of cells that is associated with a developing fetus and tumors and measurable by blood testing. Abbreviated CEA. Conditions that increase CEA include smoking, infection, inflammatory bowel disease, pancreatitis, cirrhosis of the liver, and some benign tumors (in the same organs that have cancers with increased CEA). The normal level is less than 2.5 ng/ml (nanograms per milliliter) in an adult nonsmoker and less than 5.0 ng/ml in a smoker. Benign disease rarely elevates the CEA over 10 ng/ml. The main use of CEA test is as a tumor marker, especially with intestinal cancer. The most common cancers that elevate CEA are in the colon and rectum. Others include cancer of the pancreas, stomach, breast, and lung, as well as certain types of thyroid and ovarian cancer. Levels over 20 ng/ml before therapy are associated with cancer that has already metastasized (spread). CEA tests are useful in monitoring the treatment of CEA-rich tumors.

**carcinogen** A substance or an agent that causes cancer. The International Agency for Research on Cancer has classified many substances and processes as probably or definitely causing cancer in humans. The agency has divided these substances and processes into three categories: agents (such as arsenic, asbestos, and benzene); mixtures (such as in coal tars, tobacco products, and smoke); and exposures (such as in aluminum production, shoe manufacturing and repair, and the rubber industry). One of the best-known carcinogens is ultraviolet radiation from sunlight causing skin cancers.

**carcinogenic** Having a cancer-causing potential.

**carcinoma** Cancer that begins in the skin or in tissues that line or cover body organs. Examples are carcinoma of the breast, colon, liver, lung, pancreas, prostate, or stomach.

**carcinoma, large cell** See *large cell carcinoma*.

**carcinoma, squamous cell** Cancer that begins in squamous cells, which are thin, flat cells that resemble fish scales. Squamous cells are found in the tissue that forms the surface of the skin and the lining of some organs of the body. See also *carcinoma in situ, squamous cell*.

**carcinoma, transitional cell** Cancer that develops in the lining of the renal pelvis, ureter, or bladder.

**carcinoma in situ** Cancer that has stayed in the place where it began and has not spread to neighboring tissues (for example, squamous cell carcinoma in situ).

**carcinoma in situ, squamous cell** An early stage of skin cancer that develops from squamous cells (the flat, scale-like cells in the outer layer of the skin). The hallmark is a persistent, progressive, slightly raised, red, scaly, or crusted plaque that may occur anywhere on the skin surface or on mucosal surfaces, such as in the mouth. Under a microscope, atypical squamous cells are seen to have proliferated through the whole thickness of the epidermis (the outer layer of the skin) but not beyond. Squamous cell carcinoma in situ is commonly caused by sun exposure, but can be from prolonged exposure to arsenic. Also known as Bowen disease.

**carcinoma of the breast, infiltrating ductal**

One of several recognized specific patterns of cancer of the breast, so named because it begins in the cells that form the ducts of the breast. It is the most common form of breast cancer. On a mammogram, invasive ductal carcinoma is usually visualized as a mass with fine spikes radiating from the edges (spiculation). It can sometimes be felt as a firm lump in the breast. Treatment may include radiation, chemotherapy, and surgery.

**carcinoma of the breast, infiltrating lobular**

The second most common type of invasive breast cancer. Infiltrating lobular carcinoma starts in the glands that secrete milk (lobules). On a mammogram, a lobular carcinoma can look similar to a ductal carcinoma, appearing as a mass with fine spikes radiating from the edges (spiculation). Infiltrating lobular carcinoma can cause a thickening of the breast tissue. Lobular carcinoma can occur in more than one site in the breast or in both breasts at the same time. Treatment may include radiation, chemotherapy, and surgery.

**cardiac** Having to do with the heart.

**cardiac aneurysm** See *aneurysm, cardiac*.

**cardiac arrest** A heart attack in which the heart suddenly stops pumping sufficient blood. A cardiac arrest that results in the death of heart muscle is referred to as a myocardial infarction. See also myocardial infarction, acute.

**cardiac atrium** See atrium.

**cardiac conduction system** The electrical conduction system that stimulates the heart to contract and pump blood. This system generates electrical impulses and conducts them throughout the muscle of the heart. Among the major elements in the cardiac conduction system are the sinoatrial node, the atrioventricular (AV) node, and the autonomic nervous system. See also *atrioventricular node; autonomic nervous system; sinoatrial node*.

**cardiac defibrillator, implantable** A device that is designed to be put in the body to recognize certain types of abnormal heart rhythms (arrhythmias) and correct them by delivering precisely calibrated and timed electrical shocks to restore a normal heartbeat. Defibrillators continuously monitor the heart rhythm in order to detect overly rapid life-threatening arrhythmias, such as ventricular tachycardia (rapid regular beating of the ventricles, the bottom chambers of the heart) or ventricular fibrillation (rapid irregular beating of the ventricles). Today's implantable defibrillators can be implanted with less invasive surgical techniques than in the past.

**cardiac index** A cardiodynamic measure based on the cardiac output, which is the amount of blood the left ventricle ejects into the systemic circulation in one minute, measured in liters per minute (l/min). Cardiac output is indexed to a patient's body size by dividing by the body surface area to yield the cardiac index.

**cardiac muscle** A type of muscle tissue that is found only in the heart and is distinguishable from the two other forms of muscle, smooth muscle (that moves internal organs, such as the bowels, and vessels, such as the artery walls) and skeletal muscle (that powers joints). Cardiac muscle is responsible for pumping blood throughout the body.

**cardiac output** The amount of blood the heart pumps through the circulatory system in a minute. The amount of blood put out by the left ventricle of the heart in one contraction is called the stroke volume. The stroke volume and the heart rate determine the cardiac output. A normal adult has a cardiac output of 4.7 liters (5 quarts) of blood per minute.

**cardiac septum** The dividing wall between the right and left sides of the heart. That portion of the septum that separates the two upper chambers (the right and left atria) of the heart is termed the atrial (or interatrial) septum; the portion that lies between the two lower chambers (the right and left ventricles) of the heart is called the ventricular (or interventricular) septum.

**cardiac tamponade** See *tamponade, cardiac*.

**cardiac ventricle** See *ventricle, heart*.

**cardiologist** A physician who specializes in treating heart disorders.

**cardiology** The study and treatment of heart disorders.

**cardiomyopathy** Disease of the heart muscle (myocardium).

**cardiomyopathy, hypertrophic** A heart defect characterized by increased thickness (hypertrophy) of the wall of the left ventricle, the largest of the four chambers of the heart.

**cardioplegia** Paralysis of the heart, as may be done electively in stopping the heart during cardiac surgery. Cardioplegia may be done using chemicals, cold (cryocardioplegia), or electrical stimulation.

**cardiopulmonary** Having to do with both the heart and lungs.

**cardiopulmonary bypass** Bypass of the heart and lungs (for example, during open-heart surgery). Blood returning to the heart is diverted through a heart-lung machine (a pump-oxygenator) before it is returned to the arterial circulation. The machine does the work of both the heart and the lungs, by pumping blood as well as supplying oxygen to red blood cells.

**cardiopulmonary resuscitation** A life-saving emergency procedure that involves breathing for the victim and applying external chest compression to make the heart pump. Abbreviated CPR. In the early stages of a heart attack, death can often be avoided if a bystander starts CPR within 5 minutes of the onset of ventricular fibrillation. When paramedics arrive, medications and/or electrical shock (cardioversion) to the heart can be administered to convert ventricular fibrillation to a normal heart rhythm. Prompt CPR and rapid paramedic response can improve the chances of survival from a heart attack.

**cardiovascular** Relating to the circulatory system, which comprises the heart and blood vessels and carries nutrients and oxygen to the tissues of the body and removes carbon dioxide and other wastes from them. Cardiovascular diseases are conditions that affect the heart and blood vessels and include arteriosclerosis, coronary artery disease, heart valve disease, arrhythmia, heart failure, hypertension, orthostatic hypotension, shock, endocarditis, diseases of the aorta and its branches, disorders

of the peripheral vascular system, and congenital heart disease.

**cardiovascular system** The heart and blood vessels. Also known as circulatory system.

**cardioversion** The conversion of a cardiac rhythm or electrical pattern to another, generally from an abnormal one to a normal one. Cardioversion can be accomplished by using medications or by electrical shock with a special defibrillator.

**cardioverter** A defibrillator that is used in cardioversion (the conversion of one cardiac rhythm to another). See also *cardiac defibrillator, implantable*.

**carditis** Inflammation of the heart.

**care, ambulatory** See *ambulatory care*.

**care, managed** See *managed care*.

**care, nail** See *nail care*.

**care proxy, health** See *health care proxy*.

**caries** Dental cavities in the two outer layers of a tooth (the enamel and the dentin). Small caries may not cause pain, and may not be noticed by the patient. Larger caries can collect food, and the inner pulp of the affected tooth can become irritated by bacterial toxins or by foods that are cold, hot, sour, or sweet causing a toothache. Caries are caused by the *Streptococcus* bacteria, which produces an enamel-dissolving acid as it devours carbohydrate deposits (plaque) on the teeth. To prevent caries, one should brush and floss the teeth daily, use a bacteriocidal mouthwash, and have regular dental cleanings by a professional. If caries do occur, the eroded area can be cleaned and filled by a dentist to prevent further damage.

**carotene, beta** See *beta carotene*.

**carotenemia** An excessive blood level of carotene, which causes a temporary yellowing of the skin (pseudojaundice). Carotenemia is most commonly seen in infants fed too much mashed carrots and adults consuming high quantities of carrots, carrot juice, or beta carotene in supplement form.

**carotid** Pertaining to the carotid artery and the area near that key artery, which is located in the front of the neck.

**carotid artery** Either of the two key arteries located in the front of the neck, through which blood from the heart goes to the brain. The right

and left common carotid arteries are located on each side of the neck. Together, these arteries provide the principal blood supply to the head and neck. The left common carotid artery arises directly from the aorta. The right common carotid artery arises from the brachiocephalic artery, which, in turn, comes off the aorta. Each of the two divides to form external and internal carotid arteries. Cholesterol plaque on the inner wall of the carotid artery can lead to a stroke.

**carotid endarterectomy** An operation to clear the carotid artery of buildup of cholesterol-containing matter along its inner wall. See also *endarterectomy*.

**carpal tunnel** A tunnel in the wrist formed by bone and tissues in the palm side of the wrist that provides passage for the median nerve to the hand.

**carpal tunnel release** A surgical procedure to relieve pressure exerted on the median nerve within the carpal tunnel causing carpal tunnel syndrome. Surgical release is performed via a small incision, using conventional surgery techniques or a fiberoptic scope (endoscopic carpal tunnel repair).

**carpal tunnel syndrome** Compression and irritation of the median nerve as it passes under the transverse carpal ligament in the wrist. Abbreviated CTS. CTS can be due to trauma from repetitive work, such as that of retail checkers and cashiers, assembly line workers, meat packers, typists, writers, and accountants. Other factors that can cause CTS include obesity, pregnancy, hypothyroidism, arthritis, and diabetes. The symptoms of CTS include numbness, tingling, a "pins and needles" feeling especially at night in the hand, particularly in the thumb, index, and middle fingers. CTS can also cause wrist pain, weakness in the grip, and a feeling of hand incoordination. In some cases the pain seems to migrate up from the wrist and into the arm, shoulder, and neck. The diagnosis is suspected based on symptoms, supported by signs on physical examination, and confirmed by nerve conduction testing. Treatment depends on the severity of symptoms and the underlying cause. Early CTS is usually treated by modification of activities, a removable wrist brace, exercises and/or manipulation (massage), and anti-inflammatory medicines. If detected early, CTS is reversible. If numbness and pain continue in the wrist and hand, cortisone injection into the carpal tunnel can help. Surgery is used only when other treatments have failed. In advanced CTS, particularly if there is profound weakness and muscle atrophy (wasting), surgery is done to avoid permanent nerve damage.

**carrier test** A test designed to detect carriers of a gene for a recessive genetic disorder. For example, carrier testing is done for the sickle cell trait, thalassemia trait, and Tay-Sachs gene.

**cartilage** Firm, rubbery tissue that cushions bones at joints. A flexible kind of cartilage makes up other parts of the body, such as the larynx and the outside parts of the ears.

**casein** The main protein found in milk and other dairy products.

**cast** **1** A protective shell of plaster and bandage that is molded to protect a broken or fractured limb as it heals. **2** An abnormal mass of dead cells that forms in a body cavity. For example, casts of cells that form in the tubules of the kidneys are sometimes detected in urine samples.

**casting** The application of a molded orthopedic appliance, usually composed of plaster or fiberglass, to immobilize part or all of a limb for the purpose of healing injured tissues.

**casting, serial** The use of successive casts to reshape deformed or spastic limbs or contracted joints.

**castration** Removal or destruction of the sex glands. The term is usually used in reference to the testicles, but it also can apply to the ovaries.

**CAT scan** Computerized axial tomography scan. CAT scanning is a painless X-ray test in which a computer generates cross-section views of a patient's anatomy. It can identify normal and abnormal structures, and it can be used to guide procedures. Iodine-containing contrast material is sometimes used in CAT scanning. A patient who is allergic to iodine or contrast materials and is scheduled to have a CAT scan should notify the physician and the radiology staff about the allergy. Also known as CT scan.

**cat scratch disease** See *cat scratch fever*.

**cat scratch fever** An infection caused by the *Bartonella henselae* bacteria. Almost half of all domestic cats carry these bacteria and can transmit it to humans through a scratch or bite. Cat scratch fever causes swelling of the lymph nodes, sore throat, fatigue, fever, chills, sweats, vomiting, loss of appetite, and weight loss. There is usually a little bump (a papule), which may be pus-filled (a pustule), at the site of the scratch. In people with immunodeficiency, cat scratch fever can progress to bacillary angiomatosis, a bacterial skin infection that can be treated with the antibiotics rifampin, ciprofloxacin, trimethoprim-sulfamethoxazole, and gentamicin.



**catabolism** See *metabolism*.

**cataplexy** A body's persistence in unusual postures, with waxy rigidity of the limbs, mutism, and complete inactivity, regardless of outside stimuli, as is sometimes seen in catatonic schizophrenia.

**catalyst** A substance that speeds up a chemical reaction but is not consumed or altered in the process. Catalysts are of immense importance in chemistry and biology. All enzymes are catalysts that expedite the biochemical reactions necessary for life. The enzymes in saliva, for example, accelerate the conversion of starch to glucose, doing in minutes what would otherwise take weeks.

**cataplexy** A debilitating condition in which a person suddenly feels weak and collapses at times of strong emotion such as during laughter, anger, fear, or surprise. In so collapsing, people with cataplexy may injure themselves. For example, laughter and other emotions may trigger a reflex that can bring many of the muscles of the body to the point of collapse. Cataplexy often affects people who have narcolepsy.

**cataract** A clouding or loss of transparency of the lens in the eye as a result of increased water content. There are many causes of cataracts, including aging, cortisone medication, trauma, diabetes, and other diseases. Cataracts affect most people who live into old age. Symptoms include double or blurred vision and sensitivity to light and glare. A physician can diagnose cataracts by examining the eyes with a viewing instrument. Sunglasses can help to prevent cataracts. See also *cataract surgery*.

**cataract surgery** Removal of the clouded (cataractous) lens in its entirety via surgery and replacement of the lens with an intraocular lens (IOL) made of plastic. A typical cataract operation takes about an hour, requires local anesthesia only, and usually does not require hospitalization.

**catatonic** In a state of cataplexy. See *cataplexy*.

**cath** Medical shorthand for catheter or a procedure using a catheter.

**cathartic** A laxative.

**catheter** A thin, flexible tube.

**catheter, bladder** A flexible plastic tube inserted into the bladder. See also *catheter*; *Foley*; *catheter*; *indwelling bladder*.

**catheter, Foley** A flexible plastic tube inserted into the bladder to provide continuous urinary

drainage. After the catheter is inserted in the bladder, a balloon on the bladder end is inflated with air or fluid so that the catheter cannot be removed. Removal is accomplished by deflating the balloon and slipping the catheter out. See also *catheter*; *indwelling bladder*.

**catheter, indwelling bladder** A catheter inserted into the bladder that remains there to provide continuous urinary drainage. The principal type is the Foley catheter. See also *catheter*; *Foley*.

**catheter, IV** A catheter placed in a vein to provide a pathway for drugs, nutrients, fluids, or blood products. Blood samples can also be withdrawn through an IV catheter.

**catheter, oximetry** A catheter used with monitoring equipment that can measure the amount of oxygenated hemoglobin in the bloodstream. See also *catheter*; *Swan-Ganz*.

**catheter, PA** A catheter that is inserted into the pulmonary artery.

**catheter, Swan-Ganz** A style of oximetry catheter that is inserted into a major vein under the collarbone or in the neck, threaded through the right side of the heart, and then threaded into the pulmonary artery. Physicians can use monitoring equipment with a Swan-Ganz catheter to measure blood pressure inside the heart and to find out how much blood the heart is pumping.

**cathexis** In psychiatry, the concentration of psychic energy on an idea.

**cauda equina** A bundle of spinal nerve roots that arise from the end of the spinal cord. The cauda equina comprises the roots of all the spinal nerves below the first lumbar (L1) vertebra in the lower back.

**cauda equina syndrome** Impairment of the nerves in the cauda equina, characterized by dull pain in the lower back and upper buttocks and lack of feeling (analgesia) in the buttocks, genitalia, and thigh, together with disturbances of bowel and bladder function.

**caudad** Toward or of the feet or tail. The opposite of cranial. See also Appendix B, "Anatomic Orientation Terms."

**caudal** 1 An anatomic term pertaining to, situated in, or directed toward the tail or the hind part. 2 Inferior to another structure, in the sense of being below it.

## caudal anesthesia

**caudal anesthesia** Anesthesia produced by injection of a local anesthetic into the caudal canal, the sacral portion of the spinal canal. Caudal anesthesia is used to provide anesthesia and analgesia (pain relief) below the umbilicus. It may be the sole anesthetic or combined with general anesthesia. Also known as caudal epidural anesthesia or a caudal block.

**caudal regression syndrome** A disorder characterized by absence of all or part of the sacrum and dysfunction of the bowels, bladder, and legs. About 20 percent of children with caudal regression are born to mothers with diabetes. Treatment involves surgery to correct these defects, when possible.

**caul** Folk term for the membranes that surround the fetus in the womb, particularly for the presence of these membranes over the newborn infant's face or head at birth, a relatively common and usually harmless occurrence. In some cultures, the presence of a caul at birth is considered spiritually significant.

**cauliflower ear** An acquired deformity of the external ear to which wrestlers and boxers are particularly vulnerable, due to trauma. When a blood clot (hematoma) forms under the skin of the ear, the clot disrupts the connection of the skin to the ear cartilage. The cartilage has no other blood supply except from the overlying skin, so if the skin is separated from the cartilage, it is deprived of nutrients and dies. The ear cartilage then shrivels up to form the classic cauliflower ear, so named because the tissue resembles that lumpy vegetable's surface. Treatment involves draining the blood clot through an incision in the ear and then applying a compressive dressing, to sandwich the two sides of the skin against the cartilage.

**causalgia** Intense burning pain and sensitivity to the slightest vibration or touch, usually in the hand or foot, at a site some distance removed from a wound that has healed.

**causes of cancer** See *cancer, causes*.

**cauterization** The use of heat to destroy abnormal cells. Also known as diathermy and electrodiathermy.

**cavernous hemangioma** See *hemangioma, cavernous*.

**cavernous sinus** A large channel of venous blood that creates a cavity (sinus) bordered by the sphenoid bone and the temporal bone of the skull. The cavernous sinus is an important structure

because of its location and its contents, which include the third cranial (oculomotor) nerve, the fourth cranial (trochlear) nerve, parts 1 (the ophthalmic nerve) and 2 (the maxillary nerve) of the fifth cranial (trigeminal) nerve, and the sixth cranial (abducens) nerve.

**cavernous sinus syndrome** A condition characterized by swelling of the eyelids and the conjunctivae of the eyes, as well as paralysis of the cranial nerves that course through the cavernous sinus. It is caused by a cavernous sinus thrombosis.

**cavernous sinus thrombosis** A blood clot within the cavernous sinus. A thrombosis in this key crossroads causes cavernous sinus syndrome.

**cavity** See *caries*.

**cavity, abdominal** See *abdominal cavity*.

**CBC** Complete blood count, a set of values of the cellular (formed) elements of blood. CBC measurements are usually determined by specially designed machines that analyze the different components of blood in less than a minute. The values generally included in a CBC are the following:

- The number of white blood cells in a volume of blood. The normal range varies slightly among laboratories but is generally between 4,300 and 10,800 cells per cubic millimeter (cmm).
- The automated white cell differential, which is a machine-generated percentage of the different types of white blood cells, usually split into granulocytes, lymphocytes, monocytes, eosinophils, and basophils.
- Red cell count, which is the number of red blood cells in a volume of blood. The normal range varies slightly among laboratories but is generally between 4.2 and 5.9 million cells/cmm.
- The amount of hemoglobin in a volume of blood. The normal range for hemoglobin is different between the sexes; it is approximately 13–18 g/deciliter for men and 12–16 g/deciliter for women (international units 8.1–11.2 millimoles/liter for men and 7.4–9.9 millimoles/liter for women).
- Hematocrit, the ratio of the volume of red cells to the volume of whole blood. The normal range for hematocrit is different between the sexes and is approximately 45 to 52 percent for men and 37 to 48 percent for women.

- Mean cell volume, which is the average volume of a red cell. This is a calculated value derived from the hematocrit and red cell count, and the normal range is 86–98 femtoliters.
- Mean cell hemoglobin, which is the average amount of hemoglobin in the average red cell. This is a calculated value that is derived from the measurement of hemoglobin and the red cell count. The normal range is 27–32 picograms.
- Mean cell hemoglobin concentration, which is the average concentration of hemoglobin in a given volume of red cells. This is a calculated volume that is derived from the hemoglobin measurement and the hematocrit. The normal range is 32 to 36 percent.
- Red cell distribution width, which is a measurement of the variability of red cell size. Higher numbers indicate greater variation in size. The normal range is 11–15.
- Platelet count, which is the number of platelets in a volume of blood. Platelets are not complete cells; they are actually fragments of cytoplasm from a cell called a megakaryocyte that is found in the bone marrow. Platelets play a vital role in blood clotting. The normal range varies slightly among laboratories but is in the range of 150,000–400,000/cmm ( $150 \times 10^9/\text{liter}$  to  $400 \times 10^9/\text{liter}$ ).

**CBT** Cognitive behavior therapy.

**CCP antibody** See *citrulline antibody*.

**CD4** Transmembrane glycoprotein, which is expressed by T-4 cells (also known simply as T cells). See also *T cell*; *T-4 cell*.

**CD4 count, absolute** See *T-4 count*.

**CD8** Transmembrane glycoprotein expressed by T-8 cells. See also *T lymphocyte*, *cytotoxic*; *T-suppressor cell*.

**CDC** The Centers for Disease Control and Prevention, the US agency charged with tracking and investigating public health trends. A part of the US Public Health Services (PHS) under the Department of Health and Human Services (HHS), the CDC is based in Atlanta, Georgia. It publishes key health information, including weekly data on all deaths and diseases reported in the US and travelers' health advisories. The CDC also fields special rapid-response teams to halt epidemic diseases.

**cDNA** Complementary DNA.

**CEA** Carcinoembryonic antigen.

**CEA assay** CEA test.

**cecal** Pertaining to the cecum.

**cecum** The first portion of the large bowel, which is situated in the lower-right quadrant of the abdomen. The cecum receives fecal material from the small bowel (ileum), which opens into it. The appendix is attached to the cecum.

**celiac disease, adult** See *celiac sprue*.

**celiac sprue** An immune disorder whereby the small intestine is injured when exposed to gluten, a protein found in wheat and related grains. Celiac sprue causes impaired absorption and digestion of nutrients through the small intestine. Symptoms include frequent diarrhea and weight loss. A skin condition called dermatitis herpetiformis is sometimes associated. The most accurate test for celiac sprue is a biopsy of the small bowel. Treatment involves avoidance of gluten in the diet. Medications are used for refractory (stubborn) sprue. Also known as gluten enteropathy.

**cell** The basic structural and functional unit of any living thing. Each cell is a small container of chemicals and water wrapped in a membrane. There are 100 trillion cells in a human, and each contains all of the genetic information necessary to manufacture a human being. This information is encoded within the cell nucleus in 6 billion subunits of DNA called base pairs. These base pairs are packaged in 23 pairs of chromosomes, with 1 chromosome in each pair coming from each parent. Each of the 46 human chromosomes contains the DNA for thousands of individual genes.

**cell, alpha** See *alpha cell*, *pancreatic*.

**cell, beta** See *beta cell*, *pancreatic*.

**cell, delta** See *delta cell*, *pancreatic*.

**cell, germ** The egg or sperm. Each mature germ cell is haploid, meaning that it has a single set of 23 chromosomes that contains half the usual amount of DNA and half the usual number of genes. This makes germ cells notable exceptions to the usual rules governing chromosomes, genes, and DNA.

**cell, reproductive** See *cell*, *germ*.

**cell cloning** The process of producing a group of cells that are genetically identical (clones) to a single ancestral cell.

**cell cycle** The sequence of events within the cell between mitotic (cell) divisions. The cell cycle is conventionally divided into five phases: G0 (the gap); G1, (the first gap); S (the synthesis phase, during which the DNA is synthesized and replicated); G2 (the second gap); and M (mitosis). Cells that are not destined to divide again are considered to be in the G0 phase. The transition from G0 to G1 is thought to commit the cell to completing the cell cycle by dividing.

**cellulite** In popular language, deposits of fat that have a cottage cheese-like texture. Medically, cellulite is not considered abnormal.

**cellulitis** A spreading bacterial infection underneath the skin surface characterized by redness, warmth, swelling, and pain. Cellulitis commonly appears in areas where there is a break in the skin.

**Centers for Disease Control and Prevention** See *CDC*.

**Centigrade** A thermometer scale in which the freezing point of water at sea level is 0°C and the boiling point of water at sea level is 100°C. The Centigrade scale is used in most of the world to indicate the temperature on a thermometer, but the Fahrenheit scale is still popular in the US. This anachronism requires conversion from Centigrade (°C) to Fahrenheit (°F), and vice versa.  $1^{\circ}\text{C} = (5/9) (^{\circ}\text{F}-32)$ .  $1^{\circ}\text{F} = (9/5)(^{\circ}\text{C}) + 32^{\circ}$ .

**centimorgan** A unit of measure of genetic recombination frequency. Abbreviated cM. One cM is equal to a 1 percent chance that a marker at one genetic locus will be separated from a marker at another locus due to crossing over in a single generation. In humans, 1 cM is equivalent, on average, to 1 million base pairs.

**central auditory processing disorder** A neurological disorder in which a person has difficulty properly interpreting sounds received by the ears, particularly the phonemes of speech. Abbreviated CAPD. CAPD can result in difficulties with attention, speech production, and reading.

**central core disease of muscle** One of the conditions that produces “floppy baby” syndrome. Central core disease of muscle causes hypotonia (low muscle tone) in a newborn baby, slowly progressive muscle weakness, and muscle cramps after exercise. Muscle biopsy shows a key diagnostic finding of absent mitochondria in the center of many muscle fibers. It is caused by an abnormal gene on chromosome 19 involving ryanodine receptor 1, and is inherited as a dominant trait.

**central line** An infusion tube located in or near the heart, which is at the center of the circulatory system. For example, a Swan-Ganz catheter with its tip in the right atrium and ventricle of the heart is a central line.

**central nervous system** That part of the nervous system that consists of the brain and spinal cord. Abbreviated CNS. The CNS is one of the two major divisions of the nervous system. The other is the peripheral nervous system (PNS), which is outside the brain and spinal cord. The PNS connects the CNS to sensory organs, such as the eye and ear, and to other organs of the body, muscles, blood vessels, and glands.

**central nervous system, spongy degeneration of the** See *Canavan disease*.

**central vision** A process in which millions of cells change light into nerve signals that tell the brain what the person is seeing. As a person reads, drives, and performs other activities that require fine, sharp, straight-ahead vision, light is focused onto the macula in the center of the retina, the light-sensitive layer of tissue at the back of the eye.

**centromere** The “waist” of the chromosome that is essential for the division and retention of the chromosome in the cell. The centromere is a uniquely specialized region of the chromosome to which spindle fibers attach during cell division.

**cephal-** Prefix indicating the head.

**cephalgia** Headache.

**cephalgia, histamine** See *cluster headache*.

**cephalosporin antibiotics** A group of more than 20 antibiotic drugs that are based on compounds originally isolated from the fungus *Cephalosporium acremonium*. See also *antibiotic*.

**cephalothoracic lipodystrophy** A disorder characterized by painless symmetrical diffuse deposits of fat beneath the skin of the neck, upper trunk, arms, and legs. The condition is genetic and is inherited as an autosomal dominant trait. Also known as multiple symmetrical lipomatosis, Launois-Bensaude syndrome, Madelung disease, and familial benign cervical lipomatosis.

**cerclage** Encirclement with a ring, loop, wire, or ligature. Cerclage can be done around bone fragments to hold them together, but it usually refers to an operation performed on the cervix to prevent a miscarriage.

**cerebellar** Pertaining to the cerebellum, the part of the brain in the back of the head between the cerebrum and the brain stem.

**cerebellum** The portion of the brain that is in the back of the head, between the cerebrum and the brain stem. It is involved in the control of voluntary and involuntary movement as well as balance.

**cerebral** Of or pertaining to the cerebrum or the brain.

**cerebral aneurysm** See *aneurysm, brain*.

**cerebral fornix** An arching fibrous band in the brain that connects the two lobes of the cerebrum. There are two such bands, each of which is an arched tract of nerves.

**cerebral hemisphere** One of the two halves of the cerebrum, which is the largest part of the brain.

**cerebral palsy** An abnormality of motor function (the ability to move and control movements) that is acquired at an early age, usually less than 1 year, and is due to a brain lesion that is nonprogressive. Abbreviated CP. CP is frequently the result of abnormalities that occur while a fetus is developing inside the womb. Such abnormalities may include accidents of brain development, genetic disorders, stroke due to abnormal blood vessels or blood clots, or infection of the brain. In rare instances, obstetrical accidents during particularly difficult deliveries can cause brain damage and result in CP. CP can take three forms: spastic, choreoathetoid, and hypotonic (flaccid). In spastic CP, there is an abnormality of muscle tone in which one or more extremities (arms or legs) are held in a rigid posture. Choreoathetoid CP is associated with abnormal, uncontrollable writhing movements of the arms and/or legs. A child with hypotonic CP appears floppy—like a rag doll. Treatment may include the use of casting and braces to prevent further loss of limb function, speech therapy, physical therapy, occupational therapy, the use of augmentative communication devices, and the use of medications or botulism toxin (botox) injections to treat spasticity.

**cerebral ventricle** One of a system of four communicating cavities within the brain that are continuous with the central canal of the spinal cord. They include two lateral ventricles in the cerebral hemispheres, each consisting of a triangular central body and four horns. The lateral ventricles communicate with the third ventricle through an opening called the interventricular foramen. The third ventricle, a median (midline) cavity in the brain, is bounded by

the thalamus and hypothalamus on either side. In front, the third ventricle communicates with the lateral ventricles, and in back it communicates with the aqueduct of the midbrain (also known as the aqueduct of Sylvius). The fourth ventricle, which is the lowest of the four ventricles of the brain, extends from the aqueduct of the midbrain to the central canal of the upper end of the spinal cord, with which it communicates, through the two foramina of Luschka and the foramen of Magendie. The ventricles are filled with cerebrospinal fluid.

**cerebritis** Inflammation of the brain. Cerebritis can be caused by infection or inflammation from disease.

**cerebrospinal fluid** A watery fluid that is continuously produced and absorbed and that flows in the ventricles within the brain and around the surface of the brain and spinal cord. Abbreviated CSF. CSF is produced by the choroid plexus, a series of infolded blood vessels that project into the cerebral ventricles, and it is absorbed into the venous system. If production exceeds absorption, CSF pressure rises, and the result is hydrocephalus. This can also occur if the CSF pathways are obstructed, causing the fluid to accumulate. The CSF obtained during a lumbar puncture is analyzed to detect disease.

**cerebrovascular accident** See *stroke*.

**cerebrovascular disease** Disease of the arteries that supply blood to the brain. Cerebrovascular disease is usually caused by atherosclerosis and can lead to a stroke. See also *atherosclerosis; stroke*.

**cerebrum** The largest part of the brain, which is divided into two hemispheres (halves). The left and right hemispheres are connected by two arching bands of nerves (cerebral fornices). See also *cerebral fornix*.

**ceruloplasmin deficiency** A genetic disorder that is due to a lack of ceruloplasmin, a protein that is involved in iron transport. The absence of ceruloplasmin leads to the abnormal deposition of iron in the pancreas (causing diabetes), liver (causing cirrhosis), retina (damaging vision), and brain (causing dementia and Parkinson's disease). Aggressive treatment with deferoxamine, a chelating agent that takes up iron, halts the progression of these complications. Also known as aceruloplasminemia.

**cervical** Having to do with any kind of neck, including the neck on which the head is perched and the neck of the uterus.



**cervical cancer** See *cancer, cervical*.

**cervical cap** A specially fitted contraceptive device that bars the entry of sperm into the cervix. The cervical cap is a thimble-shaped dome made of latex rubber and is much smaller than a diaphragm. For best results, a cervical cap is customarily used with spermicidal gel or cream. See also *birth control; contraceptive*.

**cervical cerclage** The process of encircling a cervix that is abnormally liable to dilate (an incompetent cervix) with a ring or loop to prevent a miscarriage.

**cervical intraepithelial neoplasia** The growth of abnormal precancerous cells on the surface of the cervix. Grades from one to three (least to most) may be used to describe the degree of involvement.

**cervical rib** See *rib, cervical*.

**cervical vertebrae** The upper seven vertebrae in the spinal column, which make up the neck. They are designated C1 through C7, from the top down. See *C1 through C7*.

**cervicitis** Inflammation of the uterine cervix.

**cervix** The low, narrow part of the uterus, which forms a canal that opens from the uterus into the vagina. The inner surface of the cervix is covered with mucus. During ovulation, this mucus is specially adapted to speed sperm to the egg. The tiny opening of the cervix dilates during birth to permit the newborn's head to emerge.

**cervix, incompetent** A cervix that has an abnormal tendency to dilate and so may not be able to keep a fetus from being spontaneously aborted (miscarried).

**cesarean section** See *caesarean section*.

**CFS** Chronic fatigue syndrome.

**Chagas disease** An infectious disease found in Central and South America caused by the parasite *Trypanosoma cruzi*. The parasite can be transmitted through bites from bugs that carry it (known as kissing bugs) or via blood transfusion. Soon after infection, there may be symptoms such as swelling of the eye on one side of the face, usually at the bite wound, but many people do not become ill until many years after being infected. Infants and persons with immunodeficiency are at risk of severe infections and complications such as meningitis and heart failure. Also known as American trypanosomiasis. See also *kissing bugs*.

**chalazion** See *cyst, Meibomian*.

**CHAMPUS** Civilian Health and Medical Program of the Uniformed Services. CHAMPUS is a US federally funded health program that provides beneficiaries with medical care, supplemental to that available in US military and Public Health Service facilities. All CHAMPUS beneficiaries switch to using Medicare at age 65. CHAMPUS is like Medicare in that the government contracts with private parties to administer the program. CHAMPUS was revamped as a managed care system and renamed TRICARE.

**chancere** The classic nonpainful ulcer of syphilis that teems with spirochetes. A chancre forms in the first (primary) stage of syphilis, is highly contagious, and can last from 1 to 5 weeks. Syphilis can be transmitted from any contact with a chancre. If a chancre is outside the vagina or on the scrotum of the male, the use of condoms may not help in preventing transmission of syphilis. Likewise, if a chancre is in the mouth, merely kissing an infected individual can spread syphilis. See also *syphilis*.

**change of life** See *menopause*.

**Charcot-Marie-Tooth disease** A genetic disease of nerves that is characterized by progressively debilitating weakness, particularly of the limbs. The foremost feature is marked wasting of the extremities, particularly in the calves, resulting in "stork legs." The disease usually weakens the legs before it weakens the arms. Pes cavus (deformity of the foot) is often the first sign of the disease. The disease is one of the most common genetic diseases, and it is the most common genetic disorder of peripheral nerves. The disease can be inherited as an autosomal dominant trait, an autosomal recessive trait, or an X-linked trait. There are also sporadic cases in which there is no family history due to a new dominant mutation. Abbreviated CMT. Also known as peroneal muscular atrophy and hereditary motor and sensory neuropathy.

**charley horse** Slang for a cramp in a muscle in the leg, usually caused by a strain or injury. A charley horse can last anywhere from a few seconds to over a quarter of an hour. It is not uncommon for one to recur before it finally resolves.

**chart, Snellen** The familiar eye chart used to measure how well a person sees at various distances. A Snellen chart is imprinted with block letters that decrease in size line by line, corresponding to the distance at which that line of letters is normally visible.

**chase the dragon** A practice of heroin use that involves heating heroin and then inhaling it. This

practice carries a risk of irreversible brain damage and death.

**cheek** The side of the face, which forms the side wall of the mouth. The cheekbone is part of the temporal bone of the skull, and it provides the prominence of the cheek. The term cheek also refers to something that has the form of the human cheek, particularly with two laterally paired parts, such as a buttock.

**chemical menopause** See *menopause, chemical*.

**chemical reaction** A process in which one substance is transformed into another.

**chemokine** One of a large group of proteins that act as chemical messengers and were first found attracting white blood cells to areas of inflammation. Chemokines are involved in several forms of acute and chronic inflammation, infectious diseases, and cancer.

**chemokine receptor** A molecule that receives a chemokine and associated proteins (chemokine docks). Several chemokine receptors are essential co-receptors for the HIV virus.

**chemoprevention** The use of natural or laboratory-made substances to prevent cancer.

**chemotherapy** Of or pertaining to treatment with drugs to kill cancer cells. Most anticancer drugs are injected into a vein, but some are given by mouth. Chemotherapy is usually systemic treatment, meaning that the drugs flow through the bloodstream to nearly every part of the body. Chemotherapy is generally given in cycles: A treatment period is followed by a recovery period, another treatment period, and so on. The side effects of chemotherapy depend mainly on the drugs and doses the patient receives. Generally, anticancer drugs affect cells that divide rapidly, including blood cells, which fight infection, help the blood to clot, and carry oxygen to all parts of the body. When white blood cells are affected by anticancer drugs, patients are more likely to develop infections. When red blood cells are affected, they may have decreased energy. Cells that line the digestive tract also divide rapidly, so chemotherapy can cause loss of appetite, nausea and vomiting, hair loss or thinning, and mouth sores. For some patients, medicines can be prescribed to help with side effects, especially with nausea and vomiting. Usually these side effects gradually go away during the recovery period or after treatment stops. In some men and women, chemotherapy drugs may result in temporary or permanent loss of the ability to have children. For

men, sperm banking before treatment may be considered; women may choose to have eggs extracted and stored. Women's menstrual periods may stop, and women may have hot flashes and vaginal dryness due to induced menopause. In some cases, bone marrow transplantation and peripheral stem-cell support are used to replace bone marrow tissue that has been destroyed by the effects of chemotherapy. See also *adjuvant chemotherapy; cancer*.

**chemotherapy, adjuvant** See *adjuvant chemotherapy*.

**cherubism** A genetic disorder of childhood that leads to prominence of the lower face and an appearance reminiscent of the cherubs portrayed in Renaissance art. Cherubism is inherited as an autosomal dominant condition. The gene responsible for cherubism is called SH3BP2 (for SH3-domain binding protein 2). Exactly how a mutation in SH3BP2 leads to cherubism is not known.

**chest** The area of the body located between the neck and the abdomen. The chest contains the lungs, the heart, and part of the aorta. The walls of the chest are supported by the dorsal vertebrae, the ribs, and the sternum. Also known as thorax.

**chest film** See *chest X-ray*.

**chest pain** Pain in the chest that can be a result of many things, including angina, heart attack (coronary occlusion), and other important diseases. Chest pain is a warning to seek medical attention, so one should try not to ignore chest pain and "work through it."

**chest X-ray** A type of X-ray commonly used to detect abnormalities in the lungs. A chest X-ray can also detect some abnormalities in the heart, aorta, and the bones of the thoracic area.

**CHF** Congestive heart failure.

**Chiari malformation** A condition in which brain tissue protrudes into the spinal canal as a result of a small or misshapen skull. Chiari malformation is usually present at birth (congenital), but occasionally develops after birth. Also known as Arnold Chiari malformation.

**chickenpox** A highly infectious viral disease characterized by an itchy rash. Also known as varicella. It is caused by herpes zoster, a member of the herpes family of viruses. Chickenpox has nothing to do with chicken; the name originated to distinguish this mild pox from smallpox (chicken being used, as in chickenhearted, to mean weak or timid). Chickenpox is not a major matter unless it occurs in

an immunodeficient person or the pox become infected with bacteria through scratching. Treatment, other than the use of calamine lotion or other topical solutions to diminish itching, is not normally necessary. However, adults (and sometimes children) can have major problems from chickenpox, including pneumonia and encephalitis (inflammation of the brain) that can lead to difficulty with balance and coordination (cerebellar ataxia). Other serious complications can include ear infections, damaged nerves (palsies), and Reye's syndrome. In such cases, antiviral medications may be tried. Reinfection with chickenpox can occur. Reactivation of the chickenpox virus is responsible for shingles. The current aim in the US is to achieve universal immunization of children with the chickenpox vaccine. See also *chickenpox immunization*; *herpes zoster*; *neuralgia*, *postherpetic*; *shingles*.

**chickenpox immunization** A vaccination that prevents chickenpox. If an older person has not had chickenpox, the shot may be given at any time. All children, except those with compromised immune systems or known neurological conditions, are recommended to have the vaccination. See also *chickenpox*.

**chilblain** An injury due to cold temperatures that, although painful, causes little or no permanent impairment. It appears as red, swollen skin that is tender and hot to the touch and may itch. This can worsen to an aching, prickly ("pins and needles") sensation, and then numbness. It can develop in only a few hours in skin exposed to extreme cold. The treatment for chilblain is to stop exposure to cold, remove any wet or constrictive clothing, gently wash and dry the injured area, elevate the injured area, cover the injured area with layers of loose warm clothes, and allow the injured area to rewarm.

**child abuse** A complex set of behaviors that include child neglect and the physical, emotional, and sexual abuse of children. Although most people think first of physical abuse when they hear the term child abuse, physical abuse makes up only a small percentage of reported cases. Physical abuse is defined as physical injury inflicted upon the child with cruel and/or malicious intent, although the law recognizes that in some cases the parent or caretaker may not have intended to hurt the child; rather, the injury may have resulted from excessive discipline or physical punishment. Physical abuse includes punching, beating, kicking, biting, burning, shaking, or otherwise physically harming a child. Injuries that can be fatal include severe head trauma, shaken baby syndrome, trauma to the abdomen or chest, scalding, burns, drowning, suf-

focation, and poisoning. Child abuse should always be reported, investigated, and stopped.

**child health** The care and treatment of children. Child health is the purview of pediatrics, which became a medical specialty in the mid-nineteenth century. Before that time the care and treatment of childhood diseases were included within such areas as general medicine, obstetrics, and midwifery.

**childbed fever** Fever due to an infection after childbirth, usually of the placental site within the uterus. If the infection involves the bloodstream, it constitutes puerperal sepsis. Childbed fever was once a common cause of death for women of child-bearing age, but it is now comparatively rare in the developed world due to improved sanitary practices in midwifery and obstetrics. Also known as child-birth fever and puerperal fever.

**childbirth** See *labor*.

**childbirth fever** See *childbed fever*.

**childhood** **1** The time between birth until adulthood. **2** The time from infancy to the onset of puberty. During childhood, the potential of a unique human person must be nurtured by parents or parent figures.

**childhood disintegrative disorder** One of the pervasive developmental disorders (PDDs) characterized by apparently normal development for at least the first 2 years after birth, as manifested by the presence of age-appropriate verbal and nonverbal communication, social relationships, play, and adaptive behavior. Children with this disorder display significant loss of previously acquired skills (before age 10 years). This loss may affect expressive or receptive language, social skills or adaptive behavior, bowel or bladder control, play, or motor skills. Childhood disintegrative disorder also involves impairment in social interaction and communication, often with the development of repetitive stereotyped patterns of behavior, interests, and activities, including motor stereotypes and mannerisms. The loss of previously acquired skills distinguishes childhood disintegrative disorder from autism, another PDD. See also *autism*; *developmental disorder*.

**childhood schizophrenia** See *schizophrenia*, *childhood*.

**children's immunizations** Vaccinations given to children. In the US, it is currently recommended that all children receive vaccination against the following unless the child has special circumstances,

such as a compromised immune system or a neurological disorder:

- Diphtheria, tetanus, and pertussis (whooping cough), as separate vaccinations or in combination as DPT
- Haemophilus influenzae type B (HIB)
- Hepatitis B
- Measles, mumps, and rubella (German measles), as separate vaccinations or in combination as MMR
- Pneumococcal infections
- Poliovirus
- Tetanus (lockjaw)
- Varicella zoster virus (chickenpox)

**chimera** **1** An imaginary monster made up of incongruous parts. **2** In medicine, a person composed of two genetically distinct types of cells. This may be due to the fusion of two embryos at a very early (blastula) stage. More commonly today, the formation of a chimera is due to transplantation, such as when bone marrow from one person is used to reconstitute the bone marrow of an irradiated recipient. **3** A viral, bacterial, or other cell that seems to be composed of two genetically distinct strains, as might be seen when genetic engineering techniques are used to enclose therapeutic properties from one cell in another type of cell for delivery.

**chiropractic** A system of diagnosis and treatment based on the concept that the nervous system coordinates all of the body's functions and that disease results from a lack of normal nerve function. Chiropractic employs manipulation and adjustment of body structures, such as the spinal column, so that pressure on nerves coming from the spinal cord due to displacement (subluxation) of a vertebral body may be relieved. Practitioners believe that misalignment and nerve pressure can cause problems not only in the local area, but also at some distance from it. Chiropractic treatment appears to be effective for muscle spasms of the back and neck, tension headaches, and certain leg pain. It may or may not be useful for other ailments. Some chiropractors also recommend other forms of treatment, such as massage, diet changes, vitamins and minerals, and herbal supplements. See also *chiropractor*.

**chiropractor** A chiropractic practitioner. Becoming a doctor of chiropractic (DC) requires a minimum of 2 years of college and 4 years in a school of chiropractic medicine. Some chiropractors also earn a traditional medical degree (MD) or other additional qualifications. Not all chiropractors are alike in their practice. The International

Chiropractors Association believes that patients should be treated by spinal manipulation alone, whereas the American Chiropractic Association advocates a multidisciplinary approach that combines spinal adjustment with other modalities, such as physical therapy, psychological counseling, and dietary measures.

**chlamydia** The agent of a sexually transmitted disease, a type of bacteria found in the cervix, urethra, throat, or rectum that acts very much like gonorrhea in the way it is spread, the symptoms it produces, and its long-term consequences. Chlamydia is destructive to the Fallopian tubes, causing infertility, tubal pregnancy, and severe pelvic infection. It is common for infected women to have no symptoms. Chlamydia is associated with an increased incidence of preterm births. Also, an infant can acquire the disease during passage through the birth canal, leading to eye problems or pneumonia. Chlamydia is one of the reasons newborns are routinely treated with antibiotic eyedrops. Chlamydia can also cause inflammation of the urethra, epididymis, and rectum in men. A chronic form of arthritis, called reactive arthritis, can develop after chlamydia infection.

**chloroform** A clear, volatile liquid with a strong smell similar to that of ether. Chloroform was once administered by inhalation to produce anesthesia, given to relieve pain, and used as a remedy for cough. It is quite toxic to the kidneys and the liver.

**choana** The passageway from the back of one side of the nose to the throat. There are two choanae, one on either side of the nose. The choanae must be open to permit breathing through the nose.

**chocolate** A food or flavoring made from the seeds of the cacao or chocolate tree (*Theobroma cacao*). Chocolate is rich in flavinoids, compounds that act as antioxidants. Flavinoids may also lower blood pressure and improve blood flow by opening blood vessels. Thus, chocolate may have health benefits, provided it is consumed in moderation.

**choked disk** See *papilledema*.

**choking** Partial or complete obstruction of the airway, usually due to the presence of food, a toy, or another foreign body in the upper throat or trachea. See also *airway obstruction*.

**cholangiogram** A radiology procedure used to look at the gallbladder and bile ducts.

**cholangitis, primary sclerosing** See *primary sclerosing cholangitis*.



**cholecystectomy** Surgical removal of the gallbladder. This procedure may be done by laparoscopy or by open surgery.

**cholecystitis** Inflammation of the gallbladder. Cholecystitis is a complication of gallstones, and it is frequently associated with infection in the gallbladder. Risk factors for cholecystitis include age, obesity, female gender, multiple pregnancies, use of birth control pills, and heredity. The most common symptom is pain in the upper abdomen, although some patients have no symptoms. Diagnosis can be made with ultrasound of the abdomen. Surgery (standard or laparoscopic) is considered for patients with severe cholecystitis. In some mild cases, medication may be used instead to treat the infection and inflammation and to dissolve the gallstones.

**cholera** An infectious disease characterized by intense vomiting and profuse watery diarrhea and that rapidly leads to dehydration and often death. Cholera is caused by infection with the bacteria *Vibrio cholerae*, which may be transmitted via infected fecal matter, food, or water. With modern sanitation, cholera is no longer as common as it once was, but epidemics still occur whenever people must live in crowded and unsanitary conditions, such as in refugee camps. The disease is treated with intravenous fluids and with antibiotics. Cholera has also been known as Asian cholera, due to its one-time prevalence in that area of the world.

**cholescintigraphy** A diagnostic test in which a two-dimensional picture of a radiation source in the biliary system is obtained through the use of radioisotopes. The test is used to examine the biliary system and diagnose obstruction of the bile ducts (for example, by a gallstone or a tumor), disease of the gallbladder, and bile leaks.

**cholesterol** The most common type of steroid in the body. Cholesterol has a reputation for being associated with an increased risk for heart and blood vessel disease. However, cholesterol is essential to the formation of bile acids, vitamin D, progesterone, estrogens (estradiol, estrone, estriol), androgens (androsterone, testosterone), mineralocorticoid hormones (aldosterone, corticosterone), and glucocorticoid hormones (cortisol). Cholesterol is also necessary to the normal permeability and function of the membranes that surround cells. A diet high in saturated fats tends to increase blood cholesterol levels, whereas a diet high in unsaturated fats tends to lower blood cholesterol levels. Although some cholesterol is obtained from the diet, most cholesterol is made in the liver and other tissues. The treatment of elevated cholesterol involves not only diet but also weight loss, regular

exercise, and medications. After the age of 20, cholesterol testing is recommended every 5 years.

**cholesterol, "bad"** See *LDL cholesterol*.

**cholesterol, "good"** See *HDL cholesterol*.

**cholesterol, HDL** See *HDL cholesterol*.

**cholesterol, high-density lipoprotein** See *HDL cholesterol*.

**cholesterol, LDL** See *LDL cholesterol*.

**cholesterol, low-density lipoprotein** See *LDL cholesterol*.

**cholesterol, lowering with fibrates** Lowering cholesterol levels through the use of cholesterol-lowering drugs that are primarily effective in lowering triglycerides and, to a lesser extent, in increasing HDL levels. Gastrointestinal complaints are the most common side effect, and fibrates appear to increase the likelihood of a patient's developing cholesterol gallstones.

**cholesterol, lowering with niacin** Niacin, also known as nicotinic acid, is a water-soluble B vitamin that improves levels of all lipoproteins when given in doses well above the vitamin requirement. Niacin lowers the total cholesterol, LDL cholesterol, and triglyceride levels, while raising the HDL cholesterol level. A common and troublesome side effect of niacin is flushing, or hot flashes, which is a result of the widening of blood vessels. Most patients develop a tolerance for flushing, and in some patients it can be decreased by taking the drug during or after meals or by the use of aspirin or other similar medications prescribed by a physician. "No-flush" niacin formulations are also available. A variety of gastrointestinal symptoms, including nausea, indigestion, gas, vomiting, diarrhea, and the activation of peptic ulcers have been seen in some patients who use niacin. Other major adverse effects include liver problems, gout, and high blood sugar; risk of these complications increases as the dose of niacin increases. The nicotinamide form of niacin does not lower cholesterol levels.

**cholesterol gallstone** Stone within the gallbladder that is a result of chronically elevated blood levels of cholesterol (hypercholesterolemia). This can lead to inflammation of the gallbladder (cholecystitis). See also *cholecystitis*.

**chondrocalcinosis** Calcium deposition in cartilage. Chondrocalcinosis can be associated with degenerative arthritis, pseudogout, hemochromatosis, hyperparathyroidism, diabetes, hypomagnesemia, and Wilson's disease.



**chondromalacia** Abnormal softening or degeneration of cartilage. See also *patellofemoral syndrome*.

**chondromalacia patella** See *patellofemoral syndrome*.

**chondroplasia** The formation of cartilage by specialized cells called chondrocytes.

**chondrosarcoma** A malignant tumor that arises in cartilage cells (chondroblasts). Chondrosarcoma can be primary or secondary. Primary chondrosarcoma forms in bone and is a disease in children. Secondary chondrosarcoma arises from a preexisting benign defect of cartilage (such as an osteochondroma or enchondroma), usually after age 40. The main treatment is surgery. See also *cartilage; sarcoma*.

**chorda tendinea** A thread-like band of fibrous tissue that attaches on one end to the edge of the tricuspid and mitral valves of the heart and on the other end to the papillary muscle within the heart. The chorda tendinea serves to anchor the valves.

**chorda tympani** A branch of the facial nerve (the seventh cranial nerve) that serves the taste buds in the front of the tongue, runs through the middle ear, and carries taste messages to the brain. The chorda tympani is part of one of three cranial nerves involved in taste.

**chordoma** A benign tumor, usually in the lower back, that originates from cells destined to form cartilage. These cells are remnants of the primitive notochord, the flexible rod of cells in the embryo that forms the supporting axis of the body. Chordomas induce bone destruction.

**chorea** Ceaseless, restless, rapid, complex body movements that look well coordinated and purposeful but are, in fact, involuntary. The term chorea is derived from the Greek word *choreia*, which means "dancing" (as is choreography) because chorea was thought to be suggestive of a grotesque dance. See also *Huntington's disease; Sydenham's chorea*.

**chorea, Huntington's** See *Huntington's disease*.

**chorea, Sydenham's** See *Sydenham's chorea*.

**chorioamnionitis** Inflammation of the chorion and the amnion, the membranes that surround the fetus. Chorioamnionitis usually is associated with a bacterial infection. This may be due to bacteria ascending from the mother's genital tract into the

uterus to infect the membranes and the amniotic fluid. Chorioamnionitis is dangerous to the mother and child.

**chorioangioma, placental** A benign tumor of a blood vessel in the placenta. Large chorioangiomas can cause complications, including excess amniotic fluid (polyhydramnios), maternal and fetal clotting problems (coagulopathies), premature delivery, toxemia, fetal heart failure, and hydrops (excess fluid) affecting the fetus. Chorioangiomas probably act as shunts between arteries and veins (arteriovenous shunts), leading to progressive heart failure of the fetus.

**choriocarcinoma** A highly malignant tumor that arises from trophoblastic cells within the uterus. Choriocarcinoma may follow any type of pregnancy but is especially likely to occur with a hydatidiform mole. The prognosis for women with metastatic choriocarcinoma has improved with the advent of multidrug chemotherapy. See also *hydatidiform mole*.

**chorion** The outermost of the two fetal membranes (the amnion is the innermost) that surround the embryo. The chorion develops villi (vascular finger-like projections) and develops into the placenta.

**chorionic gonadotropin, human** See *human chorionic gonadotropin*.

**chorionic villus sampling** A procedure for first-trimester prenatal diagnosis. Abbreviated CVS. CVS may be done between the eighth and tenth weeks of pregnancy. The aim is to diagnose severe abnormalities that are present in the fetus. Tissue is withdrawn from the villi of the chorion, a part of the placenta, and then prepared for diagnostic analysis.

**choroiditis** An inflammation of the layer of the eye behind the retina, either in its entirety (multifocal choroiditis) or in patches (focal choroiditis). The only symptom is usually blurred vision. Choroiditis is treated with medications that reduce inflammation. See also *uveitis*.

**Christmas disease** See *hemophilia B*.

**chromatid** One of the two daughter strands created by the lengthwise division of the chromosome. The two chromatids are at first joined together by a centromere, and then they separate, with each chromatid becoming a chromosome.

**chromatography, gas** An automated technique for separating mixtures of substances in which the mixture to be analyzed is vaporized and carried by

an inert gas through a special column and thence to a detection device.

**chromatopsia** Colored vision. A condition in which objects appear abnormally colored to the viewer.

**chromosome** A carrier of genetic information that is visible under an ordinary light microscope. Each human chromosome has two arms, the p (short) arm and the q (long) arm. These arms are separated from each other only by the centromere, which is the point at which the chromosome is attached to the spindle during cell division. The 3 billion base pairs in the human genome are organized into 24 chromosomes. All genes are arranged linearly along the chromosomes. Generally the nucleus of a human cell contains two sets of chromosomes—one set given by each parent. Each set has 23 single chromosomes: 22 autosomes and an X or a Y sex chromosome. (A normal female has a pair of X chromosomes; a male has an X and Y pair.) A chromosome contains roughly equal parts of protein and DNA. The chromosomal DNA contains an average of 150 million nucleotide building blocks, called bases. DNA molecules are among the largest molecules now known.

**chromosome, acentric** A fragment of a chromosome that lacks a centromere, so that the chromosome is lost when the cell divides.

**chromosome, acrocentric** A chromosome that has its centromere located near one end of the chromosome. Humans have five pairs of acrocentric chromosomes. Down syndrome is due to an extra acrocentric chromosome (chromosome 21).

**chromosome, autosomal** Any chromosome other than a sex chromosome (X or Y chromosome). Also known as an autosome.

**chromosome, dicentric** A chromosome that is abnormal in that it has two centromeres rather than one. Because the centromere is essential for chromosome division, a dicentric chromosome is pulled in opposite directions when the cell divides. This causes the chromosome to form a bridge and then break and be unstable.

**chromosome, marker** An abnormal chromosome that is distinctive in appearance but not fully identified. A marker chromosome is not necessarily a marker for a specific disease or abnormality, but it can be distinguished under the microscope from all the normal human chromosomes. For example, the fragile X (FRAXA) chromosome was once called the marker X.

**chromosome, metaphase** A chromosome at the stage in the cell cycle at which it is most condensed, easiest to see by itself, and therefore easiest to study. Metaphase chromosomes are often chosen for karyotyping and chromosome analysis.

**chromosome, prophase** A chromosome at a stage before metaphase in the cell cycle, when the chromosomes are long and often tangled like a ball of twine. Prophase chromosomes may be selected for analysis via resolution chromosome banding when it is important to detect minute details.

**chromosome, sex** The X or Y chromosome in humans. (Some other species have other sex chromosomes.)

**chromosome, X** The sex chromosome found twice in normal females and once, along with a Y chromosome, in normal males. The complete chromosome complement (consisting of 46 chromosomes, including the 2 sex chromosomes) is thus conventionally written as 46,XX for chromosomally normal females and 46,XY for chromosomally normal males. The X chromosome not only determines gender but also carries the genetic code for many essential functions in both males and females.

**chromosome, Y** The sex chromosome found in normal males, together with an X chromosome. Once thought to be a genetic wasteland, the Y chromosome is now known to contain at least 20 genes. Some of these genes are unique to the Y chromosome, including the male-determining gene and male fitness genes that are active only in the testis and that are thought to be responsible for the formation of sperm. Other genes on the Y chromosome have counterparts on the X chromosome, are active in many body tissues, and play crucial “housekeeping” roles within cells.

**chromosome complement** The whole set of chromosomes for a species. In humans, the normal chromosome complement consists of 46 chromosomes, including the 2 sex chromosomes. Also known as the karyotype.

**chromosome disorder** An abnormal condition due to something unusual in an individual's chromosomes. For example, Down syndrome is a chromosome disorder caused by the presence of an extra copy of chromosome 21, and Turner syndrome is most often due to the presence of only a single sex chromosome: one X chromosome.

**chromosome inversion** A condition in which a chromosome segment is clipped out, turned upside down, and reinserted back into the chromosome. A

chromosome inversion can be inherited from one or both parents, or it may be a mutation that appears in a child whose family has no history of chromosome inversion. An inversion can be “balanced,” meaning that it has all the genes that are present in a normal chromosome; or it can be “unbalanced,” meaning that genes have been deleted (lost) or duplicated. A balanced inversion causes no problems. An unbalanced inversion is often associated with problems such as developmental delay, mental retardation, and birth defects.

**chromosome inversion, paracentric** A type of chromosome rearrangement in which a chromosomal segment that does not include the centromere (and is therefore paracentric) is snipped out of a chromosome, inverted, and inserted back into the chromosome. The feature that makes it paracentric is that both breaks are on the same side of the centromere, so that the centromere is not involved in the rearrangement.

**chromosome inversion, pericentric** A basic type of chromosome rearrangement in which a segment that includes the centromere (and is therefore pericentric) is snipped out of a chromosome, inverted, and inserted back into the chromosome. The feature that makes it pericentric is that the breaks are on both sides of the centromere.

**chromosome map** The chart of the linear array of genes on a chromosome. The Human Genome Project contributes to the mapping of the human chromosomes. See also *Human Genome Project*.

**chromosomes in multiple miscarriages** Chromosome abnormalities (such as deletions, additions, or translocations) that are responsible for causing miscarriages. A couple that has had more than one miscarriage has about a 5 percent chance that one member of the couple is carrying an irregular chromosome that is responsible for the miscarriages.

**chronic** In medicine, lasting a long time. A chronic condition is one that lasts 3 months or more. Chronic diseases are in contrast to those that are acute (abrupt, sharp, and brief) or subacute (within the interval between acute and chronic).

**chronic arthritis, systemic-onset juvenile** See *Still's disease*.

**chronic bronchitis** See *bronchitis, chronic*.

**chronic disease** A disease that persists for a long time, typically 3 months or more. Examples of chronic diseases include arthritis, diabetes, and

emphysema. In comparison, an acute illness is of short duration. See also *acute*.

**chronic fatigue syndrome** A debilitating and complex disorder characterized by profound fatigue that lasts 6 months or longer, is not improved by bed rest, and may be worsened by physical or mental activity. Abbreviated CFS. Persons with CFS most often function at a substantially lower level of activity than they were capable of before the onset of the illness. In addition to these key defining characteristics, patients report various nonspecific symptoms, including weakness, muscle pain, impaired memory and/or mental concentration, insomnia, and postexertional fatigue lasting more than 24 hours. In some cases, CFS can persist for years. The cause or causes of CFS have not been identified, and no specific diagnostic tests are available. Moreover, because many illnesses have incapacitating fatigue as a symptom, care must be taken to exclude other known and often treatable conditions before a diagnosis of CFS is made. Also known as chronic fatigue and immune dysfunction syndrome (CFIDS) and myalgic encephalomyelitis (ME).

**chronic illness** An illness that lasts 3 months or more.

**chronic leukemia** Cancer of the blood cells that progresses slowly, as opposed to acute leukemia, which progresses rapidly. The two major types of chronic leukemia are chronic lymphocytic leukemia (CLL) and chronic myeloid leukemia (CML). See also *leukemia, chronic phase of*.

**chronic lymphocytic leukemia** See *leukemia, chronic lymphocytic*.

**chronic myeloid leukemia** See *leukemia, chronic myeloid*.

**chronic obstructive lung disease** Any disorder that persistently obstructs bronchial airflow. Abbreviated COLD. COLD mainly involves two related diseases: chronic bronchitis and emphysema. The obstruction is generally permanent and worsens over time. In asthma, there is also obstruction of airflow out of the lungs, but the obstruction is usually reversible, and between asthma attacks, the flow of air through the airways is generally good. Also known as chronic obstructive pulmonary disease (COPD).

**chronic obstructive pulmonary disease** See *chronic obstructive lung disease*.

**chronic peritonitis** See *peritonitis, chronic*.

**chronic phase** See *leukemia, chronic phase of*.

**chronic tamponade** See *tamponade, chronic*.

**chronicity** The state of being chronic, having a long duration.

**Churg-Strauss syndrome** A disease characterized by inflammation of the blood vessels in persons with history of asthma or allergy. The symptoms include fatigue, weight loss, inflammation of the nasal passages, numbness, and weakness. The diagnosis is confirmed with a biopsy of involved tissue. Treatment involves stopping inflammation and suppressing the immune system. Also known as allergic granulomatosis and allergic granulomatous angiitis.

**chyme** A predigested, acidified mass of food that passes from the stomach into the small intestine.

**Ci** The abbreviation for a Curie, a unit of radioactivity. See also *Curie*.

**-cide** Suffix indicating killing or killer, as in bactericide (a solution capable of killing bacteria).

**ciliary neuralgia** See *cluster headache*.

**circadian** Refers to events occurring within the span of a full 24-hour day, as in a circadian clock.

**circadian clock** An internal time-keeping system in all organisms. Changes in the external environment, particularly in the light-dark cycle, train this biologic clock. When environmental conditions are constant, rhythms driven by the circadian clock follow a nearly perfect 24-hour pattern. The human circadian clock regulates many daily activities, such as sleep and waking. When a person doesn't follow these natural rhythms, or when the external environment strays from its usual rhythm (as occurs in the long nights and short days of deep winter), the circadian clock must readjust. Rapid environmental changes and problems with circadian clock adjustment are among the causes of jet lag, problems that affect shift workers, some types of sleep disorders, and bipolar disorders, particularly seasonal affective disorder. Certain genes serve to set and control the circadian clock. See also *bipolar disorder; jet lag; seasonal affective disorder; sleep disorder*.

**circinate balanitis** See *balanitis, circinate*.

**circle of Willis** A critical arterial circle at the base of the brain. The circle of Willis receives all the blood that is pumped up the two internal carotid arteries that come up the front of the neck. All the principal arteries that supply the two halves of the brain (hemispheres) branch off from the circle of Willis.

**circulation** In medicine, the movement of fluid through the body in a regular or circuitous course. The circulatory system, composed of the heart and blood vessels, functions to produce circulation. Heart failure is an example of a problem with circulation.

**circulation, fetal** The blood circulation in the fetus (an unborn baby). Before birth, blood from the fetal heart that is destined for the lungs is shunted away from the lungs through a short vessel called the ductus arteriosus and returned to the aorta. When this shunt is open, it is said to be a patent ductus arteriosus (PDA). The PDA usually closes at or shortly after birth, allowing blood to course freely to the lungs.

**circulatory** Having to do with circulation, the movement of fluid in a regular or circuitous course.

**circulatory system** The system that moves blood through the body. The circulatory system is composed of the heart, arteries, capillaries, and veins. This remarkable system transports oxygenated blood from the lungs to the heart and throughout the body via the arteries. The blood goes from the arteries to the veins by passing through the capillaries. Then the blood that has been depleted of oxygen by the body is returned to the lungs and heart via the veins. See also *artery; blood; heart; lung; respiratory system; vein*.

**circumcision, female** The excision (removal) of part or all of the external female genitalia, including the clitoris, and sometimes extending to the labia. Female circumcision is practiced in some parts of the Middle East and Africa, particularly Sudan, and it is viewed with disfavor in other parts of the world. Also known as female genital mutilation. See also *clitoridectomy*.

**circumcision, male** Surgery that removes the protective ring of loose skin (foreskin) that normally covers the glans of the penis. Circumcision dates back to prehistoric times, and it may be performed for religious or cultural reasons, or to promote cleanliness. Newborn circumcision decreases the risk of urinary tract infections and lowers the risk of sexually transmitted diseases, including HIV. It also diminishes the risk for cancer of the penis and lessens the risk for cancer of the cervix in sexual partners.

**cirrhosis** Liver disease characterized by irreversible scarring. Alcohol and viral hepatitis, including both hepatitis B and hepatitis C, are among the many causes of cirrhosis. Cirrhosis can cause yellowing of the skin (jaundice), itching, and fatigue. Diagnosis is suggested by physical examination and



blood tests, and it can be confirmed by liver biopsy. Complications of cirrhosis include mental confusion, coma, fluid accumulation (ascites), internal bleeding, and kidney failure. Treatment is designed to limit any further damage to the liver and to prevent complications. Liver transplantation is becoming an important option for patients with advanced cirrhosis.

**cirrhosis, primary biliary** A scarring liver disease caused by an abnormality of the immune system. Small bile ducts within the liver become inflamed and obliterated from scarring. Backup of bile causes intense skin itching and yellowing of the skin (jaundice). Lack of bile decreases absorption of calcium and vitamin D, leading to osteoporosis. See also *cirrhosis*.

**citrulline antibody** An immune protein (antibody) that binds to a non-standard amino acid, citrulline, which is formed by removing amino groups from the natural amino acid, arginine. Citrulline antibody is present in the blood of many patients with rheumatoid arthritis. It is used in the diagnosis of rheumatoid arthritis when evaluating patients with unexplained joint inflammation. Also known as anti-citrulline antibody, anti-cyclic citrullinated peptide antibody, CCP antibody, and anti-CCP antibody.

**Cl** The chemical symbol for the element chlorine.

**clap** Slang term for gonorrhea. See *gonorrhea*.

**clasped thumbs and mental retardation** See *adducted thumbs*.

**claudication** Limping. From the Latin *claudicare*, which means "to limp." The Roman emperor Claudius was so named because he limped, probably because of a birth defect.

**claudication, intermittent** Pain in the calf that comes and goes, typically felt while walking, and usually subsiding with rest. Intermittent claudication can be due to temporary artery narrowing due to vasospasm, permanent artery narrowing due to atherosclerosis, or complete occlusion of an artery to the leg. The prognosis is generally favorable because the condition often stabilizes or improves with time. Walking regularly can sometimes increase the distance that the patient can walk without symptoms. Drugs may be prescribed for management. If conservative therapy is inadequate and claudication is severe and persistent, correction of the narrowing in the affected artery with surgery, such as bypass grafting, or interventional radiology, such as balloon angioplasty might be suggested.

**claudication, venous** Limping and/or pain resulting from inadequate venous drainage.

**clavicle** See *collarbone*.

**clavus** See *corn*.

**clay-shoveler's fracture** See *fracture, clay-shoveler's*.

**cleft lip** A fissure in the upper lip that is due to failure of the left and right sides of the fetal lip tissue to fuse, an event that should take place by 35 days of fetal age. Cleft lip can be on one side only or on both sides. Because failure of lip fusion can impair the subsequent closure of the palatal shelves, cleft lip often occurs in association with cleft palate. It is one of the most common physical birth defects, and it can be corrected with surgery.

**cleft palate** An opening in the roof of the mouth due to a failure of the palatal shelves to come fully together from either side of the mouth and fuse during the first months of development as an embryo. The opening in the palate permits communication between the nasal passages and the mouth. Surgery is needed to close the palate. Cleft palate can occur alone or in association with cleft lip.

**cleft uvula** A common minor anomaly in which the uvula (the tissue that hangs down at the back of the palate) is cleft, or parted by a fissure. Persons with a cleft uvula should not have their adenoids removed because without the adenoids they cannot achieve proper closure between the soft palate and pharynx while speaking, and they will develop hypernasal speech. Also known as bifid uvula.

**cleidocranial dysostosis** A genetic disorder of bone development that is characterized by absent or incompletely formed collarbones and cranial and facial abnormalities that may include square skull, late closure of the sutures of the skull, late closure of the fontanelles, low nasal bridge, delayed eruption of the teeth, and abnormal permanent teeth. A child with this disorder can bring his or her shoulders together, or nearly so. The gene for cleidocranial dysostosis has been found on chromosome 6 in band p21. Also known as cleidocranial dysplasia and craniocleidodysostosis.

**click-murmur syndrome** See *mitral valve prolapse*.

**climacteric** 1 Menopause in women. 2 The time corresponding to menopause in the life of men.

**clinical** 1 Having to do with the examination and treatment of patients. 2 Applicable to patients. The term comes from the French "clinique" (at the bedside).



**clinical cytogenetics** The application of chromosome analysis to clinical medicine. For example, clinical cytogenetic testing is done to look for an extra chromosome 21 in a child who is suspected of having Down syndrome.

**clinical depression** Depressed mood that meets the DSM-IV criteria for a depressive disorder. The term clinical depression is commonly used to describe depression that is a type of mental illness—not a normal, temporary mood caused by life events or grieving.

**clinical disease** A disease that has recognizable clinical signs and symptoms, as distinct from a subclinical illness, which lacks detectable signs and symptoms. Diabetes, for example, can be a subclinical disease for some years before becoming a clinical disease.

**clinical research trial** A study that is intended to evaluate the safety and effectiveness of medications or medical devices by monitoring their effects on large groups of people. Studies may be conducted by government health agencies (such as the National Institutes of Health [NIH]), researchers affiliated with hospital or university medical programs, independent researchers, or individuals from private industry. Usually volunteers are recruited, although in some cases research participants may be paid. For some patients, clinical research trials represent an avenue for receiving promising new therapies that would not otherwise be available. Patients with difficult-to-treat or “incurable” diseases may pursue participation in clinical research trials if standard therapies are not effective.

**clinical trial** See *clinical research trial*.

**clip** A device used to hold something or things together. For example, a surgical clip may be used to prevent a blood vessel from bleeding into the brain, or in a vasectomy to pinch together the sides of the vas deferens.

**clitoridectomy** The surgical excision (removal) of the clitoris to reduce a woman's ability to be sexually stimulated during intercourse. Also known as female circumcision and female genital mutilation. See also *circumcision, female*.

**clitoris** A small mass of erectile tissue in the female that is situated at the anterior apex of the vulva, near the meeting of the labia majora (vulvar lips). Like the penis, the clitoris is highly sensitive to stimulation during sex. The clitoris corresponds to the penis in the male.

**CLL** Chronic lymphocytic leukemia. See *leukemia, chronic lymphocytic*.

**clone** **1** A replica. For example, a clone can be made of a group of bacteria or a macromolecule such as DNA. **2** A group of cells derived from a single ancestral cell. **3** An individual developed from a single somatic (nongerm) cell from a parent, representing an exact replica of that parent.

**clone, recombinant** A clone that contains recombinant DNA molecules.

**clone bank** See *genomic library*.

**cloning** The process of creating a genetically identical copy.

**cloning, cell** The process of producing a group of cells (clones), all genetically identical, from a single ancestral cell.

**cloning, DNA** The use of DNA manipulation procedures to produce multiple copies of a single gene or segment of DNA.

**cloning, therapeutic** See *therapeutic cloning*.

**Clostridium difficile** A bacterium that is one of the most common causes of infection of the colon in the US. Patients taking antibiotics are at risk of becoming infected with *C. difficile* as antibiotics can disrupt the normal bacteria of the bowel, allowing *C. difficile* to become established in the colon. In some people, a toxin produced by *C. difficile* causes diarrhea, abdominal pain, severe inflammation of the colon (colitis), fever, an elevated white blood cell count, vomiting, and dehydration. In severely affected patients, the inner lining of the colon becomes severely inflamed (pseudomembranous colitis) with the potential to perforate.

**Clostridium perfringens** A bacterium that is the most common cause of gas gangrene, a lethal infection of soft tissue, especially muscle. *C. perfringens* bacteria are toxin- and gas-producing bacteria. Before the introduction of antibiotics, a significant percentage of battlefield injuries were complicated by gas gangrene. *C. perfringens* also causes food poisoning and a fulminant form of bowel disease called necrotizing colitis. Formerly known as *C. welchii*.

**Clostridium welchii** See *Clostridium perfringens*.

**clot-dissolving medication** An agent such as plasminogen-activator (t-PA) or streptokinase that is effective in dissolving clots and reopening arteries.

For example, clot-dissolving medications may be used in the treatment of heart attacks, to reestablish blood flow to the heart muscle (myocardium). Also known as thrombolytic agents.

**clubfoot** A common malformation of the foot that is evident at birth. The foot is turned in sharply so that the person seems to be walking on his or her ankle. Clubfoot can sometimes be corrected with a combination of surgery, bracing, and physical therapy. Also known as talipes equinovarus.

**cluster** An aggregation of cases of a disease or another health-related condition, such as a cancer, birth defect, or headaches, closely grouped in time and place. See also *cluster headache*.

**cluster headache** A distinctive episodic syndrome of headaches. The most common cluster headache pattern, acute cluster headache, is characterized by one to three short attacks of pain each day around the eyes, clustered over a stretch of 1 to 2 months, and followed by a pain-free period that averages 1 year. The other main pattern of cluster headache, chronic or episodic cluster headache, is characterized by the absence of sustained periods of remission, with pain occurring out of the blue or emerging several years after an episodic pattern. Cluster headache is different and distinct from migraine, although the underlying mechanisms are similar. For example, propranolol is effective in treating migraine but not in treating cluster headache, whereas lithium is beneficial for cluster headache but not migraine. Also known as ciliary neuralgia, erythropsopalgia, histamine cephalgia, migrainous neuralgia, Raeder syndrome, sphenopalatine neuralgia, and vidian neuralgia.

**cluttering** A speech disorder characterized by the unwanted repetition of entire words. It resembles stuttering, in which only sounds or parts of words are repeated. See also *speech disorder*.

**cm** Centimorgan.

**CME** Continuing medical education, education that physicians are required to obtain in order to earn CME credits to retain their medical licenses. They may do so by taking courses, attending medical conferences where they learn about new developments, or by reading and taking tests.

**CML** Chronic myeloid leukemia. See *leukemia, chronic myeloid*.

**CNA** Certified nurse aide. See *nurse assistant*.

**CNS** Central nervous system.

**CNS prophylaxis** Chemotherapy or radiation therapy to the central nervous system (CNS) as a preventive treatment. CNS prophylaxis is given to kill cancer cells that may be in the brain and spinal cord, even though no cancer has been detected there.

**coagulation, blood** See *blood coagulation*.

**coal miner's pneumoconiosis** See *black lung disease*.

**coarctation** A narrowing, stricture, or constriction of an artery. The sides of the vessel at the point of a coarctation appear to be pressed together.

**coarctation of the aorta** Congenital constriction of the aorta that impedes the flow of blood below the level of the constriction and increases blood pressure above the constriction. Symptoms may not be evident at birth but may develop as soon as the first week after birth, with congestive heart failure or high blood pressure that can require early surgery. The outlook after surgery is favorable. Some cases have been treated with balloon angioplasty.

**coated stent** A tiny cage to prop open an artery and prevent it from closing again, that is coated with a drug. The stent is inserted into a coronary artery, usually just after an angioplasty has been done, to keep open the vessel. The stent slowly releases the drug with which it is coated. Coated stents reduce the risk of artery re-narrowing (restenosis) after angioplasty. Also known as a medicated stent, drug-coated stent, drug-eluting stent, eluting stent.

**cocaine** A substance derived from the leaves of the coca plant that is a bitter, addictive substance formerly used as an anesthetic. Safer anesthetics than cocaine were developed in the 20th century, although it is still used as an injectable anesthetic by some dentists. Synthetic alternatives, such as procaine, are used far more widely. Tragically, cocaine is a highly addictive and destructive street drug.

**cocci** The plural of coccus.

**coccus** A bacterial cell that has the shape of a sphere. Coccus is part of the name of a number of bacteria, such as enterococcus, meningococcus, pneumococcus, staphylococcus, and streptococcus.

**coccygeal vertebrae** The three to five (the average number is four) rudimentary vertebrae that make up the coccyx.

**coccyx** The small tail-like bone at the bottom of the spine, very near the anus. It is the lowest part of the spinal column. Also known as tailbone.

**cochlear implant** A device that is surgically placed (implanted) within the inner ear to help a person with a certain form of deafness to hear. Cochlear implants rarely cure severe or profound deafness, but they can help some hearing-impaired people to distinguish the sounds of language clearly enough to participate in a verbal environment. For children who are congenitally deaf (born deaf), a cochlear implant can markedly increase a preschool child's chances of being able to function effectively in mainstream school classes.

**cockroach allergy** A condition that manifests as an allergic reaction when one is exposed to cockroach allergens, tiny protein particles shed or excreted by cockroaches. Asthma can be triggered by exposure to these cockroach allergens. See also *allergy*.

**code, genetic** The instructions in a gene that tell the cell how to make a specific protein. A, T, G, and C are the "letters" of the DNA code and represent the chemicals adenine, thymine, guanine, and cytosine, respectively. These make up the nucleotide bases of DNA. Each gene's code combines these four chemicals in various ways to spell out three-letter "words" that specify which amino acid is needed at every step in making a protein. The discovery of the genetic code ranks as one of the premiere events of biology and medicine.

**code blue** An emergency situation announced in a hospital or institution in which a patient is in cardiopulmonary arrest, requiring a team of providers (sometimes called a "code team") to rush to the specific location and begin immediate resuscitative efforts.

**code pink** A hospital or institution alert to security that a baby is missing from the hospital nursery.

**codon** A set of any three adjacent bases in DNA or RNA. There are 64 different codons, of which 61 specify the incorporation of an amino acid into a polypeptide chain; the remaining 3 are stop codons, which signal the ends of polypeptides.

**coenzyme** A substance that enhances the action of an enzyme to mediate and speed a chemical reaction. A number of the water-soluble vitamins, such as vitamins B1, B2, and B6, serve as coenzymes. See also *enzyme*.

**Cogan corneal dystrophy** A disorder in which the cornea shows grayish fingerprint lines, geographic map-like lines, and dots (or microcysts). These lines and dots can be seen on examination with a slit-lamp, which focuses a high-intensity light beam through a slit while the examiner uses a mag-

nifying scope to look at the front of the eye where the epithelial basement membrane is seen as abnormal. The disorder is usually without symptoms. However, about 1 patient in 10 has recurrent erosion of the cornea that generally begins after age 30. Also known as epithelial basement corneal dystrophy and map-dot-fingerprint type corneal dystrophy and microcystic corneal dystrophy.

**Cogan syndrome** A rare form of artery inflammation (arteritis) of unknown cause that affects the ear. Cogan syndrome causes problems of hearing and balance and also inflammation of the cornea and often fever, fatigue, and weight loss. Joint and muscle pains can also be present. Less frequently, the arteritis can involve blood vessels elsewhere in the body, as in the skin, kidneys, nerves, and other tissues and organs. Cogan syndrome can lead to deafness or blindness. Treatment is directed toward stopping the inflammation of the blood vessels. Cortisone-related medications, such as prednisone, are often used. Severe disease can require immunosuppression medications, such as cyclophosphamide.

**cognition** The process of knowing. Cognition includes both awareness and judgment.

**cognitive** Having to do with thought, judgment, or knowledge.

**cognitive behavior therapy** A therapeutic practice that helps patients recognize and remedy dysfunctional thought patterns. One characteristic technique is exposure and response prevention, in which a patient with a phobia deliberately exposes himself or herself to the feared situation, gradually decreasing the panic response. Cognitive behavior therapy is used to treat obsessive-compulsive disorder, panic disorder, and other biologically based psychiatric illnesses, often in combination with medication. Evidence gathered from brain scans indicates that over time this therapy can sometimes create actual changes in brain and neurotransmitter function. Abbreviated CBT.

**cognitive disability** A broad term used to describe such diverse conditions as mental retardation, thought disturbances, and neurological conditions that chronically affect a certain type of perception or mental ability.

**cognitive disturbance** Disruption of one's ability to think logically.

**cognitive dulling** Loss of mental faculties; difficulty in thinking logically or quickly. Cognitive dulling can occur due to a medical condition or as a side effect of medication.

**cognitive science** The study of the mind. Cognitive science is an interdisciplinary science that draws on many fields, including neuroscience, psychology, philosophy, computer science, artificial intelligence, and linguistics. The purpose of cognitive science is to develop models that help explain human perception, thinking, and learning with the premise that the mind is an information processor. This processor receives, stores, retrieves, transforms, and transmits information. The information and the corresponding information processes can be studied as patterns.

**cohort** In a clinical research trial, a group of study participants or patients.

**coinsurance** See *copayment*.

**coitus** Sexual intercourse.

**coitus interruptus** Sexual intercourse in which, as a birth-control measure, the male attempts to withdraw the penis before ejaculation. It is not usually an effective means of birth control because sperm are present in preejaculate fluid produced during intercourse. See also *birth control*.

**colchicine** A plant substance that is used in clinical medicine for the treatment of the inflammation, such as from gouty arthritis, and in the laboratory to arrest cells during cell division by disrupting the spindles so that their chromosomes can be visualized.

**COLD** Chronic obstructive lung disease.

**cold, common** A contagious viral upper respiratory tract infection. The common cold can be caused by many different types of viruses, and the body can never build up resistance to all of them. For this reason, colds are a frequent and recurring problem. Going out into cold weather has no effect on causing a cold. Antibiotics do not cure or shorten the duration of the illness.

**cold, June** See *hay fever*.

**cold, summer** See *allergic rhinitis*.

**cold injury** An injury caused by exposure to extreme cold that can lead to loss of body parts and even to death. Examples of cold injury are chilblain, trench foot, and frostbite. Cold injury occurs with and without freezing of body tissues. The young and the elderly are especially prone to cold injury, and alcohol consumption increases the risk of cold injury. It is important not to thaw an extremity if there is a risk of it refreezing. The extremity should be protected from trauma and gradually rewarmed.

**cold sore** A small sore located on the face or in the mouth that causes pain, burning, or itching before bursting and crusting over. Common locations for cold sores are the lips, chin, cheeks, and nostrils. Cold sores more rarely appear on the gums and the roof of the mouth. Cold sores are caused by herpes simplex type 1 virus, which lies dormant in the body and is reawakened by factors such as stress, sunburn, or fever from a wide range of infectious diseases, including colds. Sunscreen (SPF 15 or higher) on the lips prevents recurrences of herpes due to sunburn. The virus is highly contagious when fever blisters are present. It is spread by physical contact, such as kissing. Also known as labial herpes, febrile herpes, and fever blister.

**colectomy** An operation to remove all or part of the colon (large intestine). In a partial colectomy, the surgeon removes only part of the colon. The bowel is then reconnected or an opening of the bowel (ostomy) is created on the abdominal wall to allow the contents of the bowel to exit from the body. Colectomy may be needed for treatment of diverticulitis, benign polyps of the colon, and cancer of the colon.

**colic** A cause of crampy abdominal pain in early infancy. Colic is a common condition, occurring in about 1 in 10 babies. An infant with colic is irritable, cries, and often has a rigid abdomen and draws up its legs. Overfeeding, undiluted juices, food allergies, and stress can aggravate colic. Colic usually lasts from early infancy to the third or fourth month of age. Treatment can include dietary changes, carefully measured feedings, and extra burping. Parents should not assume that new abdominal pain and loud crying in their baby are colic. It is important for the baby to be seen by a physician to rule out more serious conditions.

**colitis** Inflammation of the colon (large intestine). There are many forms of colitis, including amebic, Crohn's, infectious, pseudomembranous, spastic, and ulcerative.

**colitis, amebic** Inflammation of the intestine, with ulcers in the colon, due to infection with an ameba called *Entamoeba histolytica*. This parasite can be transmitted to humans via contaminated water and food. Symptoms, which include diarrhea, indigestion, nausea, and weight loss, can begin shortly after infection, or the ameba may live in the gastrointestinal tract for months or years before symptoms erupt. Amebic colitis can be treated with medication, including emetine and antibiotics. See also *amebic dysentery*; *amebiasis*.

**colitis, Crohn's** Crohn's disease affecting the colon. Also known as granulomatous colitis. See also *Crohn's disease*.

**colitis, granulomatous** See *colitis, Crohn's*.

**colitis, pseudomembranous** Severe inflammation of the inner lining of the colon, usually due to the *Clostridium difficile* bacterium. Patients taking antibiotics are at particular risk of becoming infected with *C. difficile* because the natural bacteria of the bowel can usually prevent proliferation of *C. difficile*, but they are disrupted by antibiotics. A toxin produced by *C. difficile* causes colitis symptoms, including diarrhea, abdominal pain, and severe inflammation. Rarely, the walls of the colon wear away and holes develop (colon perforation), which can lead to a life-threatening infection of the abdomen. See also *Clostridium difficile*.

**colitis, spastic** See *irritable bowel syndrome*.

**colitis, ulcerative** A bowel disease that is characterized by inflammation with ulcer formation in the lining of colon (large intestine). Its cause is unknown. The end of the colon (the rectum) is generally involved. When limited to the rectum, the disease is called ulcerative proctitis. The inflammation may extend to varying degrees into the upper parts of the colon. When the entire colon is involved, it is referred to as pancolitis or universal colitis. Symptoms include intermittent rectal bleeding, crampy abdominal pain, and diarrhea. Many patients experience long remissions, even without medication. Ulcerative colitis may mysteriously resolve after a long history of symptoms. Direct visualization (via sigmoidoscopy or colonoscopy) and biopsy of the lining of the bowel is the most accurate diagnostic test. Treatment of ulcerative colitis involves medications and/or surgery; changes in diet can sometimes help.

**colitis, universal** Ulcerative colitis that involves the entire colon (large intestine).

**collagen** The principal protein of the skin, tendons, cartilage, bone, and connective tissue. Collagen is an essential part of the framework of the design of our various body tissues.

**collagen disease** A disease that damages collagen or other components of connective tissue. For example, dermatomyositis and systemic lupus erythematosus are collagen diseases.

**collagen injection** The practice of injecting collagen into a part of the face or body (often the lips) to make it larger. The effects are long-lasting but not permanent. Collagen injections are usually done by plastic surgeons.

**collapsed lung** See *atelectasis*.

**collarbone** A horizontal bone above the first rib that makes up the front part of the shoulder. Also known as the clavicle, the collarbone links the breastbone (sternum) with the scapula, a triangular bone in the back of the shoulder. One end of the collarbone connects to the sternum, forming one side of the sternoclavicular joint. The other end of the collarbone connects to the scapula, there forming one side of the acromioclavicular joint.

**collateral** **1** In anatomy, a subordinate or accessory part. **2** A side branch, as of a blood vessel or nerve. After a coronary artery occlusion, collateral vessels often develop to shunt blood around the blockage.

**collateral knee ligament, lateral** A ligament that straps the outside of the knee joint and provides stability and strength to the knee joint. Abbreviated LCL.

**collateral knee ligament, medial** A ligament on the inner side of the knee joint. The medial collateral knee ligament adds stability and strength to the knee joint. Abbreviated MCL.

**colon** The long, coiled, tubelike organ that removes water from digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus. Also known as large bowel and large intestine.

**colon cancer** See *cancer, colon*.

**colon cancer prevention** Measures taken to prevent the formation of colon cancer. Colorectal cancer can run in families. The risk of colon cancer is increased for a person whose immediate family member (parent, sibling, or child) had colorectal cancer. It is increased further for a person who has had more than one such relative with colorectal cancer or a family member who has developed colon cancer earlier than 55 years of age. Individuals to whom any of these circumstances apply should undergo colonoscopy every 3 years, starting at an age that is 7 to 10 years younger than when the youngest family member with colon cancer was diagnosed.

**colon polyp** A benign tumor of the large intestine. Benign polyps do not invade nearby tissue or spread to other parts of the body. Benign polyps can easily be removed during colonoscopy and are not life threatening. If benign polyps are not removed from the large intestine, they can become malignant (cancerous) over time. Most cancers of the large intestine are believed to have developed from polyps.

**colonic irrigation** See *irrigation of the colon*.



**colonoscope** A flexible, lighted instrument used to view the inside of the colon.

**colonoscopy** A procedure whereby a physician inserts a viewing tube (colonoscope) into the rectum for the purpose of inspecting the colon. During colonoscopy, polyps can be removed, bleeding can be cauterized, and a biopsy can be performed if abnormal areas of the colon are seen.

**colony-stimulating factor** A laboratory-made agent that is similar to substances in the body that stimulate the production of blood cells. Abbreviated CSF. Treatment with CSF can help blood-forming tissue recover from the effects of chemotherapy and radiation therapy.

**colorblindness** The inability to perceive colors in a normal fashion. The most common forms of colorblindness are inherited as sex-linked (X-linked) recessive traits. Females are carriers and males are affected. As a result, approximately 1 in 8 males is colorblind, compared to fewer than 1 in 100 females. The most common form of colorblindness is red-green. The second most common form is blue-yellow. The most severe form of colorblindness is achromatopsia, the inability to see any color. Testing for colorblindness is commonly performed along with other types of vision screening. See also *monochromatism*.

**colorectal** Related to the colon and/or rectum.

**colorectal cancer** See *cancer, colon*.

**colostomy** An artificial exit from the colon created to divert waste through a hole in the colon and through the wall of the abdomen. A colostomy is commonly performed by severing the colon and then attaching the end leading to the stomach to the skin, through the wall of the abdomen. At the exterior opening (stoma), a bag can be attached for waste removal. The end of the colon that leads to the rectum is closed off and becomes dormant (known as a Hartmann colostomy). There are other types of colostomy procedures. Usually a colostomy is performed because of infection, blockage, cancer, or in rare instances, severe trauma of the colon.

**colostomy, iliac** A colostomy in which the exterior opening (stoma) is located on the lower-left side of the abdomen.

**colostomy, transverse** A colostomy in which the exterior opening (stoma) is located on the upper abdomen.

**colostomy bag** A removable, disposable bag that attaches to the exterior opening of a colostomy

(stoma) to permit sanitary collection and disposal of bodily wastes.

**colostrum** A sticky white or yellow fluid secreted by the breasts during the second half of pregnancy and for a few days after birth, before breast milk comes in. It is high in protective antibodies that boost the newborn's immune system.

**colpo-** Prefix referring to the vagina.

**colpopexy** The use of stitches to bring a displaced vagina back into position against the abdominal wall.

**colpoptosis** A condition in which the vagina has dropped from its normal position against the abdominal wall.

**colporrhaphy** Surgical repair of the vagina.

**colposcopy** A procedure in which a lighted magnifying instrument called a colposcope (or vaginoscope) is used to examine the vagina and cervix.

**colpotomy** A surgical incision in the vagina.

**coma** A state of deep, unarousable unconsciousness. A coma may occur as a result of head trauma, disease, poisoning, or numerous other causes. Coma states are sometimes graded based on the absence or presence of reflexive responses to stimuli.

**comedo** The primary sign of acne, consisting of a widened hair follicle filled with keratin skin debris, bacteria, and sebum (oil). A comedo may be closed or open. A closed comedo (called a whitehead) has an obstructed opening to the skin and may rupture to cause a low-grade inflammatory skin reaction in the area. An open comedo (called a blackhead) has a wide opening to the skin and is capped with a blackened mass of skin debris.

**comedones** The plural of comedo. See also *comedo*.

**comminuted fracture** See *fracture, comminuted*.

**common bile duct** The duct that carries bile from the gallbladder and liver into the duodenum (upper part of the small intestine). The common bile duct is formed by the junction of the cystic duct, from the gallbladder, and the common hepatic duct, from the liver.

**common cold** See *cold, common*.

**communicable disease** A disease caused by an infectious organism.

**communication disorder** A disorder of the speech apparatus and/or of the mental faculties used to speak or communicate by other means. Treatment includes speech therapy and other interventions, as appropriate, for the underlying condition. See also *aphasia; apraxia of speech; articulation disorder; autism; cluttering; speech disorder; stuttering*.

**comorbid** Occurring together. For example, if a person has both Crohn's disease and stomach ulcers, these are comorbid conditions.

**compassionate use** A term used in the US for a method of providing experimental treatments, generally for very ill individuals who have no other treatment options, prior to final FDA approval for use in humans.

**complementary medicine** A group of diagnostic and therapeutic disciplines that are used together with conventional medicine. An example of a complementary therapy is using aromatherapy to help lessen a patient's discomfort following surgery. Complementary medicine is traditionally not taught or used in Western medical schools or hospitals. Complementary medicine includes a large number of practices and systems of health care that, for a variety of cultural, social, economic, or scientific reasons, have not been adopted by mainstream Western medicine. See also *alternative medicine; conventional medicine*.

**complete androgen insensitivity syndrome** An older term for the complete androgen insensitivity syndrome, a genetic disorder that makes XY fetuses insensitive (unresponsive) to androgens (male hormones). Instead, they are born looking externally like normal girls. Internally, there is a short blind-pouch vagina and no uterus, fallopian tubes, or ovaries. There are testes in the abdomen or the inguinal canal. The complete androgen insensitivity syndrome is usually detected at puberty when a girl should but does not begin to menstruate. The gene for the syndrome is on the X chromosome and codes for the androgen receptor (also called the dihydrotestosterone receptor). There are also partial androgen insensitivity syndromes.

**complete blood count** See *CBC*.

**complete hysterectomy** See *hysterectomy, total*.

**complete syndactyly** See *syndactyly, complete*.

**complication** In medicine, an unanticipated problem that arises following, and is a result of, a procedure, treatment, or illness. A complication is so named because it complicates the situation.

**compound fracture** See *fracture, compound*.

**compound microscope** A microscope that consists of two microscopes in series, the first serving as the ocular lens (close to the eye) and the second serving as the objective lens (close to the object to be viewed).

**compress** Cloth or another material applied under pressure to an area of the skin and held in place for a period of time. A compress can be any temperature, and it can be dry or wet. It may also be impregnated with medication or an herbal remedy. Most compresses are used to relieve inflammation.

**compression fracture** See *fracture, compression*.

**computed tomography scan** See *CAT scan*.

**computerized axial tomography scan** See *CAT scan*.

**conception** **1** The union of a sperm and an egg to create the first cell of a new organism. The term conception has also been used to imply the implantation of the blastocyst, the formation of a viable zygote, and the onset of pregnancy. **2** Related to the formulation or understanding of an idea. See also *pregnancy*.

**concussion** A traumatic injury to soft tissue, usually the brain, as a result of a violent blow, shaking, or spinning. A brain concussion can cause immediate but temporary impairment of brain functions, such as thinking, vision, equilibrium, and consciousness. After a person has had a concussion, he or she is at increased risk for recurrence. Moreover, after a person has several concussions, less of a blow can cause injury, and the person can require more time to recover.

**conditioning** **1** Exercise and practice to build up the body for either improved performance, as in physical therapy, or in preparation for sports performance. **2** The development of certain predictable behavior as a result of repetitive activity or exposure.

**conditioning, Pavlovian** Use of a system of rewards and punishments to influence behavior. Named after the Russian physiologist Ivan Petrovich Pavlov, who conditioned dogs to respond in what proved to be a predictable manner by giving them rewards.

**condom** A barrier method of contraception consisting of a sheath made of latex, lambskin, or other material that collects semen and thereby prevents conception. There are both male and female condoms. When not specified, the term condom usually refers to a male condom. See also *barrier method; birth control; condom, female; condom, male*.

**condom, female** A sheath made of plastic or latex that is anchored outside the vagina and lines the interior of the vagina. It collects semen, preventing the semen from reaching the cervix, and thereby preventing conception. It also provides some protection against sexually transmitted diseases, including the HIV virus. See also *barrier method; birth control*.

**condom, male** A sheath made of latex, lambskin, or other material that is placed over the erect penis before penetration to collect semen, preventing the semen from reaching the cervix, and thereby preventing conception. When used consistently, a condom is a reasonably reliable method of contraception, especially if it is combined with the use of a spermicide or a female barrier method (but not a female condom). Latex condoms also provide some protection against sexually transmitted diseases, including HIV, but lambskin condoms do not protect against HIV. A condom can be used only once. See also *barrier method; birth control*.

**conduction system, cardiac** See *cardiac conduction system*.

**condyloma** Wartlike growths around the anus, vulva, or glans penis. There are three major types of condyloma, each of which is sexually transmitted: condyloma acuminatum (warts around the vulva), condyloma latum (a form of secondary syphilis), and condyloma subcutaneum (also known as mollusum contagiosum).

**condyloma acuminatum** A sexually transmitted disorder characterized by wartlike growths around the vulva. See also *genital warts*.

**condyloma latum** A form of the secondary stage of syphilis, characterized by wartlike growths around the anus.

**condyloma subcutaneum** A sexually transmitted disorder characterized by wartlike growths around the anus and genitals that is caused by the virus poxvirus. Also known as mollusum contagiosum.

**cone biopsy** See *conization*.

**cone cell** A light-sensitive cell in the retina of the eye. Cone cells absorb light and are essential for distinguishing colors.

**congenital** A condition that is present at birth, whether or not it is inherited.

**congenital aganglionic megacolon** See *Hirschsprung's disease*.

**congenital clasped thumbs with mental retardation** See *adducted thumbs*.

**congenital defect** A birth defect.

**congenital dislocation of the hip** See *congenital hip dislocation*.

**congenital heart disease** A malformation of the heart, aorta, or other large blood vessels that is the most frequent form of major birth defect in newborns. Abbreviated CHD. There are many types of CHD, including atrial septal defect (ASD), ventricular septal defect (VSD), pulmonary (valvular) stenosis, aortic stenosis, coarctation of the aorta, Tetralogy of Fallot, and transposition of the great arteries. Much of the practice of pediatric cardiology consists of the diagnosis and treatment of CHD. Also known as congenital heart defect, congenital heart malformation, congenital cardiovascular disease, congenital cardiovascular defect, and congenital cardiovascular malformation.

**congenital hemolytic jaundice** See *spherocytosis, hereditary*.

**congenital hip dislocation** One of the most common birth defects, characterized by an abnormal formation of the hip joint in which the ball at the top of the thighbone (the head of the femur) is not stable within the socket (acetabulum). The ligaments of the hip joint may also be loose and stretched. The degree of instability at the hip varies. The usual treatment is the use of a device called the Pavlik harness. If the harness is not effective, the hip may be positioned into place under anesthesia (closed reduction) and maintained with a body cast (spica). Also known as infantile hip dislocation, congenital dislocation of the hip (CDH), and developmental dysplasia of the hip (DDH).

**congenital hypothyroidism** See *cretinism*.

**congenital malformation** A physical defect present in a baby at birth that can involve many different parts of the body, including the brain, heart, lungs, liver, bones, and intestinal tract. Congenital malformation can be genetic, it can result from exposure of the fetus to a malforming agent (such

as alcohol), or it can be of unknown origin. Congenital malformations are now the leading cause of infant mortality (death) in the US and many other developed nations. Examples include heart defects, cleft lip and palate, spina bifida, limb defects, and Down syndrome.

**congenital neutropenia, severe** See *severe congenital neutropenia*.

**congenital ptosis of the eyelids** Drooping of the upper eyelids at birth. The lids may droop only slightly, or they may cover the pupils and restrict or even block vision. Moderate or severe ptosis calls for treatment to permit normal vision development. If congenital ptosis of the eyelids is not corrected, amblyopia (lazy eye) may develop, which can lead to permanently poor vision.

**congenital torticollis** See *torticollis, congenital*.

**congestive heart failure** Inability of the heart to keep up with the demands on it, with failure of the heart to pump blood with normal efficiency. When this occurs, the heart is unable to provide adequate blood flow to other organs, such as the brain, liver, and kidneys. Abbreviated CHF. CHF may be due to failure of the right or left ventricle, or both. The symptoms can include shortness of breath (dyspnea), asthma due to the heart (cardiac asthma), pooling of blood (stasis) in the general body (systemic) circulation or in the liver's (portal) circulation, swelling (edema), blueness or duskeness (cyanosis), and enlargement (hypertrophy) of the heart. The many causes of CHF include coronary artery disease leading to heart attacks and heart muscle (myocardium) weakness; primary heart muscle weakness from viral infections or toxins, such as prolonged alcohol exposure; heart valve disease causing heart muscle weakness due to too much leaking of blood or causing heart muscle stiffness from a blocked valve; hyperthyroidism; and high blood pressure.

**conization** Surgery to remove a cone-shaped piece of tissue from the cervix and cervical canal. Conization may be used to diagnose or treat a cervical condition. Also known as cone biopsy.

**conjunctiva** A thin, clear, moist membrane that coats the inner surfaces of the eyelids (palpebral conjunctiva) and the outer surface of the eye (ocular, or bulbar, conjunctiva). Inflammation of the conjunctiva is called conjunctivitis (pinkeye).

**conjunctivitis** Inflammation of the membrane covering the surface of the eyeball. It can be a result of infection or irritation of the eye, or it can be

related to systemic diseases, such as Reiter syndrome. Also known as pinkeye.

**conjunctivitis, allergic** Inflammation of the whites of the eyes (the conjunctivae), with itching, redness, and tearing, that is caused by an allergic reaction and frequently accompanied by hay fever.

**conjunctivitis arida** See *xerophthalmia*.

**Conn syndrome** Overproduction of the hormone aldosterone by a tumor in the outer portion (cortex) of the adrenal gland. The excessive aldosterone results in low potassium levels (hypokalemia), underacidity of the body (alkalosis), muscle weakness, excessive thirst, excessive urination, and high blood pressure. Also known as aldosteronism and hyperaldosteronism.

**connectionism** A theory of information processing that is based on the neurophysiology of the brain. The basic tenets of connectionism are that signals are processed by elementary units (in this case, neurons), processing units are connected in parallel to other processing units, and connections between processing units are weighted. The weights may be hard-wired, learned, or both, and they represent the strengths of connection (either excitatory or inhibitory) between two units.

**connective tissue** A material consisting of protein fibers that form a framework that provides a support structure for body tissues. See also *collagen*.

**connective tissue disease** A disease (autoimmune or otherwise) that attacks the collagen or other core components of connective tissue. Lupus is a connective tissue disease.

**connective tissue disease, mixed** See *mixed connective tissue disease*.

**Conor and Bruch disease** See *typhus, African tick*.

**consanguinity** Close blood relationship, sometimes used to denote human inbreeding. Mating of closely related persons can cause significant genetic disease in offspring. Everyone carries rare recessive genes that, in the company of other genes of the same type, are capable of causing autosomal recessive diseases. First cousins share a set of grandparents, so for any particular gene in one of them, the chance that the other inherited the same allele from the same source is one in eight. For this reason, marriage between first cousins (not to mention closer relatives) is generally discouraged, and in many areas of the world is illegal. Mating between

more distant relatives carries lesser risks. In families where a recessive genetic disorder is known or suspected to be present, genetic testing and counseling are advised, even if the level of consanguinity is very low (as, for example, in marriages between third or fourth cousins).

**constipation** Infrequent and frequently incomplete bowel movements. Constipation is the opposite of diarrhea and is commonly caused by irritable bowel syndrome (IBS), diverticulosis, and medications. Paradoxically, constipation can also be caused by overuse of laxatives. Colon cancer can also narrow the colon and thereby cause constipation. A high-fiber diet can frequently relieve constipation. If the diet is not helpful, medical evaluation is warranted.

**continuing medical education** See *CME*.

**continuous positive airway pressure** A treatment for sleep apnea that involves wearing over the face a breathing mask that forces air through the nasal passages at a steady rate, preventing the airway from collapsing during sleep. Abbreviated CPAP. See also *sleep apnea*.

**contraceptive** Something capable of preventing conception from taking place. See also *barrier method*; *birth control*; *cervical cap*; *condom*; *condom, female*; *condom, male*; *contraceptive, emergency*; *contraceptive, implanted*; *Depo-Provera*; *diaphragm*; *intrauterine device*; *oral contraceptive*.

**contraceptive, emergency** An oral contraceptive that can be taken after unprotected intercourse. For example, emergency contraceptives may be given to victims of rape as part of aftercare procedures. Also known as the morning-after pill.

**contraceptive, implanted** A time-release contraceptive that is surgically implanted under the skin.

**contraceptive device, intrauterine** See *intrauterine device*.

**contraction** The tightening and shortening of a muscle.

**contraction, uterine** The tightening and shortening of the uterine muscles. During labor, contractions cause the cervix to thin and dilate, and they aid the baby in its entry into the birth canal and then its progress through the birth canal.

**contraindicate** To make a treatment or procedure inadvisable because of a particular condition

or circumstance. For example, certain medications are contraindicated during pregnancy because of the danger they pose to the fetus, and the use of aspirin is contraindicated in small children because of the danger of Reye's syndrome.

**contraindication** A condition which makes a particular treatment or procedure inadvisable.

**contralateral** Of or pertaining to the other side. The opposite of ipsilateral (the same side). For example, a stroke involving the right side of the brain may cause contralateral paralysis of the left leg.

**control** In research, the group of participants that does not receive the treatment under investigation. The control group may be given a placebo treatment or receive a treatment with known results to permit comparison with the results of the experiment. In lab research that does not use live participants (in vitro research rather than in vivo research), control procedures serve the same purpose as a control group.

**controlled substance** A drug or chemical that is regulated by the government. This regulation applies to manufacture, possession, and usage.

**contusion** See *bruise*.

**conventional medicine** Medicine as practiced by holders of MD or DO degrees and by their allied health professionals, such as physical therapists, psychologists, and registered nurses. Also known as *allopathy*. See also *allopathy*.

**copayment** A payment made by an individual who has health insurance, usually at the time a service is received, to offset some of the cost of care. Copayments are a common feature of HMO (health maintenance organization) and PPO (preferred provider organization) health plans in the US. Copayment size may vary depending on the service; generally, low copayments are required for visits to a regular medical provider and higher copayments are required for services received in an emergency room, the latter intended to discourage insured persons from using the emergency room unless it is absolutely necessary. Also known as *coinsurance*.

**COPD** Chronic obstructive pulmonary disease. See *chronic obstructive lung disease*.

**coprolalia** The involuntary uttering of obscene, derogatory, or embarrassing words or phrases. Coprolalia is a symptom of Tourette's syndrome, a tic disorder. Like other tics, coprolalia tends to appear and disappear, and it responds to medication. See also *tic*; *tic disorder*; *Tourette's syndrome*.



**cord, vocal** See *vocal cord*.

**corn** A small callused area of skin caused by local pressure that irritates tissue over a bony prominence. Although the surface area of a corn may be small, the area of hardening actually extends into the deeper layers of skin and flesh. The inside projection of the corn is what causes discomfort. Corns most commonly occur over a toe, where they form what is referred to as hard corns. Between the toes, pressure can form a soft corn of macerated skin, which often yellows. Corns can be softened by soaking them in hot water, with or without softening agents that are available over the counter or by prescription. In some cases, minor outpatient surgery may be used to remove excess corn tissue. A corn on the toe is also called a *clavus*.

**cornea** The clear front window of the eye, which transmits and focuses light into the eye. The cornea is more than a protective film; it is a fairly complex structure that has five layers.

**cornea, conical** See *keratoconus*.

**corneal abrasion** A scratch or scrape on the cornea, the clear front window of the eye that transmits and focuses light into the eye. Corneal abrasion can also be caused by excessive dryness to the eye. The cornea can become infected and painful as a result of the abrasion. See also *cornea*.

**corneal dystrophy** A condition in which one or more parts of the cornea lose their normal clarity due to a buildup of cloudy material. There are over 20 corneal dystrophies that affect all parts of the cornea.

**corneal dystrophy, Cogan** See *Cogan corneal dystrophy*.

**corneal ring, intrastromal** A plastic ring designed to be implanted in the cornea in order to flatten the cornea and thereby correct, or reduce the degree of, nearsightedness (*myopia*). The ring is placed in the corneal stroma, the middle of the five layers of the cornea.

**coronal plane** A vertical two-dimensional imaginary slice through the body from head to foot and parallel to the shoulders.

**coronary artery** A vessel that supplies the heart muscle (*myocardium*) with blood that is rich in oxygen. The coronary arteries encircle the heart in the manner of a crown (in Latin, *corona* means "crown"). Like other arteries, the coronary arteries may be subject to arteriosclerosis (hardening of the arteries). See also *artery*.

**coronary artery bypass graft** See *bypass, coronary*.

**coronary artery disease** Impedance or blockage of one or more arteries that supply blood to the heart, usually due to atherosclerosis (hardening of the arteries). Abbreviated CAD. A major cause of illness and death, CAD begins when hard cholesterol substances (plaques) are deposited within a coronary artery. The plaques in the coronary arteries can lead to the formation of tiny clots that can obstruct the flow of blood to the heart muscle, producing symptoms and signs of CAD, including chest pain (*angina pectoris*), heart attack (*myocardial infarction*), and sudden death. Treatment for CAD includes bypass surgery, balloon angioplasty, and the use of stents.

**coronary artery spasm** A sudden constriction of a coronary artery that deprives the heart muscle of blood and oxygen. This can cause a type of sudden chest pain referred to as variant angina or Prinzmetal angina. Coronary artery spasm can be triggered by emotional stress, medicines, street drugs (particularly cocaine), and exposure to extreme cold. Treatments include the use of beta-blocker medications and, classically, nitroglycerin to allow the coronary arteries to open.

**coronary occlusion** Blockage of a coronary artery, which can cause a heart attack. See also *acute myocardial infarction*.

**coronavirus** One of a group of viruses, so named because they look like a corona or halo when viewed under the electron microscope. Coronaviruses are the second leading cause of the common cold (after the rhinoviruses). A new coronavirus was discovered to be responsible for severe acute respiratory syndrome (SARS). See also *severe acute respiratory syndrome*.

**corpora cavernosa** Two chambers that run the length of the penis and are filled with spongy tissue. Blood flows in and fills the open spaces in this spongy tissue to create an erection.

**corporeal** Pertaining to the body of an organ or the entire body.

**corpse** A dead body. The term corpse is more often used in mystery stories than in medicine, which prefers the term *cadaver*.

**corpus** The body of the uterus.

**Corrigan pulse** A pulse that is forceful and then suddenly collapses. It is usually found in patients with aortic regurgitation, a condition caused by a

leaky aortic valve. The left ventricle of the heart ejects blood under high pressure into the aorta. Then the aortic valve normally shuts tight so that blood cannot return to the ventricle. If, however, the aortic valve cannot close completely, the blood in the aorta comes sloshing back into the ventricle, and the pressure and the pulse collapse. Also known as water-hammer pulse.

**cortex** The outer layer of any organ.

**cortex, cerebral** The gray outer portion of the largest part of the brain, the cerebrum. Because it has thousands of complex folds, the cerebral cortex has a much larger surface area than one might think. Specific areas of the cerebral cortex govern sensory perception, voluntary response to stimuli, thought, memory, and the unique human capability of consciousness. The white matter of the brain lies within the cerebral cortex, and it carries instructions arising within the cortex to all other parts of the brain and body through an intricate network of nerve fibers.

**cortical** Having to do with the cortex, the outer layer of an organ.

**cortical desmoid tumor** See *desmoids tumor, cortical*.

**corticosteroid** Any of the steroid hormones made by the outer portion (cortex) of the adrenal gland. There are two sets of these hormones: the glucocorticoids, which are produced in reaction to stress and also help in the metabolism of fats, carbohydrates, and proteins; and the mineralocorticoids, which regulate the balance of salt and water within the body.

**cortisol** A metabolite of the primary stress hormone cortisone. Cortisol is an essential factor in the proper metabolism of starches, and it is the major natural glucocorticoid (GC) in humans.

**cortisone** A naturally occurring adrenocorticoid hormone that is produced in minute amounts by the adrenal gland. Synthetic cortisone is also available; it is metabolized by the body into cortisol. Uses for synthetic oral, intramuscular, and intravenous cortisone medications include treatment of adrenocortical deficiency and treatment of conditions associated with inflammation. A popular topical form is known as hydrocortisone cream.

**coryza** A head cold that includes a runny nose.

**cosmetic surgeon** See *plastic surgeon*.

**costal margin** The lower edge of the chest (thorax), formed by the bottom edge of the rib cage.

**costochondritis** Inflammation and swelling of the cartilage of the chest wall, usually involving the cartilage that surrounds the breastbone (sternum) but sometimes including the adjacent tip of a rib. Costochondritis causes local pain and tenderness of the chest around the sternum. Treatment options include anti-inflammatory medications and, in severe cases, corticosteroid injections. Also known as Tietze syndrome.

**cough** A rapid expulsion of air from the lungs, typically in order to clear the lung airways of fluids, mucus, or other material. Also known as tussis.

**cough suppressant** A drug used to control coughing, particularly with a dry, nagging, unproductive cough.

**coughing syncope** See *syncope, coughing*.

**Coumadin** See *warfarin*.

**counseling** The therapeutic practice of using discussion to help patients understand and better cope with life's problems or health issues. Areas in which counseling may be used in medicine include nutrition, genetic counseling, and family counseling (particularly to help the family cope with a member's illness or death). Counselors may also see individuals or married couples, or they may work with students in a school setting.

**counseling, genetic** See *genetic counseling*.

**counselor** A person who practices counseling. Depending on state laws, counselors may or may not be required to hold particular licenses. Credentials used by counselors include MFC (marriage and family counselor) and LMFC (licensed marriage and family counselor). Genetic counselors are certified by the American Board of Medical Genetics and the American Board of Genetic Counseling.

**cousin marriage** See *consanguinity*.

**Cowper's gland** See *bulbourethral gland*.

**cowpox** A mild skin disease of milk cows, principally confined to the udder and teats, that can be contracted by people from milking an infected cow. Affected people develop vesicles (blebs), which break and form ulcers on the fingers (sometimes called "milkers' nodules"). These usually heal without scarring.

**cox-1** Cyclooxygenase-1, an enzyme that acts to speed up the production of certain chemical messengers, called prostaglandins, in a variety of areas of the body such as the stomach, kidneys, and sites

of inflammation. In the stomach, prostaglandins promote the production of a protective natural mucus lining. They also interact within certain cells that are responsible for inflammation and other functions.

**cox-2** Cyclooxygenase-2, an enzyme that acts to speed up the production of certain chemical messengers, called prostaglandins that play a key role in in promoting inflammation. When cox-2 activity is blocked, inflammation is reduced. Unlike cox-1, cox-2 is active only at the site of inflammation, not in the stomach.

**cox-2 inhibitor** An antiinflammatory drug that selectively blocks the cox-2 enzyme. Blocking this enzyme impedes the production of the chemical messengers that cause the pain and swelling of arthritis inflammation. Cox-2 inhibitors do not pose as great a risk of injuring the stomach or intestines as drugs that block cox-1. An example of a cox-2 inhibitor is celecoxib (brand name: Celebrex).

**Coxsackievirus** A family of enteroviruses first found in the town Coxsackie, south of Albany, New York. The Coxsackieviruses are separable into two groups: A and B. Type A viruses cause herpangina (sores in the throat) and hand, foot, and mouth disease. Type B viruses cause epidemic pleurodynia. Both types A and B viruses can cause meningitis, myocarditis, and pericarditis, as well as diabetes in children.

**CPAP** Continuous positive airway pressure. See also *sleep apnea*.

**CPR** Cardiopulmonary resuscitation.

**crabs** Slang for pubic lice, parasitic insects that can infest in the genital area of humans. Pubic lice are usually spread through sexual contact. Rarely, infestation can be spread through contact with an infested person's bed linens, towels, or clothes. The key symptom of pubic lice is itching in the genital area. Lice eggs (nits) or crawling lice can be seen with the naked eye.

**cracked-tooth syndrome** A toothache caused by a broken tooth (tooth fracture), without associated caries (cavities) or advanced gum disease. Biting on the area of tooth fracture can cause severe, sharp pains. Tooth fractures are usually caused by chewing or biting hard objects, such as hard candies, pencils, nuts, or ice. Treatment usually involves protecting the tooth with a crown. However, if placing a crown does not relieve pain symptoms, root canal surgery may be necessary.

**cradle cap** A form of seborrheic dermatitis of the scalp that is usually seen in infants but sometimes found in older children. It is characterized by flaking or scaling of the skin, which may also be reddened.

**cramp, writer's** A dystonia that affects the muscles of the hand and sometimes the forearm and that only occurs during handwriting. Similar focal dystonias have been called typist's cramp, pianist's cramp, musician's cramp, and golfer's cramp.

**cranial** Toward (the opposite of caudad) or of the head. See also Appendix B, "Anatomic Orientation Terms."

**cranial arteritis** See *arteritis, cranial*.

**cranial dystonia** See *dystonia, cranial*.

**cranial nerves** The nerves of the brain, which emerge from or enter the skull (the cranium), as opposed to the spinal nerves, which emerge from the vertebral column. There are 12 cranial nerves, each of which is accorded a Roman numeral and a name:

- Cranial nerve I: the olfactory nerve
- Cranial nerve II: the optic nerve
- Cranial nerve III: the oculomotor nerve
- Cranial nerve IV: the trochlear nerve
- Cranial nerve V: the trigeminal nerve
- Cranial nerve VI: the abducent nerve
- Cranial nerve VII: the facial nerve
- Cranial nerve VIII: the vestibulocochlear nerve
- Cranial nerve IX: the glossopharyngeal nerve
- Cranial nerve X: the vagus nerve
- Cranial nerve XI: the accessory nerve
- Cranial nerve XII: the hypoglossal nerve

**craniocleidodysostosis** See *cleidocranial dysostosis*.

**craniofacial disorder** A disorder that affects the structure of the skull and face.

**craniopharyngioma** A benign brain tumor that develops from embryonic tissue that forms part of the pituitary gland. Pressure on the pituitary gland by the tumor reduces the availability of the hormone vasopressin, raising the pressure within the cranium. A craniopharyngioma usually includes hard, calcified components within the tumor itself and affects the development of the adjacent skull. Treatment is usually surgery.

**craniosacral therapy** An alternative therapy in which practitioners attempt to create positive effects by manipulating the bones of the skull and spine, as well as the fascia that underlies muscle tissue. There is little scientific evidence at this time for the value of craniosacral therapy.

**craniosynostosis** Premature fusion of the sutures between the growth plates in an infant's skull that prevents normal skull expansion. Craniosynostosis can cause an abnormally shaped skull. Premature closure of all the sutures can cause microcephaly (an abnormally small head), which prevents the normal growth of the brain and results in mental retardation. Treatment usually involves surgery.

**craniotomy** A surgical operation in which an opening is made in the skull.

**cranium** The top portion of the skull, which protects the brain. The cranium includes the frontal, parietal, occipital, temporal, sphenoid, and ethmoid bones.

**C-reactive protein** An acute-phase plasma protein whose blood concentration reflects the presence and intensity of inflammation. Abbreviated CRP. Conditions that commonly lead to marked increases in CRP include infection, trauma, surgery, burns, inflammatory conditions, and advanced cancer. Moderate changes occur after strenuous exercise, heatstroke, and childbirth. Small changes occur after psychological stress and in several psychiatric illnesses. Elevated levels of CRP are associated with atherosclerosis and heart disease.

**cream** A water-soluble medicinal preparation applied to the skin. An ointment differs from a cream in that it has an oil base, as opposed to being water-soluble.

**crepitus** A clinical sign in medicine that is characterized by a peculiar crackling, crinkly, or grating feeling or sound under the skin, around the lungs, or in the joints. Crepitus in soft tissues is often due to gas, most often air, that has penetrated and infiltrated an area where it should not normally be (for example, in the soft tissues beneath the skin). Crepitus in a joint can indicate cartilage wear in the joint space.

**CREST syndrome** A limited form of scleroderma, a disease of connective tissue that involves the formation of scar tissue (fibrosis) in the skin and sometimes also in other organs of the body. "CREST" is an acronym for Calcinosis (the formation of tiny deposits of calcium in the skin), Raynaud's phenomenon (spasm of the tiny artery

vessels that supply blood to the fingers, toes, nose, tongue, or ears), Esophageal dysmotility (esophageal involvement by the scleroderma), Sclerodactyly (localized thickening and tightness of the skin of the fingers or toes), and Telangiectasias (dilated capillaries that form tiny red areas, frequently on the face and hands and in the mouth, behind the lips).

**cretinism** Congenital hypothyroidism (underactivity of the thyroid gland at birth), which results in growth retardation, developmental delay, and other abnormal features. Cretinism can be due to deficiency of iodine in the mother's diet during pregnancy.

**Creutzfeldt-Jakob disease** A degenerative disease of the brain that causes dementia and, eventually, death. It is believed to be caused by an unconventional microbe called a prion, rather than by bacteria or a virus. Abbreviated CJD. Symptoms of CJD include forgetfulness, nervousness, trembling hand movements, unsteady gait, muscle spasms, chronic dementia, balance disorder, and loss of facial expression. CJD is classified as a spongiform encephalopathy, and it has some relationship to animal diseases in that category, most notably bovine spongiform encephalopathy (mad cow disease). There is neither treatment nor cure for CJD. Also known as Creutzfeldt-Jakob syndrome, Jakob-Creutzfeldt disease, and spastic pseudoparalysis.

**crib death** See *SIDS*.

**crippled** A medically outmoded and politically incorrect term that implies a serious loss of normal function through damage or loss of an essential body part or element. The term has been replaced by handicapped.

**critical care** The specialized care of patients whose conditions are life-threatening and who require comprehensive care and constant monitoring, usually in intensive care units. Also known as intensive care.

**Crohn's colitis** Crohn's disease involving only the large intestine (colon). See also *Crohn's disease*.

**Crohn's disease** A chronic inflammatory bowel disease that primarily involves the small and/or large intestine. Crohn's disease can be a chronic, recurrent condition, or it can cause minimal symptoms. In mild forms, Crohn's disease causes scattered, shallow, ulcers in the inner surface of the bowel. In more serious cases, deeper and larger ulcers can develop, causing scarring, stiffness, and

possibly narrowing of the bowel, sometimes leading to obstruction. Deep ulcers can puncture holes in the bowel wall, leading to infection in the abdominal cavity (peritonitis) and in adjacent organs. Abdominal pain, diarrhea, vomiting, fever, and weight loss can be symptoms. Diagnosis is commonly made by X-ray or colonoscopy. Treatments include medications that reduce inflammation, suppress the immune system, and antibiotics. Dietary changes can reduce symptoms. When severe, surgery can be necessary. Also known as regional enteritis. See also *Crohn's enteritis*; *Crohn's enterocolitis*; *Crohn's ileitis*; *Crohn's ileocolitis*.

**Crohn's enteritis** Crohn's disease involving only the small intestine. See also *Crohn's disease*.

**Crohn's enterocolitis** Crohn's disease involving both the small and large intestines. See also *Crohn's disease*.

**Crohn's ileitis** Inflammation of the ileum (the lowest part of the small intestine) due to Crohn's disease. See also *Crohn's disease*.

**Crohn's ileocolitis** Crohn's disease involving the ileum (the lowest portion of the small intestine) and the colon (the large intestine). See also *Crohn's disease*.

**cross-section** In anatomy, a transverse cut through a structure or tissue. The opposite is longitudinal section.

**cross-sectional study** A research study done at one time, not over the course of time. A cross-sectional study might be a study of a disease such as AIDS at one point in time, to learn its prevalence and distribution within the population. Also known as a synchronic study.

**cross-training** Doing two or more aerobic activities, such as jogging, bicycling, and swimming, on a regular basis.

**crossed embolism** See embolism, paradoxical.

**crossing over** Exchanging genetic material between two paired chromosomes. Crossing over is a way to recombine the genetic material so that each person (except for identical twins) is genetically unique.

**crossover study** A type of clinical trial in which the study participants receive each treatment in a random order. With this type of study, every patient serves as his or her own control. Crossover studies are often used when researchers feel it would be difficult to recruit participants willing to risk going without a promising new treatment.

**croup** An infection of the larynx, trachea, and bronchial tubes that occurs mainly in children. It is usually caused by viruses but sometimes by bacteria. Symptoms include a cough that sounds like a seal's bark and a harsh crowing sound during inhalation. A low-grade fever is common. A major concern with croup is difficulty breathing as the air passages narrow. Treatment may include administration of moist air (as from a humidifier), saltwater nose drops, decongestants and cough suppressants, pain medication, fluids, and, if the infection is bacterial, antibiotics. The breathing of a child with croup should be closely monitored, especially at night, when croup usually gets worse due to prone body position while sleeping. Although most children recover from croup without hospitalization, some may develop life-threatening breathing difficulties. Therefore, close contact with a physician during croup is especially important.

**Crouzon syndrome** A hereditary craniofacial disorder characterized by craniosynostosis, small eye sockets that cause the eyes to protrude, a large jaw, and a beaked nose with narrowed breathing passages. Some people with Crouzon syndrome also have sleep apnea, hearing loss, and other difficulties. Treatment involves surgery to correct the craniofacial malformations. Also known as craniofacial dysostosis. See also *craniosynostosis*.

**CRP** C-reactive protein.

**cruciate** Cross-shaped.

**cruciate ligament** A ligament, such as the ligaments in the knee, that crosses other ligaments. See also *anterior cruciate ligament*; *posterior cruciate ligament*.

**cruciate ligament, anterior** See *anterior cruciate ligament*.

**cruciate ligament, posterior** See *posterior cruciate ligament*.

**cryocardioplegia** Cold-induced cardioplegia. See also *cardioplegia*.

**cryoglobulinemia** The presence in blood of abnormal proteins called cryoglobulins that have the unusual property of precipitating from the blood serum when it is chilled and redissolving upon rewarming. Cryoglobulins can increase the risk of blood clots forming in the brain (stroke), eyes, and heart. Cryoglobulins can also cause inflammation of blood vessels (vasculitis), which increases the risk of artery blockage. Cryoglobulinemia can also accompany another disease, such as multiple myeloma, dermatomyositis, or lymphoma.



Sometimes, small amounts of cryoglobulins are detected in blood samples from people who have no apparent symptoms.

**cryopreservation** The process of cooling and storing cells, tissues, or organs at very low temperatures to maintain their viability. For example, the technology of cooling and storing cells at a temperature below the freezing point ( $-196^{\circ}\text{C}$ ) permits high rates of survivability of the cells upon thawing.

**cryoprotectant** A chemical component of a freezing solution used in cryopreservation to help protect what is being frozen from freeze damage. The chemical glycerol, for example, is commonly used as a cryoprotectant to protect frozen red blood cells.

**cryosurgery** Treatment performed with an instrument that freezes and destroys abnormal tissue.

**crypt** In anatomy, variously a blind alley, a tube with no exit, a depression, or a pit in an otherwise fairly flat surface. For example, the tonsillar crypts are little pitlike depressions in the tonsils.

**cryptorchidism** A condition in which one or both testicles fail to move from the abdomen, where they develop before birth, down into the scrotum. Boys who have had cryptorchidism that was not corrected in early childhood are at increased risk for developing cancer of the testicles. Also known as undescended testicles.

**C-section** See *caesarean section*.

**CSF** 1 Cerebrospinal fluid. 2 Colony-stimulating factor.

**CT scan** See *CAT scan*.

**CTL** Cytotoxic T lymphocytes. See *T lymphocyte, cytotoxic*.

**CTS** Carpal tunnel syndrome.

**cuboid bone** The cube-shaped outer bone in the instep of the foot. The cuboid bone has a joint in back that allows it to articulate posteriorly with the calcaneus (the heel bone). It also has a joint in the front that permits it to articulate anteriorly with the fourth and fifth metatarsals (the bones just behind the fourth and fifth toes).

**cul-de-sac** In anatomy, a blind pouch or cavity that is closed at one end. The term cul-de-sac is used specifically to refer to the rectouterine pouch (the pouch of Douglas), an extension of the peritoneal cavity between the rectum and back wall of the uterus.

**culdocentesis** The puncture and aspiration (withdrawal) of fluid from the rectouterine pouch (the pouch of Douglas), an extension of the peritoneal cavity between the rectum and back wall of the uterus.

**culdoscope** The viewing tube (endoscope) introduced through the end of the vagina into the rectouterine pouch (the pouch of Douglas), an extension of the peritoneal cavity between the rectum and back wall of the uterus, in a culdoscopy.

**culdoscopy** The introduction of a viewing tube (called an endoscope or culdoscope) through the end of the vagina into the rectouterine pouch (the pouch of Douglas), an extension of the peritoneal cavity between the rectum and back wall of the uterus.

**cultural evolution** Social change mediated by ideas. Cultural evolution shows a rapid rate of change, is usually purposeful and often beneficial, is widely disseminated by diverse means, is frequently transmitted in complex ways, and is enriched by the frequent formation of new ideas and new technologies. Cultural evolution is unique to humans among all forms of life. See also *biologic evolution*.

**culture** In microbiology, the propagation of microorganisms in a growth medium. Any body tissue or fluid can be evaluated in the laboratory by using culture techniques to detect and identify infectious processes. Culture techniques can be used to determine sensitivity to antibiotics. Cells may also be grown in culture.

**curettage** Removal of tissue with a curette from the wall of a cavity or another surface. For example, curettage may be done to remove skin cancer. After a local anesthetic numbs the area, the skin cancer is scooped out with a curette. Curettage may also be done in the uterus; dilation and curettage (D&C) refers to the dilation (widening) of the cervical canal to permit curettage of the endometrium, the inner lining of the uterus.

**curette** spoon-shaped instrument that has a sharp edge. The word curette comes from French and means "scraper." Also spelled curet.

**Curie** A unit of radioactivity. Specifically, a Curie is the quantity of any radioactive nuclide in which the number of disintegrations per second is  $3.7 \times 10$  to the 10th power.

**Cushingoid** Having the constellation of symptoms and signs seen in Cushing's syndrome, caused by an excess of cortisol hormone, particularly facial puffiness and unexplained weight gain. For example, a

Cushingoid appearance can result from the extended use of cortisone medications, such as prednisone and prednisolone. See also *Cushing's syndrome*.

**Cushing's syndrome** A constellation of symptoms and signs caused by an excess of cortisol hormone. Cushing's syndrome is a hormonal condition that affects many areas of the body. Common symptoms are thinning of the skin; weakness; weight gain; bruising; hypertension; diabetes; thin, weak bones (osteoporosis); facial puffiness; and, in women, cessation of menstrual periods. One of the most common causes of Cushing's syndrome is the administration of cortisol-like medications for the treatment of diverse diseases. All other cases of Cushing's syndrome are due to the excess production of cortisol by the adrenal gland.

**cusp** **1** In reference to a heart valve, a triangular segment of the valve, which opens and closes with the flow of blood. **2** In reference to teeth, a raised area of the biting surface.

**cut** An area of severed skin. It is important to wash a cut with soap and water, and keep it clean and dry, but avoid putting alcohol, hydrogen peroxide, or iodine into a cut, which can delay healing. Delay in getting medical care can increase the rate of wound infection. If a cut results from a puncture wound through a shoe, there is a high risk of infection. Redness, swelling, increased pain, and pus draining from the wound also indicate an infection that requires professional care.

**cutaneous** Related to the skin.

**cutaneous papilloma** See *skin tag*.

**cutaneous syndactyly** See *syndactyly, cutaneous*.

**cutis anserina** See *goose bumps*.

**CVS** Chorionic villus sampling.

**cyanosis** A bluish color of the skin and the mucous membranes due to insufficient oxygen in the blood. For example, the lips can develop cyanosis when exposed to extreme cold. Cyanosis can be present at birth, as in a "blue baby," an infant with a malformation of the heart that permits into the arterial system blood that is not fully oxygenated.

**cyanotic** Characterized by cyanosis. See also *cyanosis*.

**cycle, cell** See *cell cycle*.

**cycle, menstrual** The monthly progression of changes in the endometrium (the lining of the

uterus), which includes the shedding of part of the endometrium and menstruation (monthly vaginal bleeding). This cycle is governed by a complex sequence of hormones that influence fertility and may affect mood and a variety of physical functions. By convention, the menstrual cycle is considered to begin on the first day of menstrual bleeding. See also *menstruation*.

**cyclooxygenase-1** See *cox-1*.

**cyclooxygenase-2** See *cox-2*.

**cyclooxygenase-2 inhibitor** See *cox-2 inhibitor*.

**cyclophosphamide** A medication (brand name: Cytoxan) that is prescribed primarily to suppress the immune system and kill growing cells in people with autoimmune disorders and certain types of cancer respectively.

**cyclosporine** An immunosuppressing medication (brand names: Neoral, Sandimmune) that is prescribed chiefly for organ transplant recipients and people with autoimmune disorders.

**cyclothymia** A form of bipolar disorder in which the mood swings are less severe than manic depression. See also *bipolar disorder*.

**cyst** A closed sac or capsule, usually filled with fluid or semisolid material.

**cyst, Baker** See *Baker cyst*.

**cyst, Meibomian** An inflammation of the oil gland of the eyelid. Also known as chalazion or tarsal cyst.

**cyst, ovarian** A fluid-filled sac in the ovary. The most common type of ovarian cyst is a follicular cyst. Other cysts can contain blood; they are called hemorrhagic or endometrioid cysts. Still other types of ovarian cysts are called dermoid cysts, or ovarian teratomas. These bizarre but usually benign tumors can contain many different body tissues, such as hair, teeth, bone, or cartilage. Most ovarian cysts are never noticed. When a cyst causes symptoms, pain is by far the most common feature. Pain from an ovarian cyst can be caused by rupture of the cyst, rapid growth of the cyst, and spontaneous bleeding into the cyst, or the cyst twisting around its blood supply. Diagnosis is usually made with ultrasound imaging. Treatment of ovarian cysts depends on the woman's age, the size and type of the cyst, and the cyst's appearance on ultrasound. If a cyst is causing severe pain, is not resolving, or is suspicious in any way, it can be removed through laparoscopy or, if necessary, through an open laparotomy (bikini

incision). See also *cyst of the ovary, follicular; ovarian teratoma*.

**cyst, pilonidal** An abscess that occurs in the cleft between the buttocks. Pilonidal cysts form frequently in adolescence after long trips that involve sitting, and they may be painful. Treatment frequently involves surgery if not responsive to heat applications and antibiotics.

**cyst, sebaceous** A rounded, swollen area of the skin formed by an abnormal sac of retained oily excretion (sebum) from the sebaceous glands. See also *gland, sebaceous*.

**cyst, synovial, of the popliteal space** See *Baker cyst*.

**cyst, tarsal** See *cyst, Meibomian*.

**cyst, thyroglossal** A fluid-filled sac that is present at birth and located in the midline of the neck. A thyroglossal cyst is a congenital malformation (a birth defect). It results from incomplete closure of a segment of the thyroglossal duct, a tube-like structure that normally closes as the embryo develops. Also called a thyroglossal duct cyst or a thyrolingual cyst.

**cyst, thyrolingual** See *cyst, thyroglossal*.

**cyst of the ovary, follicular** A fluid-filled sac in the ovary. A follicular cyst is the most common type of ovarian cyst. It results from the overgrowth of a follicle, the fluid-filled cyst that contains an egg, that does not rupture to release the egg. Normally ovarian cysts resolve with no intervention over the course of days to months. See also *cyst, ovarian*.

**cystectomy** Surgery to remove the bladder.

**cystic acne** A localized infection (abscess) that is formed when oil ducts become clogged and infected. Cystic acne is most common in the teenage years. Treatment includes avoiding irritants on the face, including many cleansers and cosmetics, and in some severe cases, use of steroid or antibiotic medication. Cystic acne can cause permanent scarring in severe cases and in those who are prone to forming keloids. See also *acne vulgaris*.

**cystic fibrosis** A common grave genetic disease that affects the exocrine glands and is characterized by the production of abnormal secretions, leading to mucus buildup that impairs the pancreas and, secondarily, the intestine. Mucus buildup in lungs can impair respiration. Abbreviated CF. Without treatment, CF results in death for 95 percent of affected children before age 5; however, a few long-lived CF patients have survived past age 60. Early

diagnosis is of great importance. Treatment includes physical therapy to loosen the mucus in the lungs and use of pancreatic enzymes and medications to fight dangerous infections of the lungs. One in 400 couples is at risk for having children with CF. CF is a recessive trait, so the chance of an at-risk couple having a child with CF is 25 percent with each pregnancy. CF is caused by mutations in the CFTR (cystic fibrosis conductance regulator) gene, which is located on chromosome 7.

**cysticercosis** An infection caused by the pork tapeworm, *Taenia solium*. Infection occurs when the tapeworm larvae enter the body and form cysts called cysticerci. When cysticerci are found in the brain, the condition is called neurocysticercosis. Cysticercosis is contracted by accidentally swallowing pork tapeworm eggs. Tapeworm eggs are passed in the bowel movement of a person who is infected. When the tapeworm eggs are inside the stomach, they hatch, penetrate the intestine, travel through the bloodstream, and may develop into cysticerci in the muscles, brain, or eyes. Infection is found most often in rural, developing countries where hygiene is poor and pigs are allowed to roam freely and eat human feces. Cysticercosis is not spread from person to person. However, a person who is infected with the intestinal tapeworm stage of the infection (*T. solium*) sheds tapeworm eggs in bowel movements. Tapeworm eggs that are accidentally swallowed by another person can cause infection.

**cystine** An amino acid that is particularly notable because it is the least soluble of all naturally occurring amino acids and because it precipitates out of solution in the heritable disease cystinuria. Cystine tends to precipitate out of urine and form stones (calculi) in the urinary tract, which can obstruct the flow of urine. See also *cystinuria*.

**cystine kidney stones** Kidney stones formed due to an excess of cystine in the urine. Small stones are passed in the urine, but big stones remain in the kidney, impairing the outflow of urine. Medium-size stones can make their way from the kidney into the ureter and lodge there, further blocking the flow of urine. See also *cystinuria*.

**cystine transport disease** See *cystinuria*.

**cystinuria** A genetic disorder that affects the transport of an amino acid called cystine and results in an excess of cystine in the urine and the formation of cystine kidney stones. Cystinuria is the most common defect in the transport of amino acids. Signs and symptoms of cystinuria include blood in the urine (hematuria); pain in the side due to kidney pain; intense, cramping pain due to stones in the urinary tract (renal colic); urinary tract disease

due to obstruction (obstructive uropathy); and urinary tract infections. There are several genetic types of cystinuria. See also *cystine kidney stones*.

**cystitis** Inflammation of the bladder. See also *bladder inflammation*.

**cystitis, interstitial** Chronic inflammation or irritation of the bladder wall of unknown cause. This inflammation can lead to scarring and stiffening of the bladder, and even to ulcerations and bleeding. Diagnosis is based on symptoms, findings from cystoscopy and biopsy, and elimination of other treatable causes, such as infection, as suspects. Treatment is aimed at relieving symptoms. Abbreviated IC.

**cystocele** Bulging of the bladder into the vagina.

**cystoscope** A lighted optical instrument that is inserted through the urethra into the bladder. A cystoscope has two ports: an optical port that permits one to see inside the bladder and a port for insertion of various instruments designed for biopsy, treatment of small bladder tumors, removal of stones from the bladder, and removal of the prostate.

**cystoscopy** A procedure in which a lighted optical instrument called a cystoscope is inserted through the urethra to look at the bladder.

**cytogenetics** The study of chromosomes, which are the visible carriers of the hereditary material. Cytogenetics is a fusion science, joining cytology (the study of cells) with genetics (the study of inherited variation).

**cytogenetics, clinical** See *clinical cytogenetics*.

**cytomegalovirus** A DNA-containing virus from the herpes virus family. Infection with human cytomegalovirus can also cause viral hepatitis and viral pneumonia. Also known as human herpes virus 5 (HHV-5). Abbreviated CMV. See also *mononucleosis*.

**cytometry, flow** See *flow cytometry*.

**cytoplasm** The substance of a cell that lies outside the nucleus.

**cytosine** A fundamental gene particle of the G-C (guanine-cytosine) pair of bases in DNA.

**cytotoxic T lymphocyte** See *T lymphocyte, cytotoxic*.

**Cytosan** See *cyclophosphamide*.

# Dd

**D & C** Dilatation and curettage. See also *abortion*.

**da Vinci, Leonardo** The father of anatomic art, as well as an accomplished architect, scientist, engineer, inventor, poet, sculptor, and painter. In striking contrast to the pronouncements of Galen and other anatomists, da Vinci recognized that optimal scientific knowledge of human anatomy could be gained only by dissecting the human body. He injected the blood vessels and cerebral ventricles with wax for preservation, a technique that is still used today. His drawings of the human anatomy have long been considered to be unrivaled.

**dacryocyst** The lacrimal sac; tear sac. The dilated (widened) upper end of the nasolacrimal duct, the passageway that allows tears to drain into the nasal cavity.

**dactyl-, -dactyl** Prefix or suffix denoting the digits (fingers or toes), as in dactylitis (inflammation of a finger or toe).

**dactyledema** Swelling of a finger or toe.

**dactylitis** Inflammation of a finger or toe.

**dactylomegaly** Enlargement of a finger or toe.

**dactylospasm** A cramp of a finger or toe.

**Daily Prayer of a Physician** A prayer that is said to have been written by the twelfth-century physician-philosopher Moses Maimonides, but possibly penned by German physician Marcus Herz. This prayer is often recited by new medical graduates.

**Daltonism** See *red-green colorblindness*.

**dander** Tiny scales shed from human or animal skin or hair. Dander floats in the air, settles on surfaces, and makes up a good portion of household dust. Cat dander is a common cause of allergic reactions.

**dandruff** A scalp condition that produces white flakes that may be shed and fall from the hair. One cause of dandruff is overworking of the sebaceous

glands. Another cause of dandruff is fungus, especially an abundance of the fungus *Pitrosporum ovale*. If several weeks of using a good-quality shampoo does not stop the dandruff, treatment options include an antifungal shampoo such as Denorex, DHS Targel, ionil-T plus, MG217, Neutrogena T/Gel, Scalpicin, Sebulex, Selsun Blue, Tegrin, or Zircon. The active ingredients approved for dandruff treatment by the US Food and Drug Administration (FDA) include tar, pyrrithione zinc, salicylic acid, selenium sulfide, sulfur, and ketoconazole.

**dandy fever** See *dengue fever*.

**Danlos syndrome** See *Ehlers-Danlos syndrome*.

**Darier disease** See *keratosis follicularis*.

**DASH diet** An eating plan designed to lower the blood pressure. DASH is an acronym for Dietary Approaches to Stop Hypertension. The DASH "combination diet" has been shown to decrease the blood pressure, and so helps to prevent and control high blood pressure. The DASH "combination diet" is rich in fruits, vegetables, and low fat dairy foods. It is low in saturated and total fat and cholesterol, while high in dietary fiber, potassium, calcium, and magnesium, and somewhat high in protein.

**daw** Abbreviation meaning "dispense as written."

**day sight** See *nyctanopia*.

**DDH** Developmental dysplasia of the hip. See *congenital hip dislocation*.

**DDX** See *differential diagnosis*.

**De Quervain's tenosynovitis** Inflammation of tendons on the side of the wrist at the base of the thumb. These tendons include the extensor pollicis brevis and the abductor pollicis longus tendons. De Quervain's tenosynovitis is typically associated with pain when the thumb is folded across the palm and the fingers are flexed over the thumb as the hand is pulled away from the involved wrist area (the Finklestein sign). Treatment includes a combination of rest, splinting, ice, anti-inflammation medication, and/or cortisone injection. Surgery is rarely necessary.

**DEA** The Drug Enforcement Administration of the US Department of Justice, which regulates interstate commerce in prescription drugs to prevent them from being used as drugs of abuse. Every prescription written in the US bears the DEA number of the prescribing physician.

**deafness** Partial or complete hearing loss. Levels of hearing impairment vary from a mild to a total loss of hearing. Elderly adults suffer most often from hearing loss. The most common cause of hearing



loss in children is otitis media. A substantial number of hearing impairments are caused by environmental factors such as noise, drugs, and toxins. Deafness can also result from inherited disorders.

**deafness, ichthyosis-keratitis** See *keratitis-ichthyosis-deafness syndrome*.

**deafness with goiter** See *Pendred syndrome*.

**death** The end, or cessation, of life. In the US, the Uniform Determination of Death Act states that: "An individual who has sustained either 1 irreversible cessation of circulatory and respiratory functions, or 2 irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards."

**death, black** See *bubonic plague*.

**death rate, crude** The number of deaths in the population divided by the average population (or the population at midyear).

**debilitate** To impair the strength of or to enfeeble. A chronic progressive disease may debilitate a patient.

**debride** To remove dead, contaminated, or adherent tissue and/or foreign material. To debride a wound is to remove all materials that may promote infection and impede healing. This may be done by enzymes (as with proteolytic enzymes), mechanical methods (as in a whirlpool), or sharp debridement (using instruments).

**deciduous teeth** See *primary teeth*.

**decongestant** A drug that shrinks the swollen membranes in the nose, making it easier for a person to breathe. Decongestants can be taken orally or as nasal spray. Decongestant nasal spray should not be used for more than 5 days without a physician's recommendation. Many decongestant nasal sprays cause a worsening of symptoms (a rebound effect) when they are taken for too long and then discontinued. Decongestants should not be used by people who have high blood pressure unless they are under a physician's supervision.

**decubitus ulcer** See *bedsore*.

**deep** Away from the exterior surface, or farther into the body, as opposed to superficial. For example, the bones are deep to the skin. See also Appendix B, "Anatomic Orientation Terms."

**deep vein thrombosis** A blood clot within a deep vein, typically in the thigh or leg. The blood clot (thrombus) can break off as an embolus and make its way to the lung, where it can cause lung problems. Abbreviated DVT. Also known as economy-class syndrome.

**defecation syncope** See *vasovagal syncope*.

**defect, atrial septal** See *atrial septal defect*.

**defect, enzyme** See *enzyme defect*.

**defect, ventricular septal** See *ventricular septal defect*.

**defibrillation** The use of a carefully controlled electric shock, administered either through a device on the exterior of the chest wall or directly to the exposed heart muscle, to normalize the rhythm of the heart or restart it.

**defibrillator** A device that corrects an abnormal heart rhythm by delivering electrical shocks to restore a normal heartbeat.

**defibrillator, implantable cardiac** See *cardiac defibrillator, implantable*.

**deficiency, adenosine deaminase** See *adenosine deaminase deficiency*.

**deficiency, alpha-1 antitrypsin** See *alpha-1 antitrypsin deficiency*.

**deficiency, ankyrin** See *spherocytosis, hereditary*.

**deficiency, calcium** See *calcium deficiency*.

**deficiency, ceruloplasmin** See *ceruloplasmin deficiency*.

**deficiency, G6PD** Deficiency of the enzyme glucose-6-phosphate dehydrogenase (G6PD), the most common enzyme defect of medical importance. The frequency of G6PD deficiency is increased in blacks and people of Mediterranean origin (including Italians, Greeks, Arabs, and Jews). Persons with this enzyme deficiency can develop anemia due to the breakup of their red blood cells when they are first born and when they are exposed to certain drugs, naphthalene moth balls, fava beans, fever, viral and bacterial infections, and diabetic acidosis. Drugs that can stimulate the anemia include the antimalarials hydroxychloroquine and primaquine, salicylates, dapsone, sulfonamide antibiotics, nitrofurans, phenacetin, and some vitamin K derivatives.

**deficiency, glucocerebrosidase** See *Gaucher disease*.

**deficiency, glucose-6-phosphate dehydrogenase** See *deficiency, G6PD*.

**deficiency, hex-A** See *Tay-Sachs disease*.

**deficiency, iron** An inadequate amount of iron, the most common known form of nutritional disorder in the world. Iron is necessary to make hemoglobin, the molecule in red blood cells that transports oxygen. Iron deficiency results in anemia. The prevalence of iron deficiency is highest among young children and women of childbearing age (particularly pregnant women). In pregnant women, iron deficiency increases the risk for preterm delivery and delivery of babies with low birth weight. In children, iron deficiency causes developmental delays, behavioral disturbances, failure to thrive, and increased infections. The treatment of iron deficiency anemia includes using iron supplements and iron-containing foods in the diet. Food sources of iron include meat, poultry, eggs, vegetables, and cereals (especially those fortified with iron). However, iron supplements should not be given to children unless a physician recommends them.

**deficiency, lactase** Lack of the enzyme lactase in the small intestine. Lactase is needed to digest lactose, a sugar found in milk and most other dairy products and also used as an ingredient in other foods. Although most people are born with the ability to make adequate amounts of lactase, the production of lactase normally decreases with age, and there are significant differences in lactase production among ethnic groups. People of African or Asian descent commonly have difficulty digesting products that contain lactose. The most common symptoms of lactase deficiency are diarrhea, bloating, and gas. Treatment usually involves avoiding lactose in the diet or taking over-the-counter lactase supplements before eating foods that contain lactose.

**deficiency, LCHAD** Deficiency of the enzyme long-chain-3-hydroxyacyl-CoA dehydrogenase (LCHAD), an abnormality of fatty acid metabolism. Acute fatty liver of pregnancy (AFLP) has been found to be associated in some cases with LCHAD deficiency. In such cases, both parents have LCHAD activity at half of normal levels, but the fetus has none. The metabolic disease in the baby's liver apparently causes the fatty liver disease in the mother. In women who have had AFLP, the risk of AFLP increases with each pregnancy. See also *acute fatty liver of pregnancy*.

**deficiency, long-chain-3-hydroxyacyl-CoA dehydrogenase** See *deficiency, LCHAD*.

**deficiency, magnesium** Lack of magnesium, which can occur because of inadequate intake or impaired intestinal absorption of magnesium. Low magnesium levels are often associated with low calcium and potassium levels because these nutrients interact with each other. Magnesium deficiency causes increased irritability of the nervous system, as evidenced by spasms of the hands and feet, muscular twitching and cramps, spasms of the larynx, and other symptoms. Treatment involves ensuring intake and absorption of the recommended dietary allowances of magnesium, currently 420 mg per day for men and 320 mg per day for women. One should not take more than 350 mg per day in supplement form, however.

**deficiency, niacin** See *pellagra*.

**deficiency, protein C** See *protein C deficiency*.

**deficiency, selenium** Lack of the essential mineral selenium, which can cause Keshan disease, a fatal form of disease of the heart muscle (cardiomyopathy) that was first observed in Keshan province in China and has since been found elsewhere. Treatment involves ensuring intake of the recommended dietary allowance of selenium, currently 70 mg per day for men and 55 mg per day for women. Food sources of selenium include seafood; some meats, such as kidney and liver; and some grains and seeds.

**deficiency, UDP-glucuronosyltransferase** See *Gilbert syndrome*.

**deficiency, zinc** A lack of zinc that is associated with short stature, anemia, increased pigmentation of skin, enlarged liver and spleen, impaired gonadal function, impaired wound healing, and immune deficiency. The diagnosis is with an abnormally low blood zinc level. One form of zinc deficiency is the hereditary skin disease acrodermatitis enteropathica. Treatment involves ensuring intake of the recommended dietary allowance of zinc, currently recommended 12 mg per day for women and 10 mg per day for men. Food sources of zinc include meat, eggs, seafood, nuts, and cereals. Longstanding zinc deficiency can lead to chronic diarrhea and inflammation of the skin (dermatitis). See also *acrodermatitis enteropathica*.

**deformation** A change from the normal size or shape of a structure produced by mechanical forces that distort an otherwise normal structure. Deformations occur most often late in pregnancy and during delivery. For example, a twin pregnancy can cause deformations due to crowding of the twins late in pregnancy. A well-known example of a deformation is molding of the head of a baby born by

vaginal delivery. A deformation is different from a malformation in both timing and impact. See also *malformation*.

**degeneration, macular** See *macular degeneration*.

**degenerative arthritis** See *arthritis, degenerative*.

**degenerative joint disease** See *arthritis, degenerative*.

**deglutition** The act of swallowing, particularly of swallowing food. The muscles of deglutition are the muscles employed in the act of swallowing.

**dehiscence** To burst open or gape. A surgical wound may partially or completely dehiscence after surgery, depending upon whether some or all of the layers of tissue come open.

**dehydration** Excessive loss of body water. Diseases of the gastrointestinal tract that cause vomiting or diarrhea may lead to dehydration. There are a number of other causes of dehydration, including overheating (hyperthermia), prolonged vigorous exercise (as in a marathon), kidney disease, and medications (diuretics). One clue to dehydration is a rapid drop in weight. Symptoms include increasing thirst, dry mouth, weakness or lightheadedness (particularly when it worsens on standing), and a darkening of or decrease in urination. Severe dehydration can lead to changes in the body's chemistry, kidney failure, and death. Intravenous or oral fluid replacement may be needed in some cases. See also *diarrhea; hyperthermia*.

**dehydroepiandrosterone** Also DHEA; a steroid hormone made by the adrenal glands, that acts on the body much like testosterone and is converted into testosterone and estrogen. The blood levels of DHEA decline with age. DHEA is sold in the US without a prescription as a "nutritional supplement." It has been claimed to improve mood, boost the immune system, sharpen memory, and combat aging.

**déjà vu** A disquieting feeling of having been somewhere or done something in the past, even though one has not. Although most people have experienced this feeling at one time or another, in some people sensations of déjà vu are part of a seizure or migraine aura; in others, the sensations are a seizure phenomenon. See also *jamais vu; seizure disorder*.

**delay, developmental** See *developmental delay*.

**deletion** Loss of a segment of DNA from a chromosome. A chromosome deletion can cause disease. An example is the cri du chat (cat cry) syndrome, which is due to loss of part of chromosome 5. The opposite of duplication.

**delirium** A sudden state of severe confusion and rapid changes in brain function, sometimes associated with hallucinations and hyperactivity, during which the patient is inaccessible to normal contact. Delirium can be due to a number of conditions, including infection, drug toxicity or withdrawal, seizures, brain tumor, poisoning, head injury, and metabolic disturbances.

**delirium tremens** A central nervous system symptom of alcohol withdrawal that is seen in chronic alcoholism. Symptoms include uncontrollable trembling, hallucinations, severe anxiety, sweating, and sudden feelings of terror. Abbreviated DTs. DTs can be both frightening and, in severe cases, deadly. Treatment includes observation, comfort care, and in some cases medication.

**delivery, breech** See *breech birth*.

**delivery, footling** See *footling birth*.

**delivery, vertex** See *vertex birth*.

**delta cell, pancreatic** A type of cell located in tissue that is called the islets of Langerhans in the pancreas. Delta cells make somatostatin, a hormone that inhibits the release of numerous hormones in the body.

**delta-storage pool disease** See *Hermansky-Pudlak syndrome*.

**deltoid** The muscle, roughly triangular in shape, that stretches from the collarbone (clavicle) over the shoulder to the upper bone of the arm (humerus). It contracts to move the arm up from the side.

**dementia** Significant loss of intellectual abilities, such as memory capacity, that is severe enough to interfere with social or occupational functioning. Criteria for the diagnosis of dementia include impairment of attention, orientation, memory, judgment, language, motor and spatial skills, and function. By definition, dementia is not due to major depression or schizophrenia. Alzheimer's disease is the most common cause of dementia. Other causes include AIDS, alcoholism, brain injury, vascular dementia (damage to the blood vessels leading to the brain), dementia with Lewy bodies, brain tumors, drug toxicity, infection of brain, Creutzfeldt-Jakob disease, meningitis, Pick disease, syphilis, and hypothyroidism.

**dementia, MELAS** See *MELAS syndrome*.

**dementia complex, AIDS** See *AIDS dementia complex*.

**demulcent** An agent that forms a soothing, protective film when administered onto a mucous membrane surface. For example, mucilage and oils are demulcents that can relieve irritation of the bowel lining.

**demyelination** A degenerative process that erodes the myelin sheath that normally protects nerve fibers. Demyelination exposes these fibers and appears to cause problems in nerve impulse conduction. Demyelination is seen in a number of diseases, particularly multiple sclerosis.

**dendrite** A short, arm-like protuberance from a nerve cell (neuron). The tips of dendrites transmit and receive chemical messages. See also *axon; neuron*.

**denervation** Loss of nerve supply. Causes of denervation include disease, chemical toxicity, physical injury, or intentional surgical interruption of a nerve.

**dengue fever** An acute mosquito-borne viral illness of sudden onset with headache, fever, prostration, severe joint and muscle pain, swollen glands (lymphadenopathy), and rash. The presence of fever, rash, and headache (the “dengue triad”) is characteristic. Dengue fever is endemic throughout the tropics and subtropics. Also called breakbone fever, dandy fever, and dengue. Victims of dengue fever often suffer temporary contortions due to the intense joint and muscle pain.

**dengue hemorrhagic fever** A syndrome caused by the dengue virus that tends to affect children under age 10 and causes fever, headache, sore throat, cough, nausea, vomiting, abdominal pain, bleeding, and circulatory collapse (shock). Other symptoms are bleeding with easy bruising, blood spots in the skin, vomiting of blood, blood in the stool, bleeding gums, and nosebleeds. Pneumonia and heart inflammation may also be present. Most deaths occur in children and infants are at particular risk.

**dental braces** See *braces, dental*.

**dental impaction** The pressing together of teeth. For example, molar teeth (the large teeth in the back of the jaw) can be impacted, cause pain, and require pain medication, antibiotics, and surgical removal.

**dental pain** Pain in or near the mouth that comes from irritation of a nerve to a tooth. The most common cause of toothache is a dental cavity. The second most common is gum disease. Toothache can be caused by a problem that does not originate from a tooth or the jaw.

**dentin** The hard tissue of the tooth that surrounds the central core of nerves and blood vessels (pulp).

**deoxyribonucleic acid** See *DNA*.

**depilation** See *epilation*.

**Depo-Provera** A contraceptive that is injected and lasts 3 months between doses. Depo-Provera is also used to regulate menstrual cycle in women with uneven or painful menses. It contains the hormonal compound medroxyprogesterone acetate.

**depression** An illness that involves the body, mood, and thoughts and that affects the way a person eats, sleeps, feels about himself or herself, and thinks about things. Depression is not the same as a passing blue mood. It is not a sign of personal weakness or a condition that can be wished away. People with depression cannot merely “pull themselves together” and get better. Without treatment, symptoms can last for weeks, months, or years. Appropriate treatment, however, can help most people with depression. The signs and symptoms of depression include loss of interest in activities that were once interesting or enjoyable, including sex; loss of appetite, with weight loss, or overeating, with weight gain; loss of emotional expression (flat affect); a persistently sad, anxious, or empty mood; feelings of hopelessness, pessimism, guilt, worthlessness, or helplessness; social withdrawal; unusual fatigue, low energy level, a feeling of being slowed down; sleep disturbance and insomnia, early-morning awakening or oversleeping; trouble concentrating, remembering, or making decisions; unusual restlessness or irritability; persistent physical problems such as headaches, digestive disorders, or chronic pain that do not respond to treatment, and thoughts of death or suicide or suicide attempts. The principal types of depression are called major depression, dysthymia, and bipolar disease (manic-depressive disease).

**depression, bipolar** See *bipolar disorder*.

**depression, dysthymia** See *dysthymia*.

**depression, major** Depression with a combination of symptoms that interfere with the ability to work, sleep, eat, and enjoy once-pleasurable activities. These disabling episodes of depression can occur once, twice, or several times in a lifetime. See also *depression*.

**depression, manic** See *bipolar disorder*.

**depression, postpartum** Severe depression presenting after childbirth. See also *depression*.

**depression, unipolar** Depressive disease without a manic phase. See *depression*.

**depression, winter** See *seasonal affective disorder*.

**Dercum disease** A condition characterized by painful fatty tumors (lipomas) beneath the skin. The disease tends to be associated with obesity and is about five times more frequent in females than in males. Onset of symptoms generally occurs in middle age. The fatty tumors are most often located on the trunk and limbs. Also called *adiposis dolorosa*.

**dermabrasion** A surgical procedure that involves the controlled scraping away of the upper layers of the skin by using sandpaper or some other mechanical means. The purpose of dermabrasion is to smooth the skin and, in the process, remove small scars (as from acne), moles (nevi), tattoos, or fine wrinkles. Dermabrasion is performed by a dermatologist. Chemical skin peels are an alternative to dermabrasion.

**dermatitis** Inflammation of the skin. Dermatitis has many causes, including direct contact with an irritating substance; allergic reaction to an inhaled, ingested, or injected allergen; eczema; or underlying immune disease. Symptoms of dermatitis include redness, itching, and in some cases, blistering. Noneczematous dermatitis is usually caused by direct contact with an irritant. Frequent offenders include detergents, especially those with perfumes; chemicals used in photo development; ammonia from decomposing urine in an infant's diapers (diaper dermatitis); and some types of solvents. Treatment involves identifying and avoiding substances that cause attacks and, during attacks, using topical treatments, such as steroid creams. See also *eczema*.

**dermatitis herpetiformis** An intensely itchy skin inflammation caused by an immune reaction to dietary gluten, a protein found in wheat, barley, rye, and related grains. Dermatitis herpetiformis is associated with a disorder of the small intestine called celiac sprue. See also *celiac sprue*.

**dermatographism** A common form of hives that appears due to stroking, rubbing, or scratching of the skin, or when tight-fitting clothes rub the skin. Dermatographism occurs in about 5 percent of the population. Dermatographism is not a disease and requires no specific treatment.

**dermatologic** Having to do with skin.

**dermatologist** A physician who specializes in the diagnosis and treatment of skin problems.

**dermatology** The branch of medicine concerned with the diagnosis, treatment, and prevention of diseases of the skin, hair, nails, oral cavity, and genitals. Some practitioners of dermatology also do cosmetic care and enhancement. See also *dermatologist*.

**dermatome** **1** A localized area of skin that receives its sensations via a single nerve from a single nerve root of the spinal cord. Shingles (herpes zoster) typically affects one or several isolated dermatomes. **2** A cutting instrument used for skin grafting or for slicing thin pieces of skin.

**dermatomyositis** A chronic inflammatory disease of muscle causing weakness that is associated with patches of slightly raised reddish or scaly rash. The rash can be on the bridge of the nose, around the eyes, or on sun-exposed areas of the neck and chest. Classically, however, it is over the knuckles. When inflammation of the muscle (myositis) occurs without skin disease, the condition is referred to as polymyositis. It affects both children and adults. The most common symptom is muscle weakness, usually affecting the muscles that are closest to the trunk of the body (proximal). Trouble with swallowing may occur. Occasionally, the muscles ache and are tender to touch. Some patients develop hardened bumps of calcium deposits under the skin. Treatment involves steroid drugs, such as prednisolone or prednisone. Other treatments including immunosuppressing drugs, such as azathioprine and methotrexate, may be prescribed. Intravenous immunoglobulin can be effective for severe dermatomyositis. Physical therapy is usually recommended to preserve muscle function and avoid muscle atrophy. Both dermatomyositis and polymyositis can sometimes be associated with cancers, including lymphoma, breast, lung, ovarian, and colon cancer. See also *polymyositis*.

**dermatopathy** Any disease of the skin. Also known as dermopathy.

**dermatophytic onychomycosis** See *onychomycosis*.

**dermis** The lower or inner layer of the two main layers of cells that make up the skin (the other being the epidermis). See also *epidermis*; *skin*.

**dermoid** See *ovarian teratoma*.



**dermoid cyst of the ovary** See *ovarian teratoma*.

**dermopathy** See *dermatopathy*.

**descending aorta** The part of the aorta that runs down through the chest and the abdomen. The descending aorta starts after the arch of the aorta and ends by splitting into the common iliac arteries that go down toward the thighs. The descending aorta is subdivided into the thoracic aorta and the abdominal aorta. See also *aorta*.

**desensitization, allergy** See *allergy desensitization*.

**designer drug** A drug, typically a psychoactive drug, whose structure is a modification of a preexisting drug in order to bypass existing drug laws and regulations for the purpose of marketing. Designer drugs are dangerous, as their toxic effects and pharmacology have not been properly evaluated. They are outlawed by the US Controlled Substances Act. An example of a designer drug is the street drug "ecstasy," which is an analogue of methamphetamine.

**designer estrogen** An engineered drug that possesses some, but not all, of the actions of estrogen. Also known as selective estrogen-receptor modulator (SERM). For example, raloxifene (brand name: Evista) is classified as a designer estrogen because, like estrogen, it prevents bone loss and lowers serum cholesterol; however, it does not stimulate the endometrial lining of the uterus.

**desmoid tumor** A benign soft-tissue tumor that does not spread to other parts of the body. Desmoid tumors occur most often in young adults, and they usually involve the limbs or trunk, but they can also arise in the abdomen or thorax. Desmoid tumors are very difficult to remove because they adhere tenaciously to surrounding structures and organs. Surgery is the treatment, but recurrence after surgery is common. Radiation therapy and limited chemotherapy have also been used. A desmoid tumor is also called aggressive fibromatosis because it is locally aggressive and fibrous, like scar tissue.

**desmoid tumor, cortical** A tumor that arises in embryonic tissue.

**desmoplasia** The growth of fibrous or connective tissue anywhere in the body.

**desmoplastic reaction** A reaction that is associated with some tumors and is characterized by the pervasive growth of dense fibrous tissue around the tumor. The formation of scar tissue (adhesion)

within the abdomen after abdominal surgery is another type of desmoplastic reaction.

**desquamate** To shed the outer layers of the skin.

**desquamation** The shedding of the outer layers of the skin. For example, when the rash of measles fades, desquamation occurs.

**deuteranomaly** See *colorblindness*.

**deutanopia** See *colorblindness*.

**development** The process of growth and differentiation. The most important stage of human development occurs before birth, as tissues and organs arise from differentiation of cells in the embryo. This process continues until birth, and interruptions in development result in the most serious types of birth defects, such as anencephaly and spina bifida. The developmental process continues after birth, as an infant or child grows physically, develops basic brain-based abilities such as speech and hand-eye coordination, and learns. Interruptions in any of these processes can result in developmental delay.

**development, embryonic** See *prenatal development*.

**development, fetal** See *prenatal development*.

**developmental delay** A condition in which a child is behind schedule in reaching milestones of early childhood development. This term is often used as a euphemism for mental retardation, which can be less a delay than a permanent limitation of a child's ability to progress.

**developmental disorder** One of several disorders that interrupt normal development in childhood. A developmental disorder may affect a single area of development (specific developmental disorder) or several areas (pervasive developmental disorder). With early intervention, most specific developmental disorders can be accommodated and overcome. Early intervention is absolutely essential for pervasive developmental disorders, many of which respond to an aggressive approach that may combine speech therapy, occupational therapy, physical therapy, behavior modification techniques, play therapy, and in some cases medication. See also *autism*; *cerebral palsy*; *developmental disorder, pervasive*; *developmental disorder, specific*; *developmental dyspraxia*; *dysarthria*; *dyscalculia*; *dyslexia*.

**developmental disorder, pervasive** A class of disorders in which the patient shows impairment in social interaction, imaginative activity, and verbal

and nonverbal communication skills, and has a limited number of interests and activities that tend to be repetitive (stereotyped). Abbreviated PDD. All types of PDDs are disorders of the nervous system that are usually evident by age 3. In general, children who have PDDs have difficulty talking, playing with other children, and relating to others, including their family members. The types of PDD include autistic disorder, Rett syndrome, childhood disintegrative disorder, Asperger syndrome, and "pervasive developmental disorder not otherwise specified." See also *Asperger syndrome; autism; childhood disintegrative disorder; Rett syndrome*.

**developmental disorder, specific** A disorder that affects only one area of development. For example, dysgraphia is a specific developmental disorder; it is a specific impairment of the ability to write legibly. See also *developmental disorder; developmental disorder, pervasive; dysarthria; dyscalculia; dyslexia*.

**developmental dysplasia of the hip** See *congenital hip dislocation*.

**developmental dyspraxia** A pattern of delayed, uneven, or aberrant development of gross or fine motor skills during childhood development. Developmental dyspraxia may be seen alone or in combination with other developmental problems, particularly apraxia or dyspraxia of speech. Treatment is via early intervention, using physical therapy to improve gross motor skills and occupational therapy to assist in fine motor development and sensory integration. See also *apraxia of speech; dyspraxia of speech*.

**deviated septum** See *nasal septum, deviated*.

**device, assistive** Any device that is designed, made, and/or adapted to assist a person to perform a particular task that might otherwise be difficult. For example, canes, crutches, walkers, wheelchairs, and shower chairs are all assistive devices. See also *assistive technology; augmentative communication device; device, medical*.

**device, intrauterine** See *intrauterine device*.

**device, medical** Broadly defined, any physical item used in medical treatment, from a heart pacemaker to a wheelchair. In insurance parlance, medical device is usually synonymous with assistive device, although it may include items more frequently thought of as medical supplies, such as dressings needed for wound care at home or syringes for self-administration of insulin. Medical devices are not covered by most insurance policies, although they may be available through supplemen-

tal insurance or, in some cases, on an inexpensive rental basis through hospitals, clinics, or pharmacies. See also *assistive device*.

**dextro-** Prefix from the Latin word *dexter*, meaning "on the right side." For example, a molecule that shows dextrorotation is turning or twisting to the right. The opposite of *levo-*.

**dextrocardia** Reversal of the anatomic location of the heart, placing it in the right side of the chest rather than in its normal location on the left. This is a true anatomic reversal, in which the apex (tip) of the heart points to the right instead of the left. Dextrocardia occurs in Kartagener syndrome, an abnormal condition that is present at birth. See also *dextroposition of the heart; Kartagener syndrome*.

**dextroposition** Moving to the right.

**dextroposition of the heart** A condition in which the heart is displaced to the right side of the chest, but without any anatomic alteration in the heart itself. Dextroposition occurs when the contents of the left side of the chest shove the heart to the right, or when the contents of the right side of the chest are reduced (for example, by collapse of the right lung) and the heart moves toward the sparsely occupied space on the right. See also *dextrocardia*.

**dextrose** Glucose, a simple sugar.

**DHEA** See *dehydroepiandrosterone*.

**DHF** Dengue hemorrhagic fever.

**Di Ferrante syndrome** A rare form of mucopolysaccharidosis. Di Ferrante syndrome is an autosomal recessive genetic disorder. Also known as mucopolysaccharidosis Type IX. See also *mucopolysaccharidosis*.

**dia-** Prefix meaning through, throughout, or completely, as in diachronic (over a period of time), diagnosis (to completely define the nature of a disease), and dialysis (cleansing the blood by passing it through a special machine).

**diabetes** See *diabetes mellitus*.

**diabetes, adult-onset** Type 2 diabetes. See also *diabetes, type 2*.

**diabetes, brittle** See *diabetes, labile*.

**diabetes, bronze** Diabetes mellitus that occurs as a result of damage to the pancreas from iron deposition of hemochromatosis. See also *diabetes mellitus; hemochromatosis*.

**diabetes, childhood** Type 1 diabetes. See also *diabetes, type 1*.

**diabetes, gestational** A diabetic condition that appears during pregnancy and usually goes away after the birth of the baby. Gestational diabetes is best controlled by dietary adjustment. Gestational diabetes can cause birth complications. One complication is macrosomia, in which the baby is considerably larger than normal due to large deposits of fat; such a baby can grow too large to be delivered through the vagina. Gestational diabetes also increases the risk of low blood sugar, low serum calcium and low serum magnesium in the baby immediately after delivery. The key to prevention is careful control of the mother's blood sugar levels. If the mother maintains normal blood sugar levels, it is less likely that the fetus will develop macrosomia, hypoglycemia, or other chemical abnormalities.

**diabetes, insulin-dependent** Type 1 diabetes. See also *diabetes, type 1*.

**diabetes, insulin-resistant** Type 2 diabetes. See also *diabetes, type 2*.

**diabetes, labile** Type 1 diabetes that is untreated, poorly controlled, or resistant to treatment so that the blood glucose level tends to swing quickly and widely up and down. Also known as brittle diabetes and unstable diabetes. See also *diabetes, type 1*.

**diabetes, non-insulin-dependent** Type 2 diabetes. See also *diabetes, type 2*.

**diabetes, type 1** A chronic condition in which the pancreas makes too little insulin (or no insulin) because the beta cells in the pancreas have been destroyed by the immune system. The body is then not able to effectively use blood glucose (sugar) for energy. The disease tends to occur in childhood, adolescence, or early adulthood, but it may appear at any age. The symptoms and signs of type 1 diabetes are great thirst, hunger, a need to urinate often, and loss of weight. Fluctuations in blood glucose levels can lead to blurred vision. Extremely elevated glucose levels can lead to lethargy and coma. To treat the disease, the person must inject insulin, follow an appropriate diet, exercise daily, and test blood glucose several times daily. This type of diabetes used to be known as juvenile diabetes, juvenile-onset diabetes, and insulin-dependent diabetes. See also *diabetes, type 2; diabetic neuropathy; diabetic retinopathy; diabetic coma; diabetic shock*.

**diabetes, type 2** A form of diabetes mellitus in which patients can still produce insulin, but do so relatively inadequately. Type 2 diabetes mellitus occurs mostly in individuals over 30 years old and the

incidence increases with age. While there is a strong genetic component to developing this form of diabetes, there are other risk factors, particularly obesity. Symptoms include increased urine output, increased appetite and thirst, unexplained weight loss or fluctuation, and fatigue. Type 2 diabetes mellitus is first treated with weight reduction, a diabetic diet, and exercise. When these measures fail to control the elevated blood sugars, oral medications are used. If oral medications are still insufficient, insulin medications are considered. Also known as non-insulin-dependent diabetes, adult-onset diabetes, or insulin-resistant diabetes. See also *diabetes, type 1; diabetic neuropathy; diabetic retinopathy*.

**diabetes, unstable** See *diabetes, labile*.

**Diabetes Association, American** See *ADA*.

**diabetes diet** Dietary control that is the primary method for treating all forms of diabetes. The goal is to minimize the chance of overloading the body with the sugar glucose. Patients with diabetes benefit from eating carefully controlled amounts and types of food at regular intervals throughout the day, rather than at two or three large meals. Soluble fibers, such as oat bran, apples, citrus, pears, peas and beans, and psyllium, slow down the digestion of carbohydrates (sugars), which results in better glucose metabolism. Patients avoid consumption of sugary foods and moderate their intake of starches that convert quickly to glucose. Some patients with type 2 diabetes may be successfully treated with diet alone, and patients on insulin can often reduce their insulin requirements by adhering to the appropriate diet. Learning proper eating habits is especially important for children with diabetes (type 1 diabetics), who run the highest long-term risk of severe symptoms.

**diabetes insipidus** A metabolic disorder that mimics symptoms of diabetes mellitus, including increased output of urine and increased thirst. It is caused by a malfunction in the pituitary gland, and can be treated by administering vasopressin, a pituitary hormone. There are two types of diabetes insipidus, central and nephrogenic. Central diabetes insipidus is a lack of ADH production and is due to damage to the pituitary gland or hypothalamus where ADH is produced. Nephrogenic diabetes insipidus is a lack of response of the kidney to the fluid-conserving action of ADH. It can be due to diseases of the kidney (such as polycystic kidney disease), certain drugs (such as lithium), and can also occur as an inherited disorder. The main danger is when fluid intake does not keep pace with urine output, resulting in dehydration and high blood sodium. The treatment of central diabetes insipidus is with vasopressin. Nephrogenic diabetes insipidus does not respond to

vasopressin treatment. In cases of nephrogenic diabetes insipidus caused by a drug (such as lithium), stopping the drug usually leads to recovery. In cases of hereditary nephrogenic diabetes insipidus, treatment is with fluid intake to match urine output and drugs that lower urine output. See also *antidiuretic hormone*; *pituitary*, *posterior*.

**diabetes mellitus** A chronic condition associated with abnormally high levels of sugar (glucose) in the blood and urine. Absence of, insufficient production of, or autoimmune resistance to the pancreatic hormone insulin causes diabetes. Insulin provides the body with a natural method for oxidizing glucose to provide energy; without enough insulin, glucose builds up in the bloodstream to dangerous levels. The tendency to develop diabetes runs in families, but not all patients have such a family history. Symptoms of diabetes include increased urine output, increased appetite and thirst, unexplained weight loss or fluctuation, and fatigue. Diabetes mellitus is diagnosed through blood sugar testing. Major complications include dangerously elevated blood sugar levels, abnormally low blood sugar levels due to incorrect dosing of diabetes medications, and disease of the blood vessels, which can damage the eyes, kidneys, nerves, and heart. Circulation problems due to blood vessel damage may also endanger the patient's feet and legs. When the body cannot use glucose for energy because of inadequate insulin in diabetes, it turns to burning fat as energy. This process creates compounds called ketones. If the blood level of ketones gets too high, the result is a dangerous condition called ketosis that, if unchecked, can cause lethargy, convulsions, coma, and death. Treatment depends on the type of diabetes. Diet is always the primary treatment. Many patients take medications that help to regulate their production and use of insulin. Others may need insulin injections, either self-administered via syringe or, more recently, via an almost-painless "gun" device, an external insulin pump, or an internally implanted insulin pump. There are two forms of diabetes mellitus, type 1 (insulin requiring) and type 2 (non-insulin requiring). Approximately 10 percent of the patients with diabetes mellitus have type 1 diabetes; the remaining 90 percent have type 2 diabetes mellitus. Diabetes mellitus is commonly referred to as diabetes, though technically there are two forms of diabetes, diabetes mellitus and diabetes insipidus, which are distinctly different conditions, both of which are characterized by the excessive production of dilute urine. See also *diabetes*, *type 1*; *diabetes*, *type 2*.

**diabetic coma** Deep unconsciousness that results from uncontrolled diabetes associated with ketones

in the bloodstream. The best treatment is prevention. Careful diet, medication, and insulin dosing, as needed, should prevent ketone buildup. Patients with diabetes and their family members should be aware of the early signs of ketone buildup, including weight loss, nausea, confusion, gasping for breath, a characteristically sweet, chemical odor, similar to that of acetone or alcohol (acetone breath), to the patient's breath, and sometimes sweat. Lethargy, confusion, and convulsions may precede diabetic coma. To prevent death, immediate emergency medical treatment is needed in a hospital setting for patients who show the early signs of diabetic coma.

**diabetic dermopathy** A skin condition characteristic of diabetes featuring light brown, reddish oval, or round scaly patches, most often on the shins or front of the thighs and less often on the scalp, forearm, and trunk. The cause of diabetic dermopathy is thought to be a type of inflammation affecting tiny blood vessels in the skin. There is no known effective treatment, but the patches can resolve after a few years.

**diabetic nephropathy** Kidney disease from longstanding diabetes. Diabetes affects the tiny blood vessels in the glomerulus, a key structure in the kidney composed of capillary blood vessels. This structure is critical for blood filtration. Features of diabetic nephropathy include nephrotic syndrome, which is characterized by excessive protein in the urine, high blood pressure, and progressively impaired kidney function. With severe diabetic nephropathy, kidney failure, end-stage renal disease requiring kidney dialysis or a kidney transplant may result. Also known as intercapillary glomerulonephritis, Kimmelstiel-Wilson disease, and Kimmelstiel-Wilson syndrome.

**diabetic neuropathy** Nerve damage caused by diabetes that leads to numbness and sometimes pain and weakness in the hands, arms, feet, and legs. Diabetic neuropathy can affect the digestive tract, heart, and genitalia. The longer a person has diabetes, the greater the risk of neuropathy. There are four types of diabetic neuropathy: peripheral, autonomic, proximal, and focal. Peripheral neuropathy, the most common, causes pain or loss of feeling in the hands, arms, feet, and legs. Autonomic neuropathy can cause changes in digestion, bowel and bladder control problems, and erectile dysfunction, and it can affect the nerves that serve the heart and control blood pressure. Proximal neuropathy produces pain in the thighs and hips and weakness in the legs. Focal neuropathy can strike any nerve in the body, causing pain or weakness. Treatment of diabetic neuropathy principally involves bringing the blood glucose and glycohemoglobin levels into the normal range. Good foot care is mandatory. Analgesics, low doses of antidepressants, and some anticonvulsant



medications may be prescribed for relief of pain, burning, or tingling. Some patients may find that walking regularly, taking warm baths, and using elastic stockings help relieve leg pain due to diabetic neuropathy.

**diabetic retinopathy** Disease of the retina caused by diabetes that involves damage to the tiny blood vessels in the back of the eye. Early disease may not cause symptoms. As the disease progresses, it enters its advanced, or proliferative, stage. Fragile, new blood vessels grow along the retina and in the clear, gel-like vitreous that fills the inside of the eye. Without timely treatment, these new blood vessels can bleed, cloud vision, and destroy the retina. Everyone with type 1 or type 2 diabetes is at risk for diabetic retinopathy. Swelling in the portion of the retina that is most sensitive to light (macular edema) makes it hard for a patient to do things like read and drive. As new blood vessels form at the back of the eye, they can bleed and further blur vision. Large hemorrhages tend to happen more than once, often during sleep. There are no early warning signs. Diagnosis of diabetic retinopathy is made during an eye examination that includes a visual acuity test, pupil dilation, ophthalmoscopy (to look in the back of the eye), and tonometry (to check the pressures). The two treatments for diabetic retinopathy are laser surgery, to stop the edema and hemorrhage, and vitrectomy, to remove blood from the back of the eye. It is strongly recommended that all diabetics have eye examinations at least once (ideally twice) a year.

**diabetic shock** Hypoglycemia (low blood sugar) due to excessive use of insulin or other glucose-lowering medications to lower the blood sugar level in diabetic patients. Symptoms include a sweet, chemical odor on the patient's breath that is similar to that of acetone or alcohol (acetone breath); fatigue, lightheadedness, or fainting; and reddening of the skin in Caucasian patients or darkening of the skin in patients with darker skin. Immediate treatment involves administration of glucose in a prescription sublingual form or in the form of hard candy or cake frosting if nothing else is available. Patients with diabetes and their families should learn the early warning signs of diabetic shock and carry glucose tablets for emergency use. The treatment includes glucagon given by intramuscular injection. Glucagon causes the release of glucose from the liver, and should be part of the emergency kit of a diabetic, especially if the patient uses insulin. Families and friends of those with diabetes should be taught how to administer glucagon, because obviously the patients will not be able to do it themselves in an emergency situation. Changes in diet, medication, or insulin administration can then be made to prevent future episodes.

Also known as an insulin reaction or insulin shock. See also *insulin reaction*.

**diabulimia** The practice of minimizing one's insulin dosages by patients with type 1 diabetes mellitus in an attempt to control body weight. Since insulin encourages fat storage, sometimes patients attempt to manipulate their insulin, often skipping doses, in an attempt to reduce weight gain. The term does not refer to a recognized medical condition but to a practice recognized by diabetes experts. Diabulimia is most common in young girls and women with type 1 diabetes.

**diachronic** Over a period of time. The opposite of synchronic.

**diachronic study** See *longitudinal study*.

**diagnosis** Knowledge of the nature of a disease. A patient who speaks of "getting a diagnosis" means learning the medical name for the ailment and gaining an understanding of the condition. Abbreviated dx and Dx. See also *differential diagnosis*.

**diagnosis, differential** See *differential diagnosis*.

**dialysis** The process of cleansing the blood by passing it through a special machine. Dialysis is necessary when the kidneys are not able to filter the blood. It gives patients with kidney failure a chance to live productive lives. There are two types of dialysis: hemodialysis and peritoneal dialysis. A hemodialysis session generally takes about 4 hours, and patients typically visit a dialysis clinic one to three times per week. Peritoneal dialysis allows the patient to do dialysis at home. Each type of dialysis has advantages and disadvantages. Patients can often choose the type of long-term dialysis that best matches their needs. See also *dialysis, peritoneal*.

**dialysis, peritoneal** A dialysis technique that uses the patient's own body tissues inside the belly (abdominal cavity) as a filter. The intestines lie in the abdominal cavity, the space between the abdominal wall and the spine. A plastic tube called a dialysis catheter is placed through the abdominal wall and into the abdominal cavity. A saline fluid called dialysate is then flushed into the abdominal cavity so that it washes around the intestines. The intestinal walls act as a filter between this fluid and the bloodstream. By using different types of solutions, waste products and excess water can be removed from the body through this process.

**dialysis machine** A machine used in dialysis that filters a patient's blood to remove excess water and waste products when the kidneys are damaged,



dysfunctional, or missing. The dialysis machine itself can be thought of as an artificial kidney. Inside, it consists of more plastic tubing that carries the removed blood to the dialyser, a bundle of hollow fibers that forms a semipermeable membrane for filtering out impurities. In the dialyser, blood is diffused with a saline solution called dialysate, and the dialysate is in turn diffused with blood. When the filtration process is complete, the cleansed blood is returned to the patient. Most patients who undergo dialysis because of kidney impairment or failure use a dialysis machine at a dialysis clinic. Also, a machine called a peritoneal dialysis machine can be used chronically at home for dialysis, which eliminates the need for regular hemodialysis clinic treatments. Using this machine during the day and frequently during sleep, the patient can control his/her own dialysis.

**diaper rash** An inflammatory reaction localized to the area of skin usually covered by the diaper. It can have many causes, including infections (yeast, bacterial, or viral), friction irritation, chemical allergies (perfumes, soaps), sweat, decomposed urine, and plugged sweat glands. Most diaper rash problems can be solved by cleansing the skin with nonperfumed, gentle products; changing diapers frequently; and exposing the affected skin area to air. Commercially available diaper rash ointments may be helpful for prevention but may actually cause further irritation if used on the inflamed areas. Also called diaper dermatitis.

**diaphragm** **1** The muscle that separates the chest (thoracic) cavity from the abdomen. Contraction of the diaphragm helps to expand the lungs when one breathes in air. **2** A specially fitted contraceptive device that covers the cervix to prevent the entry of sperm. For greatest effectiveness, a diaphragm is used with spermicidal gel or cream. See also *birth control*; *contraceptive*.

**diaphragm pacing** A procedure to help patients with spinal cord injuries to breathe. Their breathing is helped by setting the respiratory rate by electrical stimulation (pacing) of the phrenic nerve using electrodes surgically implanted into the diaphragm muscle that is innervated by the nerve.

**diaphragmatic hernia** Passage of a loop of bowel through the diaphragm muscle. This type of hernia occurs as the bowel from the abdomen protrudes (herniates) upward through the diaphragm into the chest (thoracic) cavity.

**diarrhea** A common condition that involves unusually frequent and liquid bowel movements. The opposite of constipation. There are many infectious and noninfectious causes of diarrhea.

Persistent diarrhea is both uncomfortable and dangerous to the health because it can indicate an underlying infection and may mean that the body is not able to absorb some nutrients due to a problem in the bowels. Treatment includes drinking plenty of fluids to prevent dehydration and taking over-the-counter remedies. People with diarrhea that persists for more than a couple days, particularly small children or elderly people, should seek medical attention.

**diarrhea, antibiotic-induced** Diarrhea caused by the bacterium *Clostridium difficile* (*C. difficile*), one of the most common causes of infection of the large bowel (colon). Patients taking antibiotics are at particular risk of becoming infected with *C. difficile*. Antibiotics disrupt the normal bacteria of the bowel, allowing *C. difficile* and other bacteria to become established and overgrow inside the colon. In some people, a toxin produced by *C. difficile* causes diarrhea, abdominal pain, severe inflammation of the colon (colitis), fever, an elevated white blood cell count, vomiting, and dehydration. In severely affected patients, the inner lining of the colon becomes severely inflamed (pseudomembranous colitis). Rarely, the walls of the colon wear away and holes develop (colon perforation), which can lead to a life-threatening infection of the abdomen.

**diarrhea, rotavirus** A leading cause of severe diarrhea in infants and young children, often accompanied by fever and dehydration. Treatment includes frequent administration of fluids to prevent dehydration, rest, good nutrition, and in some cases medication. A preventive vaccine has been developed but is not in use at this time. See also *rotavirus*.

**diarrhea, travelers'** Illness, including diarrhea, that is associated with travel to a foreign country. Causes include viruses and the bacterium *Escherichia coli*, which may be transmitted via food or water. Prevention involves drinking bottled water; filtering tap water or, if camping, water from natural sources; washing fruits and vegetables purchased in local markets with a solution of water and a few drops of bleach; and when possible, choosing restaurants with high standards of sanitation. Treatment includes replacement of fluids and electrolytes (sodium and other ions) lost via diarrhea. In serious cases of persistent travelers' diarrhea, medical care should be sought.

**diarrhea and dermatitis, zinc deficiency** See *deficiency, zinc*.

**diastolic** Referring to the time when the heart is in a period of relaxation and dilation (expansion),

which is called diastole. Diastolic pressure is the minimum arterial pressure during relaxation and dilation of the ventricles of the heart when the ventricles fill with blood. In a blood pressure reading, the diastolic pressure is typically the second number recorded. For example, in a blood pressure reading of 120/80 ("120 over 80"), the diastolic pressure is 80 (that is, 80 mm Hg [millimeters of mercury]). A diastolic murmur is a heart murmur heard during diastole. See also *systolic*.

**diathermy** See *cauterization*.

**diathesis** An elegant term for a predisposition or tendency. For example, hemorrhagic diathesis means a tendency to bleed.

**dicentric chromosome** See *chromosome, dicentric*.

**diet** Food and drink. A specific diet can be prescribed for medical reasons according to a certain type, volume, and timing. For examples, specific diets are commonly prescribed for persons affected by hypoglycemia, gout, celiac disease, dermatitis herpetiformis, lactose intolerance, diabetes, hypercholesterolemia, heart disease, kidney disease, and difficulty in swallowing.

**diet, DASH** See *DASH diet*.

**dietary supplement** A substance that can be added to the diet, usually in pill, liquid, or powder form, ostensibly to promote health. Dietary supplements range from natural weight-gain concoctions used by body-builders, to joint pain relievers, vitamins, herbs, minerals, and salts that claim health benefits. Many dietary supplements are harmless when taken as directed, and the health benefits of some have been substantiated. Dietary supplements can interact with prescription medications, and some are not suitable for people with certain medical conditions.

**diethylstilbestrol** The earliest synthetic form of the female hormone estrogen. Abbreviated DES. DES was widely prescribed between 1940 and 1971 to prevent miscarriages. The use of DES during pregnancy declined and was halted when it was found that, when given during the first 5 months of pregnancy, DES can interfere with the development of the fetal reproductive system. Women whose mothers were given DES during pregnancy are at increased risk for an uncommon form of cancer called clear cell adenocarcinoma of the vagina and cervix. Daughters of women who took DES also have an increased risk of having the most common forms of cancer of the cervix. They are also at increased risk of having anatomic abnormalities of the vagina,

cervix, and uterus and of having tubal (ectopic) pregnancies, infertility, miscarriages, or premature births. Sons of women who took DES are predisposed to abnormalities of the testicles, such as abnormally small testes and failure of the testes to descend into the scrotum; these abnormalities increase the risk of testicular cancer. People who believe they may have been exposed to DES before birth should inform their physicians of their exposure so that they can be appropriately examined and monitored. DES is still available for prescription in the US for the palliative treatment of breast and prostate cancer.

**dietitian** A person trained in the design and management of the diet in health and disease as, for example, in diabetes.

**differential diagnosis** Knowledge gained through weighing the probability of one disease against the probability of other diseases that might account for a patient's illness. For example, the differential diagnosis of a runny nose includes allergic rhinitis (hay fever), the abuse of nasal decongestants, and the common cold. Abbreviated DDX. See also *diagnosis*.

**differentiation** **1** The process by which cells become progressively more specialized; a normal process by which cells mature. Cells early in development have the potential to develop into many different types of tissues of the body. Differentiation occurs so the specific body tissues can form. Once developed into a specific cell type, the cell has lost its ability to differentiate into a cell for a different tissue. **2** In cancer, the difference in the maturity (development) of the cancer cells in a tumor. Differentiated tumor cells resemble normal cells and tend to grow and spread at a slower rate than undifferentiated or poorly differentiated tumor cells, which lack the structure and function of normal cells and grow uncontrollably. **3** The evolution from an incomplete form of disease to a complete form of disease.

**diffuse idiopathic skeletal hyperostosis** A form of degenerative arthritis characteristically associated with flowing calcification along the sides of the vertebrae of the spine. Abbreviated DISH. DISH commonly includes inflammation (tendonitis) and calcification of the tendons at their points of attachment to bone. Anti-inflammatory medications (NSAIDs), such as ibuprofen, can be helpful in relieving both pain and inflammation. Also called Forestier disease.

**DiGeorge syndrome** A congenital disorder characterized by low blood calcium because of underdevelopment of the parathyroid glands

needed to control calcium; immunodeficiency due to hypoplasia of the thymus (an organ behind the breastbone in which lymphocytes mature and multiply); and defects involving the outflow tracts from the heart. DiGeorge syndrome is caused by a very small deletion in chromosome band 22q11.2. The key gene that is lost is Tbx-1. Tbx-1 is a master control gene that regulates other genes required for the connection of the heart with the blood circulation. Tbx-1 also controls genes involved in the development of the parathyroid and thymus glands and the shape of the face. Also known as hypoplasia of the thymus and parathyroids and as third and fourth pharyngeal pouch syndrome.

**digestive system** The system of organs responsible for getting food into and out of the body and for making use of food to keep the body healthy. The digestive system includes the salivary glands, mouth, esophagus, stomach, liver, gallbladder, pancreas, small intestine, colon, and rectum. The digestive system's organs are joined in a long, twisting tube from the mouth to the anus. Inside this tube is a lining called the mucosa. In the mouth, stomach, and small intestine, the mucosa contains tiny glands that produce juices to help digest food. Two solid organs, the liver and the pancreas (both of which are embryologically derived from the digestive tract), produce digestive juices that reach the intestine through small tubes known as ducts. In addition, parts of other organ systems (for instance, nerves and blood) play a major role in the digestive system.

**digit** A finger or toe.

**digit, supernumerary** An extra finger or toe.

**digital rectal exam** A routine exam in which a physician inserts a lubricated, gloved finger into the rectum and feels for abnormal areas to detect rectal cancer and, in a man, inflammation, enlargement, or cancer of the prostate as well as nerve problems indicated by reduction of the normal tone of the muscles of the rectal sphincter.

**digitalis** A chemical from the dried leaf of the common foxglove (*Digitalis purpurea*) plant that is used to strengthen the force of the heartbeat. The Scottish physician William Withering discovered this use for digitalis in the late 1700s. Digitalis, its components, and their derivatives have long been used to treat congestive heart failure and slow the speeding heart so it is more efficient.

**dilatate** In medicine, to enlarge or expand. Also known as dilate.

**dilatation** The process of enlargement or expansion. Also known as dilation.

**dilate** To stretch or enlarge. Also known as dilatate.

**dilating** The widening and opening of an opening, such as the cervix or esophagus. For example, the amount of widening can be described in terms of the number of fingers that could fit in the cervical opening, or it is described in centimeters.

**dilation** See *dilatation*.

**dilation, pupil** **1** A type of eye examination that enables an eye-care professional to see more of the retina, the light-sensitive layer of tissue at the back of the eye. Dilating the pupil permits the retina to be examined for signs of disease. To dilate the pupil, drops are placed into the eye. **2** A normal response of the iris to a decrease in light exposure. **3** An abnormal widening of the pupil in response to brain injury.

**dilation and curettage** A minor operation in which the cervix is expanded (dilatated) enough to permit the cervical canal and uterine lining to be scraped with a spoon-shaped instrument called a curette (curettage). Abbreviated D & C. D & C is normally used to remove abnormal material from the uterus, such as unexpelled placental material after birth.

**dilator** A device used to stretch or enlarge an opening. Patients with scarring of the esophagus can require a dilator procedure to open the esophagus for adequate passage of food and fluids.

**diphtheria** An acute infectious upper respiratory tract disease that affects the throat. It is caused by the bacteria *Corynebacterium diphtheriae*. Symptoms include sore throat and mild fever at first. As the disease progresses, a membranous substance forms in the throat that makes it difficult to breathe and swallow. Diphtheria can be deadly. It is one of the diseases that the DT (diphtheria-tetanus), DTP (diphtheria-tetanus-pertussis), and DTaP (diphtheria-tetanus-acellular-pertussis) vaccines are designed to prevent.

**diploid** The number of chromosomes in most cells of the body. The diploid in humans is 46, which is twice the haploid number of 23 chromosomes contained in human eggs (ova) and sperm.

**diplopia** A condition in which a single object appears as two objects. Also known as double vision.

**directive, advance medical** See *advance directive*.

**disaster supplies** Items stored in case of emergency, such as a prolonged power outage, earthquake, or flood. Recommended disaster supplies include the following:

- **Water.** Store at least 3 gallons of water per person (2 quarts for drinking, 2 quarts for food preparation/sanitation × three days). Store it in plastic containers, such as soft drink bottles.
- **Food.** Store at least a 3-day supply of foods that require no refrigeration, preparation, or cooking (and little or no water). If you must heat food, go to a camping goods store for options that do not require electricity or natural gas. Good choices include ready-to-eat canned meats, fruits, and vegetables; canned juices, milk, and soup (if powdered, store extra water); staples, particularly sugar, salt, and pepper; high-energy foods such as peanut butter, granola bars, and trail mix; vitamin pills; special foods for infants, elderly persons, or persons on special diets; and “comfort foods” such as cookies, hard candy, sweetened cereals, lollipops, instant coffee, and tea.
- **First aid kit.** Assemble a first aid kit for your home and one for each car. A first aid kit should include sterile adhesive bandages in assorted sizes, four to six 2-inch sterile gauze pads, four to six 4-inch sterile gauze pads, hypoallergenic adhesive tape, three triangular bandages, three rolls of 2-inch sterile roller bandages, three rolls of 3-inch sterile roller bandages, scissors, tweezers, a needle, moist towelettes, antiseptic (cream and/or liquid), thermometer, two tongue depressors, a tube of petroleum jelly or other lubricant, assorted sizes of safety pins, cleansing agent and/or soap, a medicine dropper, two pairs of latex gloves, and sunscreen. Contact your local American Red Cross chapter to obtain a basic first aid manual.
- **Nonprescription drugs.** Over-the-counter drugs that you might need in an emergency include aspirin or nonaspirin pain relievers, antidiarrhea medication, antacid for stomach upset, syrup of ipecac and activated charcoal (to use if advised by the Poison Control Center), and laxatives.
- **Tools and supplies.** Keep the items you would most likely need during an evacuation in an easy-to-carry container, such as a large, covered trash container, camping backpack, or duffle bag. These emergency items include mess kits (or paper cups, plates, and plastic utensils), an emergency-preparedness manual, a battery-operated radio with extra batteries, a flashlight with extra batteries, cash or traveler's checks, change, a nonelectric can opener, a utility knife, a small canister fire extinguisher of the ABC type, a tube tent, pliers, tape, a compass, matches in a waterproof container, aluminum foil, plastic storage containers, a signal flare, paper and pencil, needles and thread, a shut-off wrench for turning off household gas and water, a whistle, plastic sheeting, and a map of the area for locating shelters. A map showing the precise location of local shelters may be available in advance from your local emergency-preparedness office.
- **Sanitation.** Have on hand an adequate supply of toilet paper and/or towelettes, soap, liquid detergent, feminine supplies, personal hygiene items, plastic garbage bags with ties for personal sanitation uses, a plastic bucket with a tight lid, disinfectant, and chlorine bleach.
- **Clothing and bedding.** Have available at least one complete change of clothing and footwear per person, preferably items that are easy to clean. Depending on your location, you may also need to include sturdy shoes or work boots, hats and gloves, coats and/or rain gear, thermal underwear, blankets or sleeping bags, and sunglasses.
- **Special items.** Remember family members with special needs, such as infants and elderly or disabled persons. For babies, store an adequate supply of formula, diapers, bottles, powdered milk, and medications. For older children and adults, remember essentials such as heart and high blood pressure medication, insulin and syringes, prescription drugs, denture needs, contact lenses and supplies, extra eyeglasses, and games and books for entertainment. Ask a physician or pharmacist about how to store prescription medications.
- **Important documents.** Keep these records in a waterproof, portable container: wills, insurance policies, contracts, deeds, stocks and bonds, passports, Social Security cards, immunization records, bank account numbers, credit card account numbers and

companies, an inventory of valuable household goods, important telephone numbers, and family records (such as birth, marriage, and death certificates).

This kit should be stored in a convenient place known to all family members, and a smaller version should be stowed in each car trunk. All items should be stored in air-tight plastic bags, and the stored water supply should be changed every 6 months so it stays fresh. Stored food should be rotated every 6 months, and the kit and family needs should be rethought at least once a year. Batteries should be replaced as needed, clothes should be updated as family members' sizes change, and so on.

**discharge** **1** The flow of fluid from part of the body, such as the nose or vagina. **2** To officially permit a patient to leave the hospital.

**discoid lupus** See *lupus, discoid*.

**discordant** **1** Showing discordance, lack of synchrony. For example, a couple may be discordant for a sexually transmitted infection, with one partner having it and the other not. **2** In transplantation genetics, between different species. For example, a discordant graft is a transplant between members of very different species.

**disease** Illness or sickness, often characterized by abnormal sensations (symptoms) and physical findings (signs). For a specific disease, see the specific disease (such as Addison disease) under its alphabetical listing.

**disease, metabolic** See *metabolic disease*.

**disease, obesity-related** One of the diseases to which obesity predisposes, including type 2 diabetes; high blood pressure; stroke; heart attack; congestive heart failure; certain forms of cancer, such as prostate and colon cancer; gallstones and gall bladder disease; gout and gouty arthritis; osteoarthritis of the knees, hips, and lower back; sleep apnea; and Pickwickian syndrome.

**disease, polygenic** A genetic disorder caused by the combined action of more than one gene. Examples of polygenic conditions include some forms of coronary disease, hypertension, asthma, and diabetes. Because such disorders depend on the simultaneous presence of several genes, they are not inherited as simply as single-gene diseases. See also *disease, single gene*.

**disease, single gene** A hereditary disorder caused by a change (mutation) in a single gene. There are thousands of single-gene diseases, including achondroplasia, Huntington's disease, cystic

fibrosis, sickle cell anemia, Duchenne muscular dystrophy, and hemophilia. Single-gene diseases typically describe classic simple Mendelian patterns of inheritance (as autosomal dominant, autosomal recessive, and X-linked traits), compared to polygenic diseases, which follow more complex patterns of inheritance. See also *disease, polygenic*.

**diseases, rickettsial** See *rickettsial diseases*.

**DISH** Diffuse idiopathic skeletal hyperostosis.

**disk, choked** See *papilledema*.

**diskitis** Inflammation of the disks between the vertebrae in the spinal column.

**diskitis, tuberculous** See *tuberculous diskitis*.

**disorder, attention deficit** See *attention deficit disorder*.

**disorder, lymphoproliferative** A malignant disease of the lymphoid cells and of cells from the reticuloendothelial system (lymph nodes and drainage tissues that clear inert particles within the body). A patient with lymphoproliferative disorder has proliferation and accumulation of lymphoid cells in the blood and marrow.

**disorder, myeloproliferative** A malignant disease of certain bone marrow cells, including those that give rise to the red blood cells, the granulocyte (types of white blood cells), and the platelets (which are crucial to blood clotting). The four major myeloproliferative disorders are polycythemia vera, myelofibrosis, thrombocythemia, and chronic myeloid leukemia (CML).

**disorder, seasonal affective** See *seasonal affective disorder*.

**dissect** To cut apart or separate tissue, as for anatomical study or in surgery. Also, an artery is said to dissect when its wall is torn, as in a dissecting aneurysm.

**dissecting aneurysm** See *aneurysm, dissecting*.

**dissociation** In psychology and psychiatry, a perceived detachment of the mind from the emotional state or even from the body. Dissociation is characterized by a sense of the world as a dreamlike or unreal place and may be accompanied by poor memory of specific events.

**dissociative disorder** A psychiatric disorder characterized by the ability to temporarily disconnect from reality. Multiple personality disorder is a



type of dissociative disorder in which, while dissociating, the person believes himself or herself to be another person.

**distal** The more (or most) distant of two (or more) things. For example, the distal end of the thigh bone is the end of that bone that is by the knee, most distant from the end that is near the hip. The opposite of distal is proximal. See also Appendix B, "Anatomic Orientation Terms."

**distal hereditary myopathy** See *muscular dystrophy, distal*.

**diuresis** Excretion of urine, typically in large volumes. See also *diuretic*.

**diuretic** Something that promotes the formation of urine by the kidney. All diuretics cause a person to "lose water," but they do so by diverse means, including inhibiting the kidney's ability to reabsorb sodium, thus enhancing the loss of sodium and consequently water in the urine (loop diuretic); enhancing the excretion of both sodium and chloride in the urine so that water is excreted with them (thiazide diuretic); or blocking the exchange of sodium for potassium, resulting in excretion of sodium and potassium but relatively little loss of potassium (potassium-sparing diuretic). Some diuretics work by yet other mechanisms, and some have other effects and uses, such as in treating hypertension. Also known as water pill. Substances in food and drinks, such as coffee, tea, and alcoholic beverages, may act as diuretics.

**diuretic, loop** A diuretic that works by encouraging the loss of sodium (salt) and water by affecting sodium transport at the loop area of the kidneys. As the sodium is removed, it takes water with it. Loop diuretics are very strong, and they should be used only under constant medical supervision. They can deplete the electrolyte balance, cause dehydration, reduce blood volume, and worsen certain medical conditions. See also *diuretic*.

**diuretic, potassium-sparing** A diuretic that blocks the exchange of sodium (salt) and potassium, encouraging the excretion of sodium and therefore of water, but generally allowing potassium to be retained. See also *diuretic*.

**diuretic, thiazide** A diuretic that works by encouraging excretion of both sodium (salt) and chloride. See also *diuretic*.

**diurnal** Occurring in the daytime. A patient may have a diurnal fever rather than a nocturnal one. Diurnal also refers to something that recurs every day.

**diverticula** The plural of diverticulum.

**diverticulitis** Inflammation of diverticula along the wall of the large intestine (colon). For diverticulitis to occur, there must be outpouchings of the large intestine (diverticulosis). Diverticulitis can be diagnosed with barium X-rays of the colon or with sigmoidoscopy or colonoscopy. Antibiotics are usually needed to treat acute diverticulitis attacks. In severe diverticulitis, with high fever and pain, patients are hospitalized and given intravenous antibiotics. Surgery is necessary for persistent bowel obstruction and for abscesses that do not respond to antibiotics. A high-fiber diet may help delay the progression of diverticulosis and may prevent or reduce bouts of diverticulitis. See also *diverticulosis*.

**diverticulosis** The condition of having diverticula, small outpouchings from the large intestine (colon). Diverticulosis can occur anywhere in the colon but is most typical in the sigmoid colon, the S-shaped segment of the colon located in the lower-left part of the abdomen. The incidence of diverticulosis increases with age. As a person ages, the walls of the colon weaken, and this weakening permits the formation of diverticula. By age 80, most people have diverticulosis. Diverticulosis sets the stage for inflammation and infection of the diverticula (diverticulitis). A diet that is high in fiber keeps the bowels moving, keeps the pressure in the colon within normal limits, and slows or stops the formation of diverticula. See also *diverticulitis*.

**diverticulum** A small bulging sac that pushes outward from the bowels. The plural is diverticula. As a person ages, pressure within the large intestine (colon) causes diverticula. Diverticula can occur throughout the colon but are most common near the end of the S-shaped segment of the colon located in the lower-left part of the abdomen (the sigmoid colon). See also *diverticulitis; diverticulosis*.

**diverticulum, Meckel** An outpouching of the small bowel. About 1 in every 50 people has a Meckel diverticulum. Meckel diverticula are usually located about 2 feet before the junction of the small bowel and the colon (the large intestine) in the lower-right abdomen. Meckel diverticula can become inflamed, ulcerate, and perforate (break open or rupture), which can cause obstruction of the small bowel. Generally Meckel diverticula that are inflamed or perforated are removed via surgery.

**dizziness** Painless head discomfort with many possible causes, including disturbances of vision, the brain, the balance (vestibular) system of the inner ear, or the gastrointestinal system. Dizziness is

a medically indistinct term. Laypersons use it to describe a variety of conditions, ranging from light-headedness or unsteadiness to vertigo. See also *lightheadedness*; *unsteadiness*; *vertigo*.

**dizziness, anxiety as a cause of** One cause of dizziness is overbreathing (hyperventilation) due to anxiety. Relief can be had by breathing in and out of a paper bag to increase the level of carbon dioxide in the blood. In persistent cases, as in repeated panic attacks, antianxiety medication can be helpful.

**dizziness, presyncopal** Dizziness before fainting. Some symptoms of dizziness, such as “wooziness,” feeling as though one is about to black out, and tunnel vision may be presyncopal and are due to insufficient blood flow to the brain. These symptoms are typically worse when standing, improve with lying down, and may be experienced by healthy individuals who rise quickly from a seated or prone position and have a few seconds of disorientation. See also *syncope*.

**DMD** Duchenne muscular dystrophy. See *muscular dystrophy*, *Duchenne*.

**DNA** 1 Deoxyribonucleic acid, one of the two molecules (along with RNA) that encode genetic information. DNA is double-stranded. The two strands are held together by weak hydrogen bonds between base pairs of nucleotides to form a double helix. The double helix looks something like an immensely long ladder twisted into a helix, or coil. The sides of the ladder are formed by a backbone of sugar and phosphate molecules, and the rungs consist of nucleotide bases joined in the middle by the hydrogen bonds. The four nucleotides in DNA contain the bases adenine (A), guanine (G), cytosine (C), and thymine (T). 2 In the UK, an abbreviation for “did not attend,” comparable to the US term “no-show” for a patient who missed an appointment.

**DNA, mitochondrial** The DNA of the mitochondrion, a structure situated in the cytoplasm of the cell rather than in the nucleus, where all the other chromosomes are located. Abbreviated mtDNA. mtDNA is inherited from the mother. There are 2 to 10 copies of the mtDNA genome in each mitochondrion. mtDNA is a double-stranded, circular molecule. It is very small compared to the chromosomes in the nucleus, and it contains only a limited number of genes. It is specialized in the information it carries, and it encodes a number of the subunits in the mitochondrial respiratory-chain complex that the cell needs in order to respire. Mutations (changes) in mtDNA can cause disease, and they often impair the function of oxidative-phosphorylation enzymes in the respiratory chain, especially in tissues with high

energy expenditure, such as brain and muscle tissues. See also *mitochondrial disease*.

**DNA, recombinant** DNA made up of DNA molecules of different origins, joined together by using recombinant DNA technology. A recombinant DNA molecule is constructed (recombined) from segments from two or more different DNA molecules. Under certain conditions, a recombinant DNA molecule can enter a cell and replicate there.

**DNA cloning** The use of DNA-manipulation procedures to produce multiple copies of a single gene or segment of DNA. See also *DNA, recombinant*.

**DNA polymerase** An enzyme that catalyzes (speeds) the polymerization of DNA. DNA polymerase uses preexisting nucleic acid templates and assembles the DNA from deoxyribonucleotides.

**DNA repair** The process by which a cell uses a series of special enzymes to repair mutations (changes) in DNA and restore the DNA to its original state. The DNA is constantly mutating and being repaired. This repair process is controlled by special genes. A mutation in a DNA repair gene can cripple the repair process and cause a cascade of unrepaired mutations in the genome.

**DNA repair gene** A gene that is engaged in DNA repair. When a DNA repair gene is altered, mutations pile up throughout the DNA.

**DNA repair pathway** The sequence of steps in the repair of DNA. Each step is governed by an enzyme.

**DNA replication** A complex process whereby the “parent” strands of DNA in the double helix are separated, and each one is copied to produce a new (daughter) strand. This process is said to be “semi-conservative” because one strand from each parent is conserved and remains intact after replication has taken place.

**DNA sequence** The precise ordering of the bases (A, T, G, C) from which DNA is composed. Base pairs form naturally only between A and T and between G and C, so the base sequence of each single strand of DNA can be simply deduced from that of its partner strand. The DNA nucleotide code is in triplets, such as ATG; the base sequence of ATG’s partner strand would be TAC.

**DNR** Do not resuscitate.

**D.O.** Doctor of Osteopathy, an osteopathic physician. See also *osteopath*; *osteopathy*.

**do not resuscitate** A directive to not attempt mechanical or manual resuscitation if the patient stops breathing. Abbreviated DNR. See also *advance directive*.

**DOB** Date of birth, an abbreviation that is frequently used in medical charting.

**doctor** In a medical context, any medical professional with an MD, a PhD, or any other doctoral degree. The term doctor is quite unspecific. A doctor may, for example, be a physician, psychologist, biomedical scientist, dentist, or veterinarian. In a nonmedical context, a professor of history might be addressed as doctor, an eminent theologian might be named a doctor of a church, and a person awarded an honorary doctorate by a college or university might also be called a doctor.

**doctors' symbol** See *Aesculapius*.

**DOE** Department of Energy, a US agency.

**dolor** Pain, one of the four classic signs of inflammation together with calor, rubor, and tumor (heat, redness, and swelling, respectively).

**domain** In biomedicine, a discrete portion of a protein that has its own function. The combination of domains in a single protein determines the overall function of the protein.

**dominant** A genetic trait that is evident when only one copy of that gene for that trait is present. (As opposed to a recessive trait, which is usually expressed only when two copies of the gene for that trait are present.) Most dominant traits are due to genes located on the autosomes (the nonsex chromosomes). Diseases inherited in an autosomal dominant manner typically affect both males and females and each of their children run a 50 percent chance to receive their disease gene. Autosomal dominant diseases include achondroplasia (dwarfism with short arms and legs), Huntington disease (a form of progressive dementia), and neurofibromatosis (a neurologic disorder with an increased risk of malignant tumors). X-linked dominance is due to genes on the X chromosome. A single copy of the mutant gene on the X chromosome causes the disease in a female. An example is a type of hereditary rickets called hypophosphatemic rickets. See also *autosomal dominant trait*; *X-linked dominant*.

**dominant, autosomal** See *autosomal dominant*.

**dominant, X-linked** See *X-linked dominant*.

**donor** The giver of a tissue or an organ, such as a blood donor or kidney donor.

**donor insemination** See *artificial insemination by donor*.

**dopa-responsive dystonia** A disease characterized by progressive difficulty in walking and in some cases by spasticity. Abbreviated DRD. DRD begins in childhood or adolescence. It can be successfully treated with drugs. Segawa dystonia is an important variant of DRD. Some scientists feel that DRD is not only rare but also rarely diagnosed because it mimics many of the symptoms of cerebral palsy. Medications that affect the chemical nerve transmitter dopa can improve symptoms.

**dorsal** Pertaining to the back, or posterior, side of a structure, as opposed to the ventral, or front, side. Some of the dorsal surfaces of the body are the back, buttocks, and calves, and the knuckle side of the hand. See also Appendix B, "Anatomic Orientation Terms."

**dorsum** The back or posterior side of a structure. Something that pertains to the dorsum is dorsal.

**DOT** Directly observed therapy.

**double helix** The structure of DNA, in which two strands of DNA spiral about each other.

**double pneumonia** See *pneumonia, double*.

**double-blinded study** A medical study in which both the subjects participating and the researchers are unaware of when the experimental medication or procedure has been given. Double-blinded studies are often used when initial studies shows particular promise.

**double-jointed** Popular term to describe a joint that is unusually flexible. Medically, the joint is said to be hyperflexible, hyperextensible, or hypermobile. People whose fingers are hypermobile have higher rates of arthritis in the hands. Marked joint hypermobility is a feature of Ehlers-Danlos syndrome. See also *Ehlers-Danlos syndrome*.

**douche** Usually, a stream of water applied into the vagina for cleansing purposes. A douche can use a solution, such as vinegar and water, rather than simple water, and it can be directed at any body cavity or part.

**douching** Using water or a medicated solution to clean the vagina and cervix or any other body cavity or part.

**Douglas, pouch of** See *pouch of Douglas*.

**Dowager's hump** An abnormal outward curvature of the thoracic vertebrae of the upper back. Compression of the front portion of the involved vertebrae due to osteoporosis leads to forward bending of the spine (kyphosis) and creates a hump at the upper back. Like most osteoporotic changes, it is often preventable.

**Down syndrome** A common birth defect that is usually due to an extra chromosome 21 (trisomy 21). Down syndrome causes mental retardation, a characteristic facial appearance, and multiple malformations. It occurs most frequently in children born to mothers over age 35. It is associated with a major risk for heart problems, a lesser risk of duodenal atresia (partially undeveloped intestines), and a minor but significant risk of acute leukemia. Treatment for Down syndrome includes early intervention to develop the mental and physical capacities to their utmost, speech therapy, and surgery, as needed, to repair malformations. About one-half of children with Down syndrome have heart defects, most often holes between the two sides of the heart (septal defects). With appropriate intervention, most children with Down syndrome live active, productive lives into at least middle age. Most are mildly to moderately retarded, although some have IQs in the low-normal range. Unfortunately, most adults with Down syndrome eventually develop Alzheimer's disease as they grow older. Down syndrome was also once called mongolism, a term now considered out of date, as the disorder has no relationship to Mongolian or Asian heritage. It can occur in any racial or ethnic group.

**downregulation** Reduction in the number of receptors on the surface of target cells, making the cells less sensitive to a hormone or another agent.

**DPT** Diphtheria-pertussis-tetanus vaccine. Today the more frequent abbreviation is DTP, for diphtheria-tetanus-pertussis vaccine. See also *DTP immunization*.

**drain** **1** A device for removing fluid from a cavity or wound, typically a tube or wick. **2** As a verb, to allow fluid to be released from a confined area.

**DRD** See *dopa-responsive dystonia*.

**dream** A series of thoughts, visions, and other sensations that occupy the mind during sleep. Dreams occur during that part of sleep when there are rapid eye movements (REM sleep). People have three to five periods of REM sleep per night, which usually come at intervals of 1 to 2 hours and are quite variable in length. An episode of REM sleep might be brief and last just 5 minutes, or it might be

much longer. Experiments have shown that a person can communicate with a person who is dreaming. Dreaming is not uniquely human; cats and dogs dream, judging from the physiologic features, and so, apparently, do many other animals. The content of dreams is sometimes the topic of psychoanalysis. Although this method of therapy is less common today than it once was, some physicians still look at dreams as a diagnostic clue to medical disorders. For example, children with bipolar disorder have been found to frequently have a particular type of nightmare, and especially lucid dreams are a side effect of certain medications. These clues indicate that chemicals in the brain, as well as life events and individuals' preoccupations, influence dreams. See also *REM sleep*.

**drip** Short for intravenous drip, a device for administering a fluid drop-by-drop into a vein via an intravenous (IV) route.

**drug, ACE-inhibitor** See *ACE inhibitor*.

**drug, anti-angiogenesis** See *anti-angiogenesis drug*.

**drug, antihypertensive** See *antihypertensive*.

**drug, anti-infective** See *agent, anti-infective*.

**drug, antiviral** See *antiviral agent*.

**drug, over-the-counter** A drug for which a prescription is not needed.

**drug, prescription** See *prescription drug*.

**drug, teratogenic** See *teratogen*.

**drug activity** A measure of the physiological response that a drug produces. A less active drug produces less response, and a more active drug produces more response.

**Drug Enforcement Administration** See *DEA*.

**drug resistance** The ability of bacteria and other microorganisms to withstand a drug that once stalled them or killed them.

**drug screen** An examination of biologic material to detect the presence of certain drugs and determine prior drug use. Also known as a drug test.

**drug-coated stent** See *coated stent*.

**drug-induced** Incited or caused by a drug.

**drugs during pregnancy, dangerous** See *teratogen*.

**dry eyes** See *xerophthalmia*.

**dry mouth** See *xerostomia*.

**dry skin** See *xeroderma*.

**DSM-IV** Diagnostic and Statistical Manual of Mental Disorders, fourth edition, the official source on definitions related to mental illness.

**DT immunization** A vaccination against diphtheria and tetanus. DT immunization does not protect from pertussis as the DTP and DTaP immunizations do. It is usually reserved for individuals who have had a significant adverse reaction to a DTP shot or who have a personal or family history of seizure disorder or brain disease. See also *diphtheria*; *tetanus*.

**DTaP immunization** Diphtheria-tetanus-acellular-pertussis immunization, a vaccine that, like DTP, protects against diphtheria, pertussis (whooping cough), and tetanus. DTaP is the same as DTP, except that it contains only acellular pertussis vaccine, which is thought to cause fewer of the minor reactions associated with immunization. Acellular pertussis vaccine is also probably less likely than regular pertussis vaccine to cause the more severe reactions occasionally seen following pertussis vaccination. It is currently recommended that DTaP be given at 18 months and at 4 to 6 years of age. See also *diphtheria*; *pertussis*; *tetanus*.

**DTP immunization** Diphtheria, tetanus, and pertussis (whooping cough) immunization, a vaccine that is given in a series of five shots at 2, 4, 6, and 18 months of age and again at 4 to 6 years of age. Due to vaccination programs, diphtheria, tetanus, and pertussis have become less common than they were in the past. However, there are still unvaccinated individuals who are capable of carrying and passing diphtheria and pertussis to others who are not vaccinated. Tetanus bacteria are prevalent in natural surroundings, such as contaminated soil. Children with compromised immune systems or known neurological disorders generally should not receive the DTP immunization, particularly during infancy. See also *DTaP immunization*.

**DTs** See *delirium tremens*.

**dual diagnosis** A diagnosis of both a mental illness and a substance abuse disorder.

**Duchenne muscular dystrophy** See *DMD*.

**duct** A walled passageway, such as a lymph duct, that carries fluid from one place to another. Also known as a *ductus*.

**duct, thoracic** See *thoracic duct*.

**ductal carcinoma of the breast, infiltrating** See *carcinoma of the breast, infiltrating ductal*.

**ductus** See *duct*.

**ductus arteriosus** A short vessel through which blood headed from the heart via the pulmonary artery to the lungs is shunted before birth. This blood is shunted away from the lungs and returned to the aorta. When the shunt is open, it is said to be patent. A patent ductus arteriosus (PDA) usually closes at or shortly after birth, and blood is permitted from that moment on to course freely to the lungs. If the ductus stays open, flow reverses, and blood from the aorta is shunted into the pulmonary artery and recirculated through the lungs. The PDA may close later on its own, or it may need to be ligated (tied off) surgically.

**due date** The estimated calendar date when a baby is due to be born. Also called the estimated date of confinement (EDC).

**dumping syndrome** A group of symptoms, including cramps, nausea, diarrhea, and dizziness, that occur when food or liquid enters the small intestine too rapidly.

**duodenal ulcer** A crater (ulcer) in the lining of the beginning of the small intestine (duodenum). Ulcer formation is caused by infection with *Helicobacter pylori*. Other factors predisposing a person to ulcers include anti-inflammatory medications and cigarette smoking. Ulcer pain may not correlate with the presence or severity of ulceration. Diagnosis is made with barium X-ray or endoscopy. Complications of ulcers include bleeding, perforation, and blockage. Treatment involves using antibiotics to eradicate *H. pylori*, eliminating risk factors, and preventing complications.

**duodenitis** Inflammation of the duodenum, the first part of the small intestine.

**duodenum** The first part of the small intestine. The duodenum is a common site for peptic ulcer formation.

**duplication, chromosome** The addition of part of another chromosome to a chromosome. This is a common cause of genetic disease. The opposite of deletion.

**Dupuytren's contracture** A localized formation of scar tissue in the palm of the hand within a tissue (fascia) beneath the skin of the palm that normally covers the tendons that pull the fingers into a grip.



As Dupuytren's contracture progresses, more of the fascia becomes thickened and shortened. Dimpling and puckering of the skin over the area eventually occur. The precise cause of Dupuytren's contracture is not known. Causes include diabetes mellitus, seizure disorders (epilepsy), and alcoholism. It also can be inherited. Most patients with Dupuytren's contracture require only stretching exercises with heat application. When the palm is persistently sore with grasping, ultrasound treatments can be helpful. Sometimes local inflammation can be relieved with cortisone injection. For patients with significant fixed flexed posture (contracture) of the fingers from Dupuytren's contracture, surgical procedures can remove the scarred tissue to free the fingers.

**dura mater** The outermost and most fibrous of the three membranes (dura mater, arachnoid membrane, and pia mater) covering the brain and the spinal cord.

**durable power of attorney** A type of advance medical directive in which legal documents provide the power of attorney to another person in the case of an incapacitating medical condition. A durable power of attorney allows another person to make bank transactions, sign Social Security checks, apply for disability, or write checks to pay utility bills while an individual is medically incapacitated. Such documents are recommended for any patient who may be unable to make his or her wishes known during a long medical confinement.

**DVT** Deep vein thrombosis.

**dwarfism** Abnormally short stature, which may be due to a variety of causes. Some forms of dwarfism are hereditary. The Little People of America (LPA) defines dwarfism as a medical or genetic condition that usually results in an adult height of 148 cm (4 feet 10 inches) or shorter, among both men and women. Also known as nanism. Dwarfism is now more correctly called short stature. See also *achondroplasia*; *dwarfism*, *pituitary*; *hypochondroplasia*; *Seckel syndrome*.

**dwarfism, achondroplastic** See *achondroplasia*.

**dwarfism, hypochondroplastic** See *hypochondroplasia*.

**dwarfism, pituitary** Dwarfism caused by a lack of growth hormone, usually due to malfunction of the anterior pituitary gland. Children with growth hormone deficiency may grow normally for the first 2 to 3 years of life, but they then fall behind their peers in height. Unlike those with other forms of dwarfism, those with pituitary dwarfism are normally proportioned. Pituitary dwarfism can be treated with injections of human growth hormone

during childhood. Also known as hypopituitary dwarfism. See also *pituitary*, *anterior*.

**dwarfism, rhizomelic** Dwarfism with shortening especially of the ends of the limbs. See also *achondroplasia*; *dwarfism*.

**dwarfism, Seckel-type** See *Seckel syndrome*.

**dwarfism, thanatophoric** A form of short-limbed (micromelic) dwarfism that usually causes death within the first few hours after birth. The bones of the arms and legs are very short. The ribs are also extremely short, and the rib cage is small, leading to respiratory insufficiency and death. See also *achondroplasia*; *dwarfism*; *hypochondroplasia*.

**Dx** Abbreviation for diagnosis, the determination of the nature of a disease.

**dys-** Prefix denoting bad or difficult, as in dyspepsia (difficult digestion).

**dysarthria** Speech that is characteristically slurred, slow, and difficult to understand. A person with dysarthria may also have problems controlling the pitch, loudness, rhythm, and voice qualities of his or her speech. Dysarthria is caused by paralysis, weakness, or inability to coordinate the muscles of the mouth. Dysarthria can occur as a developmental disability. It may be a sign of a neuromuscular disorder such as cerebral palsy or Parkinson's disease. It may also be caused by a stroke, brain injury, or brain tumor. Treatment of dysarthria includes intensive speech therapy with a focus on oral-motor skill development.

**dyscalculia** A specific developmental disability that affects a person's ability to conceptualize and perform mathematics. Mild cases can often be compensated for with use of a calculator, but those with severe dyscalculia need special education services.

**dysentery** Inflammation of the intestine, with pain, diarrhea, bloody stools, and often a fever above 38.3°C (101°F). The causes of dysentery include bacteria (such as *Shigella*), protozoa (such as amebae), parasitic worms (such as schistosomes), and viruses. Dysentery can be fatal because it can cause severe dehydration. Treatment includes rapid rehydration, sometimes via IV, and medication.

**dysentery, amebic** See *amebic dysentery*.

**dysfunction, erectile** See *erectile dysfunction*.

**dysgraphia** A specific developmental disability that affects a person's handwriting ability. Problems may include fine-motor-muscle control of the hands and/or processing difficulties. Sometimes occupational

therapy is helpful for those with dysgraphia. Most successful students with dysgraphia that does not respond to occupational therapy or extra writing help use a typewriter, computer, or verbal communication.

**dyskinesia** The presence of involuntary movements, such as the choreaform movements seen in some cases of rheumatic fever or the characteristic movements of tardive dyskinesia. Some forms of dyskinesia are side effects of certain medications, particularly L-dopa and, in the case of tardive dyskinesia, antipsychotic drugs.

**dyslexia** A specific developmental disability that alters the way the brain processes written material. Because dyslexia is due to a defect in the brain's processing of graphic symbols, it is thought of primarily as a learning disability. The effects of dyslexia vary from person to person. The only common trait among people with dyslexia is that they read at levels significantly lower than are typical for people of their age and intelligence. Dyslexia is different from reading retardation which may, for example, reflect mental retardation or cultural deprivation. Treatment of dyslexia should be directed to the specific learning problems of the affected individual. The usual course is to modify teaching methods and the educational environment to meet the specific needs of the individual with dyslexia. The outlook varies. The prognosis is generally good, however, for individuals whose dyslexia is identified early, who have supportive families and friends and a strong self-image, and who are involved in appropriate remediation programs.

**dyslipidemia** A disorder of lipoprotein metabolism, including lipoprotein overproduction or deficiency. Dyslipidemias may be manifested by elevation of the total cholesterol, the "bad" low-density lipoprotein (LDL) cholesterol or the triglyceride concentrations, and by a decrease in the "good" high-density lipoprotein (HDL) cholesterol concentration in the blood. Dyslipidemias lead to atherosclerosis. See also *atherosclerosis*.

**dysmenorrhea** See *menstrual cramps*.

**dysmorphic feature** A body characteristic that is abnormally formed. A malformed ear, for example, is a dysmorphic feature.

**dysmorphology** The study of human congenital malformations (birth defects), particularly those affecting the anatomy (morphology) of the individual.

**dysostosis, cleidocranial** See *cleidocranial dysostosis*.

**dyspareunia** Pain during sexual intercourse. There are many causes of dyspareunia, including vaginal infection or dryness. Treatment is directed

toward the underlying cause and vaginal lubricant jelly can be of help.

**dyspepsia** Indigestion. A condition characterized by upper abdominal symptoms that may include pain or discomfort, bloating, feeling of fullness with very little intake of food, feeling of unusual fullness following meals, nausea, loss of appetite, heartburn, regurgitation of food or acid, and belching. The term dyspepsia is often used for these symptoms when they are not typical of a well-described disease (for example, gastrointestinal reflux) and the cause is not clear. After a cause for the symptoms has been determined, the term dyspepsia is usually dropped in favor of a more specific diagnosis.

**dysphagia** Difficulty swallowing. Dysphagia is due to abnormal nerve or muscle control. It is common, for example, after a stroke. Dysphagia can compromise nutrition and hydration and may lead to aspiration pneumonia and dehydration.

**dysphonia** An impairment of the voice. Difficulty in speaking. Hoarseness caused by a virus is a common form of dysphonia.

**dysphonia, spasmodic** A disorder that involves the muscles of the throat that control speech. Spasmodic dysphonia causes strained and difficult speaking or breathy and effortful speech. Also known as spastic dysphonia and laryngeal dystonia.

**dysphoria** Anxiety.

**dysplasia** Abnormality in form or development. For example, retinal dysplasia is abnormal formation of the retina during embryonic development.

**dysplasia, bronchopulmonary** Chronic lung disease in infants who have received mechanical respiratory support with high oxygenation in the neonatal period.

**dysplasia, cleidocranial** See *cleidocranial dysostosis*.

**dysplastic nevus** A mole whose appearance is different from that of common moles. Dysplastic nevi are generally larger than ordinary moles, and they have irregular borders. Their color is often not uniform. They are usually flat, but parts may be raised above the skin surface. Dysplastic nevi can be precancerous. See *cancer, skin*.

**dyspnea** Difficult or labored breathing; shortness of breath. Dyspnea is a sign of serious disease of the airway, lungs, or heart. The onset of dyspnea should not be ignored; it is reason to seek medical attention.

**dyspnoea** See *dyspnea*.

**dyspraxia** Impaired or painful function of an organ of the body. See also *developmental dyspraxia*.

**dyspraxia, developmental** See *developmental dyspraxia*.

**dyspraxia of speech** A developmental disability characterized by difficulty with muscle control, specifically with the muscles involved in producing speech. The cause is unclear. Treatment involves intensive speech therapy that concentrates on oral-motor skills. See also *apraxia of speech*.

**dysthymia** A type of depressive disorder that involves long-term, chronic symptoms that are not disabling but that nonetheless keep a person from full function or from feeling good. Dysthymia is a less severe type of depression than major depression. However, people with dysthymia may also sometimes experience major depressive episodes, suggesting that there is a continuum between dysthymia and major depression. See also *depression; depression, major*.

**dystocia** Difficult or abnormal labor or delivery.

**dystocia, cervical** Dystocia caused by mechanical obstruction at the cervix.

**dystocia, fetal** Dystocia caused by the fetus, due to its size (too big), shape, or position in the uterus.

**dystocia, placental** Dystocia characterized by trouble delivering the placenta (afterbirth).

**dystonia** Involuntary movements and prolonged muscle contraction that result in twisting body motions, tremors, and abnormal posture. These movements may involve the entire body or only an isolated area. Dystonia can be inherited, may occur sporadically without any genetic pattern, may be associated with medications (particularly antipsychotic drugs), or may be a symptom of certain diseases (for example, a specific form of lung cancer). Some types of dystonia respond to dopamine. Dystonia can sometimes also be controlled with sedative-type medications or surgery.

**dystonia, cranial** A form of dystonia that affects the muscles of the head, face, and neck. Spasmodic torticollis can be classified as a type of cranial dystonia.

**dystonia, dopa-responsive** See *dopa-responsive dystonia*.

**dystonia, focal** A form of dystonia that affects only one muscle group. Common focal dystonias that affect the muscles of the hand and sometimes the forearm have been called typist's cramp, pianist's cramp, musician's cramp, golfer's cramp, and writer's cramp.

**dystonia, focal, due to blepharospasm** The involuntary, forcible closure of the eyelids. Focal dystonia due to blepharospasm is the second most common focal dystonia. The first symptom may be uncontrollable blinking. Only one eye may be affected initially, but eventually both eyes are usually involved. The spasms may leave the eyelids completely closed, causing functional blindness even though the eyes and vision are normal. Uncontrollable blinking may also be caused by tic disorders, including Tourette syndrome.

**dystonia, focal, due to torticollis** See *torticollis*.

**dystonia, generalized torsion** See *dystonia, idiopathic torsion*.

**dystonia, idiopathic torsion** A form of torsion dystonia that begins in childhood, around age 12. Symptoms typically start in one part of the body, usually in an arm or a leg, and eventually spread to the rest of the body within about 5 years. Early-onset torsion dystonia is not fatal, but it can be severely debilitating. Also known as generalized torsion dystonia. See also *dystonia, torsion*.

**dystonia, laryngeal** See *dysphonia, spasmodic*.

**dystonia, oromandibular** Dystonia that affects the muscles of the jaw, lips, and tongue. The jaw may be pulled either open or shut, and speech and swallowing can be difficult.

**dystonia, Segawa** See *dopa-responsive dystonia*.

**dystonia, torsion** A type of dystonia in which symptoms typically start in one part of the body, usually in an arm or a leg, and eventually spread to the rest of the body. A form that strikes in childhood is known as idiopathic torsion dystonia, early-onset torsion dystonia, and generalized torsion dystonia. See also *dystonia, idiopathic torsion*.

**dystonia musculorum deformans** See *dystonia, torsion*.

**dystrophy, muscular** See *muscular dystrophy*.

**dystrophy, myotonic** A relatively common inherited disease in which the muscles contract but have decreasing ability to relax (myotonia). Myotonic dystrophy is also characterized by the development of a mask-like, expressionless face, premature balding, cataracts, and abnormalities in heart rhythm. See *amplification; anticipation*.

**dysuria** Pain during urination, or difficulty urinating. Dysuria is usually caused by inflammation of the urethra, frequently as a result of infection.

# Ee

**E. coli** *Escherichia coli*, a bacterium that normally resides in the colon. Although *E. coli* is normally present in the colon with no harmful consequences, it can cause disease when transmitted from human to human via water, food, or feces. Infants, young children, the elderly, and people with compromised immune systems are especially at risk for *E. coli* infection.

**Eagle syndrome** Inflammation of the styloid process, a spike-like growth that projects out of the base of the skull. If the styloid process is oversized or projects too far, the tissues in the throat can rub on it causing pain during the act of swallowing and pain on rotation of the neck. Diagnosis of Eagle syndrome is made by an X-ray demonstrating an abnormally elongated styloid process.

**ear** The hearing organ. There are three sections of the ear: outer, middle, and inner. The outer, or external, ear helps concentrate the vibrations of air created by sound onto the eardrum, causing the eardrum to vibrate. These vibrations are transmitted by a chain of little bones in the middle ear to the inner ear, where they stimulate the fibers of the auditory nerve to transmit impulses to the brain. The auditory cortex of the brain interprets speech and other sounds that the ear receives as information we can use to interpret our environment. See also *ear, inner*; *ear, middle*; *ear, outer*.

**ear, cauliflower** See *cauliflower ear*.

**ear, external** See *ear, outer*.

**ear, inner** A highly complex structure whose essential component for hearing is the membranous labyrinth, where the fibers of the auditory nerve connect the ear to the brain. The membranous labyrinth is a system of communicating sacs and ducts (tubes) filled with fluid (endolymph), and it is lodged within a cavity called the bony labyrinth. At some points the membranous labyrinth is attached to the bony labyrinth, and at other points the membranous labyrinth is suspended within the bony labyrinth in a fluid called perilymph. The bony labyrinth has three parts: a central cavity called the vestibule; semicircular canals, which open into the vestibule; and a spiraling tube called the cochlea. The membranous labyrinth also has a vestibule,

which consists of two sacs (the utriculus and sacculus) that are connected by a narrow tube. The larger of the two sacs, the utriculus, is the principal organ of the vestibular system, which is the system of balance. This system informs a person about the position and movement of the head. The smaller of the two sacs, the sacculus, is also connected by a membranous tube to the cochlea that contains the organ of Corti. The hair cells, which are the special sensory receptors for hearing, are in the organ of Corti.

**ear, internal** See *ear, inner*.

**ear, low-set** A minor anomaly in which the ear is situated below the normal location. Technically, the ear is low-set when the helix of the ear meets the cranium at a level below that of a horizontal plane through both inner canthi (the inside corners of the eyes). The presence of two or more minor anomalies such as this one in a child increases the probability that the child has a major malformation.

**ear, malrotated** See *ear, slanted*.

**ear, middle** A part of the ear that consists of the eardrum (tympanic membrane) and, beyond it, a cavity (tympanum). This cavity is connected to the pharynx (nasopharynx) via a canal known as the Eustachian tube. The middle ear cavity also contains a chain of three little bones, the ossicles (the malleus, incus, and stapes), which connect the eardrum to the internal ear. The middle ear communicates with the pharynx, equilibrates with external pressure, and transmits the eardrum vibrations to the inner ear.

**ear, outer** The part of the ear that is visible along the side of the head. The outer ear consists of the pinna, or auricle (the visible projecting portion of the ear), the external acoustic meatus (the outside opening to the ear canal), and the external ear canal, which leads to the eardrum. The outer ear concentrates air vibrations on the eardrum to make the eardrum vibrate.

**ear, slanted** A minor anomaly in which the ear is slanted more than usual—more than 15 degrees from the perpendicular. The presence of two or more minor anomalies such as this one in a child increases the probability that the child has a major malformation. Slanted ears are a common sign of fetal alcohol spectrum disorders. Both of these conditions also feature a very high rate of sensorineural hearing loss and ear infections. Also known as malrotated ear. See also *fetal alcohol effect*; *fetal alcohol syndrome*.

**ear, swimmer's** See *ear infection, external*.

**ear piercing** The practice of using a needle or needle gun to make holes through the ear lobe or other parts of the ear so that jewelry can be worn. Ear piercing can result in inflammation and/or



infection. Infected ear piercings should be washed and then treated with antibiotic cream. Further treatment involves either allowing the piercing to close or using only nonirritating jewelry (usually gold or hypoallergenic plastic). The likelihood of inflammation and infection is greater for piercings that go through hard cartilage, as found on the side and top of the outer ear, than for the soft bottom lobe of the ear.

**ear pit** A tiny pit in front of the ear, also called a preauricular pit. This minor anomaly is of no consequence in and of itself. It is more common in blacks than in whites, and in females than males. It can recur in families. However, the presence of two or more minor anomalies such as this one in a child increases the probability that the child also has a major malformation, such as a congenital heart defect.

**ear puncture** Puncture of the eardrum. Ear puncture may be due to an accident, as when something is stuck into the ear, or due to fluid pressure in the middle ear. The eardrum is occasionally punctured intentionally via surgery. A tiny incision (myringotomy) is made in the eardrum to allow fluid trapped behind the eardrum, usually thickened secretions, to be removed. An ear tube may be inserted after the fluid drains. See also *ear tube*.

**ear ringing** See *tinnitus*.

**ear infection** Infection of the ear by bacteria or viruses. Ear infections are the most frequent diagnosis in sick children. Ear infections occur less commonly in adults. Almost every child has one or more bouts of middle ear infection (otitis media) before age 6. The Eustachian tube is shorter in children than in adults, allowing easy entry of bacteria and viruses. Outer ear infection in adults is sometimes associated with excessive cotton swab irritation of the ear canal. Bottle-feeding is a risk factor for ear infections. Breast-feeding passes to the baby immunity that helps prevent ear infections. The position of the breast-feeding child is better than that of the bottle-feeding child for Eustachian tube function. If a child needs to be bottle-fed, holding the infant rather than allowing the child to lie down with the bottle is best. A child should not take the bottle to bed. Ear infections are not contagious, but the bacteria or viruses that cause them may be. A child with an ear infection can travel by airplane, but if the Eustachian tube is not functioning well, changes in pressure can cause discomfort. A child with a draining ear should not fly or swim. See also *ear infection, external*.

**ear infection, external** Infection of the skin covering the outer ear canal that leads in to the ear

drum, usually due to bacteria such as streptococcus, staphylococcus, or pseudomonas. External ear infection is usually caused by excessive water exposure. When water pools in the ear canal (frequently trapped by wax), the skin will become soggy and serve as an inviting culture media for bacteria. The first sign of an external ear infection is a feeling of fullness and itching in the ear. Next the ear canal swells, and drainage and pain follow. With severe infection, the ear canal can swell completely shut and the side of the face can become swollen. Moisture and irritation will prolong the course of swimmer's ear. For this reason, the ear should be kept dry. Scratching the inside of the ear or using Q-tips should be avoided. A hearing aid should be left out. Also known as otitis externa and swimmer's ear.

**ear tag** A rudimentary tag of ear tissue, often containing a core of cartilage, usually located just in front of the ear (auricle). This minor anomaly is common and harmless. However, the presence of two or more minor anomalies such as this one in a child increases the probability that the child has a major malformation. Also known as preauricular tag.

**ear tube** A small plastic tube that is inserted into the eardrum (tympanum) to keep the middle ear aerated for a prolonged period of time. To put an ear tube in place, a tiny surgical incision is made in the eardrum. Any fluid is removed. Water should not be allowed to enter the ear canal while the tubes are in place. Ear tubes may remain in place for several years. A physician may remove a tube during a routine office visit, or it may simply fall out of the ear naturally without the patient realizing it. Formally known as a tympanostomy tube.

**ear tumor** A formation of benign (noncancerous) bumps on the external ear or within the external ear canal. Most of these lumps and bumps are harmless sebaceous cysts. However, some are bony overgrowths known as exostoses or osteomas. If they are large and interfere with hearing, they can be surgically removed with relative ease.

**eardrum** The tympanic membrane of the ear, or tympanum. The eardrum separates the middle ear from the external ear.

**earthquake supplies kit** See *disaster supplies*.

**earwax** A natural wax-like substance secreted by glands in the skin on the outer part of the ear canal. Earwax repels water and traps dust and sand particles. Usually small amounts of wax accumulate and then dry up and fall out of the ear canal, carrying unwanted particles. Earwax is helpful in normal amounts. The absence of earwax may result in dry, itchy ears, and in infection. There are two types of



earwax: wet and dry. Most whites and blacks have the wet type, and most Asians and Native Americans have the dry type.

**Ebola virus** A virus that causes a deadly form of hemorrhagic fever that is characterized by a rise in temperature and bleeding problems. Ebola virus epidemics have occurred mainly in Sudan and Zaire. The initial symptoms are fever and headache, followed by vomiting and diarrhea, muscle pain, rash, and bloody nose, spitting up of blood from the lungs and stomach, and bloody eyes. Ebola virus is highly contagious and is transmitted by contact with blood, feces, or body fluids from an infected person. The incubation period ranges from 2 to 21 days. There is no specific treatment for the disease. Death can occur within 10 days.

**EBV** Epstein-Barr virus.

**ecchymosis** Nonraised skin discoloration caused by the escape of blood into the tissues from ruptured blood vessels. Ecchymoses can occur in mucous membranes (for example, in the mouth).

**ecchymotic** Characterized by ecchymosis.

**ECG** Electrocardiogram.

**echocardiography** A diagnostic test of the heart that uses ultrasound waves to form images of the heart chambers, valves, and surrounding structures. Echocardiography can measure cardiac output, and it is a sensitive test for detecting inflammation around the heart (pericarditis). It can also be used to detect abnormal anatomy and infections of the heart valves.

**echolalia** The involuntary, parrot-like repetition (echoing) of a word or phrase just spoken by another person. Echolalia is a feature of schizophrenia (especially the catatonic form), Tourette syndrome, and other disorders. See also *echopraxia*; *schizophrenia*; *Tourette syndrome*.

**echopraxia** The involuntary imitation of the movements of another person. Echopraxia is a feature of schizophrenia (especially the catatonic form), Tourette syndrome, and some other neurological diseases. See also *echolalia*.

**echovirus** A group of viruses found in the intestinal tract. The "echo" part of the name is an acronym for enteric cytopathic human orphan viruses. "Orphan" implied that these viruses were not associated with any disease. However, it is now known that echoviruses can cause a number of different diseases, including rashes, diarrhea, respiratory infections (such as the common cold, sore throat, bronchitis, and bronchiolitis), muscle

inflammation, meningitis, encephalitis, and inflammation around the heart.

**eclampsia** The presence of one or more convulsions in a pregnant woman who has preeclampsia. Eclampsia is a frequent cause of maternal death in underdeveloped countries, and it is a serious problem even in developed countries. Treatment is with antispasmodic medication, notably magnesium sulfate. See also *HELLP syndrome*; *preeclampsia*.

**ecogenetics** The interaction of genetics with the environment. For example, persons with the genetic disease phenylketonuria (PKU) lack an enzyme that is needed to process the amino acid phenylalanine, and they require a special environment: a diet low in phenylalanine.

**economy-class syndrome** See *deep vein thrombosis*.

**ecstasy** 1 A state of rapture and trancelike elation. 2 A street name for 3, 4-methylenedioxymethamphetamine (MDMA), a synthetic, mind-altering drug with hallucinogenic and amphetamine-like properties—other street names include "Adam" and "XTC." Its chemical structure is similar to two other synthetic drugs, MDA and methamphetamine. See also *designer drug*.

**ECT** Electroconvulsive therapy.

**ectoderm** The outermost of the three primary germ cell layers (the other two being the mesoderm and endoderm) that make up a very young embryo. The ectoderm differentiates (specializes) to give rise to many important tissues and structures, including the outer layer of the skin and its appendages (such as the sweat glands, hair, and nails), the teeth, the lens of the eye, parts of the inner ear, the nerves, the brain, and the spinal cord. Stem cell research has shown that some cells within ectodermal structures retain their ability to differentiate into other tissues. For example, some cells in the brain (ectoderm) can become bone marrow (mesoderm). See also *differentiation*; *embryo*; *endoderm*; *mesoderm*.

**ectodermal dysplasia** A genetic disorder in which the skin and associated structures (the hair, nails, teeth, and sweat glands) develop abnormally. X-linked anhidrotic (nonsweating) ectodermal dysplasia is most common; because it is an X-linked trait, it mainly affects males. There is also an autosomal dominant form that affects both males and females. The term ectodermal dysplasia refers to the abnormal development (dysplasia) of structures derived from one of the germ cell layers in the embryo (ectoderm).

**-ectomy** The surgical removal of something. For example, a lumpectomy is the surgical removal of a lump, a tonsillectomy is the removal of the tonsils, and an appendectomy is removal of the appendix.

**ectopia cordis** A birth defect that results in an abnormal location of the heart, usually outside the chest.

**ectopic** In the wrong place, out of place. For example, an ectopic kidney is a kidney that is not in the usual location.

**ectopic pregnancy** A pregnancy that occurs outside of the uterus. Usually, ectopic pregnancies occur because a fertilized egg settles and grows in a Fallopian tube. However, ectopic pregnancies can occur in other locations, such as the ovary, cervix, and abdominal cavity. An ectopic pregnancy is usually due to the inability of a fertilized egg to make its way through a Fallopian tube into the uterus. Risk factors include pelvic inflammatory disease (PID); adhesions from surgery on or near a Fallopian tube; endometriosis, a condition in which tissue like that normally lining the uterus is found outside the uterus; a prior ectopic pregnancy; a history of repeated induced abortions; and a history of infertility problems or use of medications to stimulate ovulation. A major concern with ectopic pregnancy is internal bleeding. Pain is usually the first symptom. The pain, which is usually sharp and stabbing, is often one-sided and may occur in the pelvis, abdomen, or even the shoulder or neck (due to blood from a ruptured ectopic pregnancy building up under the diaphragm and the pain being "referred" up to the shoulder or neck). Diagnosis is made through a pelvic exam to test for pain, tenderness, and a mass in the abdomen. The most useful laboratory test is the measurement of the hormone human chorionic gonadotropin (hCG). In a normal pregnancy, the level of hCG doubles about every 2 days during the first 10 weeks, whereas in an ectopic pregnancy, the hCG rise is usually slower and lower than normal. Ultrasound can also help determine whether a pregnancy is ectopic, as can culdocentesis, the insertion of a needle through the vagina into the space behind the uterus to see whether there is blood there from a ruptured Fallopian tube. Treatment includes surgery, often by laparoscopy, to remove the ill-fated pregnancy. A ruptured Fallopian tube usually has to be removed. If the tube has not yet burst, a physician may be able to repair it. The outlook for future pregnancies depends on the extent of the surgery.

**eczema** An inflammatory reaction of the skin in which there are tiny blister-like raised areas in the early stage followed by reddening, swelling, bumps, crusting, and thickening and scaling. Eczema char-

acteristically causes itching and burning. Also known as atopic dermatitis. Eczema is a very common skin problem that may start in infancy, later in childhood, or in adulthood. It can be caused by allergies, diabetes, sunburn, or unknown reasons. It can be treated with medications, commonly topical cortisone creams that reduce inflammation. There are numerous types of eczema, including atopic dermatitis, contact eczema, seborrheic eczema, nummular eczema, neurodermatitis, stasis dermatitis, and dyshidrotic eczema.

**eczema, allergic contact** A red, itchy, weepy reaction that occurs where the skin has come into contact with a substance that the immune system recognizes as foreign, such as poison ivy or certain preservatives in creams and lotions. Also known as allergic contact dermatitis.

**eczema, contact** A localized reaction that involves redness, itching, and burning that occurs where the skin has come into contact with an allergen (an allergy-causing substance) or an irritant such as an acid, a cleaning agent, or another chemical.

**eczema, dyshidrotic** Irritation of the skin on the palms of the hands and the soles of the feet that is characterized by clear, deep blisters that itch and burn.

**eczema, nummular** Coin-shaped patches of irritated skin that may be crusted, scaling, and extremely itchy. Nummular eczema appears most commonly on the arms, back, buttocks, and lower legs.

**eczema, seborrheic** See *seborrhea*.

**ED** Erectile dysfunction.

**EDC** Estimated date of confinement. See *due date*.

**edema** The swelling of soft tissues as a result of excess fluid accumulation. Edema is often most prominent in the lower legs and feet toward the end of the day because fluid pools while people maintain an upright position.

**edema, hereditary angioneurotic** Localized skin swelling that results from an inherited deficiency of the C1 esterase inhibitor protein, which normally prevents activation of a cascade of proteins that leads to the occurrence of angioedema. Patients can develop recurrent attacks of swollen tissues, pain in the abdomen, and swelling of the voice box (larynx) that can compromise breathing. The diagnosis is confirmed when abnormally low levels of C1

esterase inhibitor are detected in the blood. Treatment options include antihistamines and male steroids (androgens). Also known as hereditary angioedema.

**edema, periorbital** Swelling around the eyes due to excess water accumulation.

**edentulous** Being without teeth. Complete loss of all natural teeth can substantially reduce quality of life, self-image, and daily functioning.

**Edwards syndrome** See *trisomy 18 syndrome*.

**EEG** Electroencephalogram.

**EFA** Essential fatty acid.

**effacement** Thinning of the cervix, which occurs before and while the cervix dilates.

**effect, founder** See *founder effect*.

**effluent** Carrying away. For example, an artery is an efferent vessel that carries blood away from the heart, and an efferent nerve carries impulses away from the central nervous system. The opposite of efferent is afferent.

**efferent nerve** A nerve that carries impulses away from the central nervous system.

**efferent vessel** A vessel that carries blood away from the heart. Hence, an efferent vessel is an artery or an arteriole (a little artery).

**effusion** Too much fluid, an outpouring of fluid. For example, a pleural effusion is an abnormal accumulation of fluid in the pleural space between the lungs and the chest wall, while a knee effusion is an abnormal amount of fluid in the knee joint. A hemorrhagic effusion contains blood in the fluid.

**effusion, pericardial** Too much fluid within the fibrous sac (pericardium) that surrounds the heart. The inner surface of the pericardium is lined by a layer of flat cells (mesothelial cells) that normally secrete a small amount of fluid, which acts as a lubricant to allow normal heart movement within the chest. A pericardial effusion involves the presence of an excessive amount of pericardial fluid, a pale yellow serous fluid, within the pericardium.

**effusion, pleural** Excess fluid between the two membranes that cover the lungs (the visceral and parietal pleurae) separating the lungs from the chest wall. A small quantity of fluid is normally spread thinly over the visceral and parietal pleurae and acts as a lubricant between the two membranes. Any significant increase in the quantity of pleural

fluid is a pleural effusion. The most common symptoms of pleural effusion are chest pain and painful breathing (pleurisy). Many pleural effusions cause no symptoms but are discovered during physical examination or detected on chest X-rays; X-ray is the most convenient way to confirm the diagnosis. Pleural effusion can be caused by heart and kidney failure, hypoalbuminemia (low levels of albumin in the blood), infections, pulmonary embolism, and malignancies.

**EGD** Esophagogastroduodenoscopy. See *endoscopy, upper*.

**egg** See *ovum*.

**EGG** See *electrogastrogram*.

**egg sac** See *ovary*.

**Ehlers-Danlos syndrome** A heritable disorder of connective tissue that is characterized by easy bruising, joint hypermobility (loose joints), skin laxity, and weakness of tissues. Abbreviated EDS. There are a number of different types of EDS, each of which has these characteristic features. The variations of EDS are treated according to their particular manifestations. Skin protection (against injury of trauma, sun, and so on) is critical. Wounds must be tended to with great care, and infections must be treated and prevented. Suturing can be difficult because the skin can be extremely fragile. Joint injury must be avoided, and bracing may sometimes be necessary to maintain joint stability. Exercises that strengthen the muscles that support the joints can help to minimize joint injury. Contact sports and activities involving joint impact should be avoided.

**ehrlichiosis** An acute tick-borne disease first reported in humans in 1986. Erlichiosis is due to infection by the rickettsia microbe, *Ehrlichia canis*, which is usually carried by the brown dog tick. Erlichiosis is similar to Rocky Mountain spotted fever, characterized by high fever, headache, malaise, and muscle pain, but without the rash. See also *rickettsial diseases*.

**eight-day measles** Rubeola (measles). See also *measles*.

**ejaculation** Ejection of sperm and seminal fluid during an orgasm in a male.

**ejection fraction** The percentage of blood that is pumped out of a filled ventricle as a result of a heartbeat. The heart does not eject all the blood in the ventricle. Only about two-thirds of the blood is normally pumped out with each beat, and that fraction is referred to as the ejection fraction. The ejection fraction is an indicator of the heart's health. If

the heart is diseased from a heart attack or another heart condition, the ejection fraction may decrease.

**EKG** Electrocardiogram.

**elbow** The juncture of the long bones in the middle portion of the upper extremity. The bone of the arm (humerus) meets both the ulna (the inner bone of the forearm) and radius (the outer bone of the forearm) to form a hinge joint at the elbow. The radius and ulna also meet one another in the elbow to permit a small amount of rotation of the forearm. The elbow therefore functions to move the arm like a hinge (forward and backward) and in rotation (outward and inward). The biceps muscle is the major muscle that flexes the elbow hinge, and the triceps muscle is the major muscle that extends it. The primary stability of the elbow is provided by the ulnar collateral ligament, located on the medial (inner) side of the elbow. The outer bony prominence of the elbow is the lateral epicondyle, a part of the humerus bone. Tendons attached to this area can be injured, causing inflammation or tendonitis (lateral epicondylitis, or tennis elbow). The inner portion of the elbow is a bony prominence called the medial epicondyle of the humerus. Additional tendons from muscles attach here and can be injured, likewise causing inflammation or tendonitis (medial epicondylitis, or golfer's elbow).

**elbow, arthritis of the** Inflammation of the elbow joint. Arthritis of the elbow can be due to many systemic forms of arthritis, including rheumatoid arthritis, gouty arthritis, and psoriatic arthritis. Elbow arthritis is associated with signs of warmth, swelling, pain, tenderness, and decreased range of motion.

**elbow, golfer's** Medial epicondylitis caused by injured tendons from the muscles that attach to the bony prominence in the inner portion of the elbow called the medial epicondyle.

**elbow, tennis** Lateral epicondylitis caused by injured tendons from the muscles that attach to the outer bone of the elbow (called the lateral epicondyle), which is a part of the humerus bone.

**elbow, tip of the** The bony tip of the elbow, which is formed by the near end of the ulna, one of the two long bones in the forearm (the other is the radius). See also *olecranon*.

**elbow bursitis** A common form of bursitis that is also known as olecranon bursitis. At the tip of the elbow (olecranon area) is the olecranon bursa, a fluid-filled sac that functions as a gliding surface to reduce friction during motion. Because of its location, the olecranon bursa is subject to trauma, rang-

ing from simple repetitive weight-bearing while leaning to banging in a fall. Such trauma can cause elbow bursitis in the area overlying the point of the elbow. If elbow bursitis is not caused by infection, treatment includes rest and the use of ice and medications for inflammation and pain. Infectious bursitis is treated with antibiotics, aspiration, and surgery.

**elbow joint** See *elbow*.

**elder abuse** The physical, sexual, or emotional abuse of an elderly person, usually one who is disabled or frail. Like child abuse, elder abuse is a crime that all health and social services professionals are mandated to report.

**elective mutism** Complete lack of speech, believed to be chosen on the part of the patient. True elective mutism may be a reaction to a traumatic event, the aftermath of damage to or pain in the mouth or throat, or a symptom of extreme shyness. In other cases, the lack of speech is eventually found not to be chosen, but rather a symptom of damage or deformity of the speech apparatus or of autism. See also *selective mutism*.

**electric shock** An extreme stimulation of the nerves, muscles, and other parts of the body that is caused by contact with electrical current. Electric shock can cause burning at the site of entry of the electricity, unconsciousness, and death. If a person may be in contact with high voltage, no one else should touch the person directly or go near the area. Using a dry, nonconductive object such as a wooden stick, the switch should be switched off, to break the contact between the electrical source and the patient. Immediate emergency medical help is required. While waiting for emergency treatment, the victim must be kept warm and CPR may be necessary.

**electric shock therapy** See *electroconvulsive therapy*.

**electrocardiogram** A recording of the electrical activity of the heart. Abbreviated ECG and EKG. An ECG is a simple, noninvasive procedure. Electrodes are placed on the skin of the chest and connected in a specific order to a machine that, when turned on, measures electrical activity all over the heart. Output usually appears on a long scroll of paper that displays a printed graph of activity on a computer screen. The initial diagnosis of heart attack is usually made through observation of a combination of clinical symptoms and characteristic ECG changes. An ECG can detect areas of muscle deprived of oxygen and/or dead tissue in the heart. If a medication is known to sometimes adversely



affect heart function, a baseline ECG may be ordered before the patient starts taking the medicine, and follow-up testing may occur at regular intervals to look for any changes.

**electroconvulsive therapy** The use of controlled, measured doses of electric shock to induce convulsions. Convulsions so induced can sometimes treat clinical depression that is unresponsive to medication. Abbreviated ECT.

**electrodesiccation** Use of an electric current to destroy cancerous tissue and control bleeding.

**electrodiathermy** See *cauterization*.

**electroencephalogram** A technique for studying the electrical currents within the brain. Electrodes are attached to the scalp. Wires attach these electrodes to a machine, which records the electrical impulses. The results are either printed out or displayed on a computer screen. Different patterns of electrical impulses can denote various forms of epilepsy. Abbreviated EEG.

**electrogastrogram** A test in which the electrical current generated by the muscle of the stomach is sensed and recorded in a manner very similar to that of an electrocardiogram of the heart. Abbreviated EGG. An EGG is performed by taping electrodes to the skin on the upper abdomen over the stomach. Recordings from the muscle are stored and analyzed by a computer. An EGG is performed to diagnose motility disorders of the stomach, conditions that prevent the muscles of the stomach from working normally.

**electrolarynx** A battery-operated instrument that makes a humming sound to help people who have lost their larynx talk.

**electrolysis** Permanent removal of body hair, including the hair root, with an electronic device. Although electrolysis is promoted as a permanent process, many people find that hair does grow back (albeit slowly) after electrolysis. Electrolysis may be done by a dermatologist, by an electrolysis technician, or by a facial technologist or esthetician.

**electrolyte** A substance that dissociates into ions in solution and acquires the capacity to conduct electricity. Sodium, potassium, chloride, calcium, and phosphate are examples of electrolytes, informally known as lytes. Electrolyte replacement is needed when a patient has prolonged vomiting or diarrhea, and as a response to strenuous athletic activity. Commercial electrolyte solutions are available, particularly for sick children (solutions such as Pedialyte) and athletes (sports drinks, such as

Gatorade). Electrolyte monitoring is important in treatment of anorexia and bulimia.

**electromyogram** A test that records the electrical activity of muscles. Normal muscles produce a typical pattern of electrical current that is usually proportional to the level of muscle activity. Diseases of muscle and/or nerves can produce abnormal electromyogram patterns. Abbreviated EMG. Also known as a myogram.

**electron microscope** A microscope in which an electron beam replaces light to form the image. An electron microscope permits greater magnification and resolution than an optical microscope, but the electron densities of objects are shown rather than their actual images. Abbreviated EM.

**electron microscopy** See *electron microscope*.

**electrophoresis** A method used in clinical and research laboratories for separating molecules according to their size and electrical charge. An electric current is passed through a medium that contains the mixture of molecules. Each kind of molecule travels through the medium at a different rate, depending on its electrical charge and molecular size. Separation of the molecules occurs based on these differences.

**electroretinography** A test in which the electrical potentials generated by the retina of the eye are measured when the retina is stimulated by light. Abbreviated ERG. In an ERG, an electrode is placed on the cornea at the front of the eye that measures the electrical response of the rods and cones, the visual cells in the retina at the back of the eye. An ERG may be useful in the evaluation of hereditary and acquired disorders of the retina. The instrument used to conduct ERG is an electroretinograph, and the resultant recording is called an electroretinogram.

**electroshock therapy** See *electroconvulsive therapy*.

**elephant nails** See *pachyonychia congenita*.

**ELISA** Enzyme-linked immunosorbent assay, a rapid immunochemical test that involves an enzyme used for measuring a wide variety of tests of body fluids. ELISA tests detect substances that have antigenic properties, primarily proteins rather than small molecules and ions, such as glucose and potassium. Some of these substances include hormones, bacterial antigens, and antibodies. ELISA tests are generally highly sensitive and specific, and they compare favorably with radioimmune assay (RIA) tests. They have the added advantage of not



requiring the use of radioisotopes or radiation-counting apparatus.

**elliptocytosis** A blood disorder characterized by elliptically shaped red blood cells with variable breakup of red cells (hemolysis) and varying degrees of anemia. Inherited as a dominant trait, elliptocytosis is due to the mutation of one of the genes that encodes proteins of the red cell membrane skeleton. There are several forms of elliptocytosis caused by specific gene abnormalities.

**EM 1** Electron microscope. **2** Electron microscopy.

**embolism** The obstruction of a blood vessel by a foreign substance or a blood clot that travels through the bloodstream, lodging in a blood vessel, plugging the vessel. Foreign substances that can cause embolisms include air bubbles, amniotic fluid, globules of fat, clumps of bacteria, chemicals (such as talc), and drugs (mainly illegal ones). Blood clots are the most common causes of embolisms. A pulmonary embolus is a blood clot that has been carried through the blood into the pulmonary artery (the main blood vessel from the heart to the lung) or one of its branches, plugging that vessel within the lung.

**embolism, crossed** See *embolism, paradoxical*.

**embolism, paradoxical** Passage of a clot (thrombus) from a vein to an artery. When clots in veins break off (embolize), they travel first to the right side of the heart and, normally, then to the lungs, where they lodge. The lungs act as a filter to prevent the clots from entering arterial circulation. However, when there is a hole in the wall between the two upper chambers of the heart (atrial septal defect), a clot can cross from the right to the left side of the heart, and then pass into the arteries as a paradoxical embolism. When a clot enters arterial circulation, it can travel to the brain, block a vessel there, and cause a stroke (cerebrovascular accident). Because of the risk of stroke from paradoxical embolism, it is usually recommended that even small atrial septal defects be repaired. Also known as crossed embolism.

**embolization** The clogging of small blood vessels with a substance that blocks the flow of blood. Embolization can occur as an abnormal natural event, such as when a blood clot travels from the leg to lodge in the blood vessels of the lungs, or it can be used as a treatment method, such as when material is purposely placed in blood vessels that supply a tumor in the hopes of destroying that tumor. See also *embolism*.

**embolus** A blockage or plug that obstructs a blood vessel. Examples of emboli are detached blood clots, clumps of bacteria, and clumps of other foreign material, such as air.

**embryo** An organism in the early stages of growth and differentiation, from fertilization to the beginning of the third month of pregnancy (in humans). After that point in time, an embryo is called a fetus.

**embryonal rhabdomyosarcoma** See *sarcoma botryoides*.

**embryonic development** See *prenatal development*.

**embryonic hemoglobin** See *hemoglobin E*.

**emergency contraceptive** See *contraceptive, emergency*.

**emergency medical technician** A person trained in the performance of the procedures required in emergency medical care. Abbreviated EMT. EMTs generally work with mobile emergency response teams, such as ambulance or fire and rescue teams. Some EMTs are employed in emergency rooms, and some are hired to be present at sporting events, camps, or other locations where emergency response might be needed.

**emergency supplies kit** See *disaster supplies*.

**emesis** Vomiting.

**emetic** Something that causes vomiting. A common emetic is syrup of ipecac.

**EMG** See *electromyogram*.

**emotional child abuse** See *child abuse*.

**emphysema 1** A lung condition characterized by an abnormal accumulation of air in the lung's many tiny air sacs (alveoli). As air continues to collect in these sacs, they become enlarged and may break or be damaged and form scar tissue. Emphysema is strongly associated with cigarette smoking, a practice that causes lung irritation. It can also be associated with or worsened by repeated infection of the lungs, such as that seen in chronic bronchitis. The best response to the early warning signs of emphysema is prevention: smoking cessation and immediate treatment for incipient lung infections. **2** Air accumulated abnormally into body tissues, such as between layers of skin (subcutaneous emphysema).

**empiric risk** The chance that a disease will occur in a family, based on experience with the

diagnosis, past history, and medical records rather than theory.

**empirical** Based on experience and observation rather than on systematic logic. Experienced physicians often use empirical reasoning to make diagnoses, based on having seen many cases over the years. Less-experienced physicians are more likely to use diagnostic guides and manuals. In practice, both approaches (if properly applied) can lead to the same diagnosis.

**empyema** Pus in the pleural space between the outer surface of the lung and the chest wall. Empyema is typically a result of a serious bacterial infection. Empyema is a type of pleural effusion, one that is grossly infected. See also *effusion*, *pleural*; *pneumonia*.

**EMT** Emergency medical technician.

**enanthem** A rash inside the body. Koplik spots within the mouth in measles constitute enanthem. By contrast, a rash on the outside of the body is called exanthem. A patient with measles can have both exanthem and enanthem. See also *exanthem*; *measles*; *rash*.

**encapsulated** Confined to a specific area. For example, an encapsulated tumor remains in a compact form.

**encephalitis** Inflammation of the brain, which may be caused by a bacterium, a virus, or an allergic reaction. Some forms of viral encephalitis are contagious. Encephalitis usually runs a short course, with full recovery within a week, but can cause brain damage and death. Treatment of encephalitis must begin as early as possible to avoid potentially serious and lifelong effects. Depending on the cause of the inflammation, treatment may include use of antibiotics, antiviral medications, and anti-inflammatory drugs. If brain damage results from encephalitis, therapy (such as physical therapy or cognitive restoration therapy) may help patients regain lost functions.

**encephalitis, West Nile** See *West Nile virus*.

**encephalomyelitis** Inflammation of both the brain and the spinal cord. Encephalomyelitis can be caused by a variety of conditions, including viruses that infect the nervous system. One type of encephalomyelitis, acute disseminated encephalomyelitis, occurs most commonly after an acute viral infection, such as measles (rubeola). It is due to an autoimmune attack on the nervous system, meaning that the immune system mistakenly

attacks body tissue that it believes to be the measles virus. Also known as myeloencephalitis.

**encephalopathic syndrome** A dangerous condition that is associated with lithium toxicity.

**encephalopathy, mitochondrial** See *MELAS syndrome*.

**enchondroma** A common benign tumor of cartilage within bone. Enchondroma most often appears as a bony nodule in the hand or foot of a patient aged 10 to 30 years. Pain may be a sign of a fracture or malignant transformation. If fracture occurs, the enchondroma may be treated with removal and bone grafting. No treatment is needed if there are no symptoms. Enchondromas rarely become malignant as chondrosarcomas.

**enchondromatosis** See *Ollier's disease*.

**encopresis** The inability to control the elimination of stool. Encopresis can have a variety of causes, including inability to control the anal sphincter muscle or gastrointestinal problems, particularly chronic diarrhea and Crohn's disease. Several neurological disorders, including Tourette syndrome and obsessive-compulsive disorder, are also occasionally associated with the symptom of encopresis, particularly in children. Preventive care for encopresis includes frequent scheduled toileting and the wearing of pads or diapers to prevent embarrassing soiling. Careful cleaning is important to prevent skin breakdown. Treatment of encopresis usually involves treatment of the underlying disorder; cognitive behavioral therapy or behavior modification is also sometimes helpful. Also known as fecal incontinence.

**endarterectomy** An operation to clear an artery of accumulated cholesterol-containing matter along its inner wall to restore normal blood flow. An endarterectomy removes diseased material from the inside of an artery, and also removes any occluding atheromatous deposits, the aim being to leave a smooth lining within the vessel, so the blood can flow freely. See also *atherosclerosis*.

**endemic** Present in a community at all times, but occurring in low frequency. For example, malaria is endemic in some areas of the world. In comparison to endemic, epidemic denotes a sudden outbreak, and pandemic denotes an epidemic that spreads across a region. See also *epidemic*; *pandemic*.

**endemic typhus** See *typhus*, *murine*.

**endocardium** The lining of the interior surface of the heart chambers. The endocardium consists of a layer of endothelial cells and an underlying layer of connective tissue.

**endocervical curettage** The removal of tissue from the inside of the cervix, using a spoon-shaped instrument called a curette.

**endocrine** Pertaining to hormones and the glands that make and secrete them into the bloodstream through which they travel to affect distant organs. See also *endocrinology*; *endocrinopathy*.

**endocrinology** The study of the medical aspects of hormones, including diseases and conditions associated with hormonal imbalance, damage to the glands that make hormones, or the use of synthetic or natural hormonal drugs. An endocrinologist is a physician who specializes in the management of hormone conditions.

**endocrinopathy** A disease of an endocrine gland. The term endocrinopathy is commonly used as a medical term for a hormone problem. Common endocrinopathies include hyperthyroidism and hypothyroidism.

**endoderm** The innermost of the three primary germ cell layers (the other two being the mesoderm and ectoderm) that make up the very early embryo. It differentiates to give rise first to the embryonic gut and then to the linings of the respiratory and digestive tracts and the liver and pancreas. Also referred to as entoderm. See also *differentiation*; *ectoderm*; *embryo*; *mesoderm*.

**endogenous** Originating from inside an organism. For example, endogenous cholesterol is cholesterol that is made inside the body, not derived from the diet. See also *exogenous*.

**endometrial biopsy** A common procedure for sampling the inner lining of the uterus (the endometrium). Endometrial biopsy is usually done to learn the cause of abnormal uterine bleeding, although it may be used to determine the cause of infertility, test for uterine infections, and monitor the response to certain medications. The main problems resulting from endometrial biopsy are cramping and pain. Vaginal bleeding, infection, and, very rarely, perforation of the uterus can also occur.

**endometrial hyperplasia** A condition characterized by overgrowth of the lining of the uterus.

**endometriosis** A noncancerous condition in which tissue that looks like endometrial tissue grows in abnormal places, most often in the

abdomen. Although most women with endometriosis have no symptoms, pelvic pain during menstruation or ovulation can be a symptom of endometriosis. Endometriosis can also be suspected by a physician during a physical examination and confirmed by surgery, usually laparoscopy. Treatment options include medication for pain, hormone therapy, and laparoscopic surgery to remove the growths (hysterectomy was once done but is usually ineffective). Most women with endometriosis are completely unaware of these growths, and are not harmed by their presence. However, endometriosis can increase the risk of ectopic pregnancy, a potentially life-threatening condition that can cause infertility. See also *adenomyosis*.

**endometritis** Inflammation of the endometrium, the inner layer of the uterus.

**endometrium** The inner layer of the uterus.

**endonuclease** An enzyme that cleaves a nucleic acid (DNA or RNA) at specific sites in the nucleotide base sequence.

**endorphin** A hormonal compound that is made by the body in response to pain or extreme physical exertion. Endorphins are similar in structure and effect to opiate drugs. They are responsible for the so-called runner's high, and release of these essential compounds permits humans to endure childbirth, accidents, and strenuous everyday activities.

**endoscope** A lighted optical instrument that is used to get a deep look inside the body. An endoscope, which may be rigid or flexible, can be used to examine organs, such as the throat or esophagus. Specialized endoscopes are named for where they are intended to look. Examples include the cystoscope (bladder), nephroscope (kidney), bronchoscope (bronchi), laryngoscope (larynx), otoscope (ear), arthroscope (joint), laparoscope (abdomen), and gastrointestinal endoscopes.

**endoscopic gastrostomy, percutaneous** See *gastrostomy, percutaneous endoscopic*.

**Endoscopic Retrograde Cholangiopancreatography** See ERCP.

**endoscopy** Examination of the inside of the body by using a lighted, flexible instrument called an endoscope. In general, an endoscope is introduced into the body through a natural opening such as the mouth or anus. Although endoscopy can include examination of other organs, the most common endoscopic procedures evaluate the esophagus, stomach, and portions of the intestine.

**endoscopy, upper** A procedure that enables the examiner (usually a gastroenterologist) to examine the esophagus, the stomach, and the first portion of small bowel (duodenum) by using a thin, flexible tube that can be looked through or seen through on a TV monitor. Also known as esophagogastroduodenoscopy (EGD).

**endostatin** A fragment of a protein, collagen 18, that is found in all blood vessels. Endostatin is normally secreted by blood vessels in response to tumors. Endostatin appears to halt the process of developing new blood vessels (angiogenesis), which is necessary to tumor development.

**endothelial** Relating to the endothelium.

**endothelium** The single layer of cells that lines the inner surfaces of the blood vessels and the heart. The endothelium is where cholesterol can accumulate as plaque in arteries affected by arteriosclerosis. The endothelium is a specific form of epithelium. See also *epithelium*.

**endotracheal tube** A flexible plastic tube that is put in the mouth and then down into the trachea (airway). A physician inserts an endotracheal tube under direct vision, with the help of a laryngoscope, in a procedure called endotracheal intubation. The purpose of using an endotracheal tube is to ventilate the lungs.

**endourologist** A urologist with special expertise in navigating inside the kidneys, ureter, and bladder, using endoscopic optical instruments and other tools. Endourologists are specialists in diagnosing and treating diseases of these organs.

**engagement** The sensation that a pregnant woman feels when the lowermost part of the fetus descends and is engaged in the mother's pelvis, an event that typically occurs 2 to 3 weeks before labor begins. Women who have had two or more prior viable pregnancies (multiparas) may not experience engagement until labor actually begins. When engagement occurs, there is a visible change in the shape of the woman's stomach because the baby drops lower in the abdomen. Also known as *lightening* because the pregnant woman feels lighter after this event. Most women feel more comfortable after engagement, but some may experience lower back pain as the fetus presses close to the tailbone and the sciatic nerve. Others may find movement more difficult due to the lower center of gravity caused by engagement.

**ENGRIX-B** A vaccine against the hepatitis B virus. ENGRIX-B stimulates the body's immune system to produce antibodies against the virus.

**engram** An enduring change in the brain that is postulated to account for the persistence of memory.

**enophthalmos** Sunken eyeball. Enophthalmos can be a sign of severe dehydration.

**enoxaparin** A low-molecular-weight version of heparin that acts like heparin as an anticoagulant medication. Enoxaparin is used to prevent thromboembolic complications (blood clots that travel from their site of origin through the bloodstream to clog another vessel) and in the early treatment of blood clots in the lungs (pulmonary embolisms).

**ENT** Ears, nose, and throat. An ENT physician is a specialist in the diagnosis and treatment of disorders of the head and neck, particularly those of the ears, nose, and throat. ENT physicians are also known as otolaryngologists.

**Entamoeba histolytica** The agent that causes amebic dysentery. *Entamoeba histolytica* is a single-celled parasite that is transmitted to humans via contaminated water and food. It can also infect the liver and other organs. See also *amebiasis*; *amebic colitis*; *amebic dysentery*.

**enteric** Of or relating to the small intestine.

**enteric-coated medication** A medication that is coated with a material that allows transit through the stomach to the small intestine before the medication is released. Aspirin, which commonly causes stomach irritation and upset, is among the medications that may have enteric coating.

**enteritis, Crohn's** See *Crohn's enteritis*.

**enteritis, regional** See *Crohn's disease*.

**entero-** Prefix referring to the intestine, as in enteropathy (a disease of the intestine) and enterospasm (a painful, intense contraction of the intestine).

**enterobiasis** See *pinworm infestation*.

**enterocele** A vaginal hernia. Protrusion of the small intestine into the upper wall of the vagina.

**enterocentesis** The use of a hollow needle inserted through the wall of the stomach or intestine to relieve pressure from gas or fluid buildup.

**enterococcus** Bacteria normally found in the feces. Two types, *Enterococcus fecalis* and *Enterococcus fecium*, cause human disease, most commonly in the form of urinary tract and wound infections. Other infections, including those of the

blood stream (bacteremia), heart valves (endocarditis), and the brain (meningitis) can occur in severely ill patients in hospitals. Enterococci also often colonize open wounds and skin ulcers, and are among the most common antibiotic-resistant bacteria.

**enterocolitis, Crohn's** See *Crohn's enterocolitis*.

**enterogenous** Carried within the intestine. For example, an enterogenous bacterial infection is a bacterial infection within the intestine.

**enteropathy** A disease of the intestine.

**enteropathy, gluten** See *celiac sprue*.

**enteropathy, protein-losing** A condition in which an excessive amount of plasma protein is lost into the intestine. Protein-losing enteropathy can be due to diverse causes, including celiac sprue, extensive ulceration of the intestine, intestinal lymphatic blockage, and infiltration of leukemic cells into the intestinal wall.

**enterospasm** A painful, intense contraction of the intestine.

**enterostomal therapist** A health care specialist who is trained to help patients care for and adjust to their colostomies.

**enterostomy** An operation that opens the small intestine and brings it through the abdominal wall to create a new opening (stoma) to permit intestinal draining. See also *colostomy*; *ostomy*.

**enterovirus** A virus that comes into the body through the gastrointestinal tract and thrives there, often moving on to attack the nervous system. Enteroviruses include the polioviruses, rhinoviruses, and echoviruses. See also *polio*.

**Entoderm** See *endoderm*.

**enucleation** The surgical removal of an eye. Enucleation is done under drastic circumstances such as to remove a malignant tumor in the eye or to relieve intolerable pain in a blind eye. Following enucleation, an artificial eye (ocular prosthesis) is implanted as a cosmetic substitute for the real eye.

**enuresis** Involuntary urination, which may be caused by a variety of factors, including disorders of the kidneys, bladder, or ureter, and poor control of the muscles that control release of urine. Enuresis is also occasionally associated with neurological disorders, such as Tourette syndrome, particularly in children. Nighttime (nocturnal) enuresis may be related to any of the above, or it may be a symptom

of a sleep disorder. Palliative treatment options include ensuring regularly scheduled toileting, increasing awareness of the need to urinate, performing exercises intended to strengthen the muscles that control release of urine, using pads or diapers to prevent embarrassing and uncomfortable wetness, and in some cases using special devices that alert the patient to the initial signs of wetness. Treatment of enuresis usually involves treatment of the underlying disorder. Cognitive behavioral therapy or behavior modification techniques sometimes also proves helpful. Also known as urinary incontinence. See also *bedwetting*; *Kegel exercises*.

**environmental tobacco smoke** See *second-hand smoke*.

**enzootic** Endemic in animals. An enzootic disease is constantly present in an animal population, but usually only affects a small number of animals at any one time.

**enzyme** A protein or protein-based molecule that speeds up a chemical reaction in a living organism. An enzyme acts as a catalyst for specific chemical reactions, converting a specific set of reactants (substrates) into specific products. Without enzymes, life as we know it would not exist. Errors in the design of enzymes are responsible for numerous diseases. See also *enzyme defect*.

**enzyme defect** A disorder resulting from a deficiency (or functional abnormality) of an enzyme. For example, newborns are routinely screened for certain enzyme defects, such as phenylketonuria (PKU) and galactosemia.

**enzyme-linked immunosorbent assay** See *ELISA*.

**eosinophil** A normal type of white blood cell that has coarse granules within its cytoplasm. Eosinophils are produced in the bone marrow and migrate to tissues throughout the body. When a foreign substance enters the body, other types of white blood cells (lymphocytes and neutrophils) release substances to attract eosinophils and then release toxic substances to kill the invader. The numbers of eosinophils in blood often rise when an allergic reaction occurs. Elevated eosinophil counts are also common in some diseases, such as parasite diseases and asthma.

**eosinophilia** An abnormally high number of eosinophils in the blood. Normally, eosinophils constitute 1 percent to 3 percent of the peripheral blood leukocytes, at a count of 350 to 650 per cubic millimeter. In areas of the world where parasite diseases are common, they are the usual cause of eosinophilia. In developed nations, eosinophilia is



most often due to allergy or, less often, a drug reaction. Other causes of eosinophilia are numerous, but less common. See also *eosinophil*.

**eosinophilic fasciitis** A disease that leads to inflammation and thickening of the skin and of the lining tissue under the skin that covers the surface of underlying tissues (fascia). In eosinophilic fasciitis, the involved fascia is inflamed with the eosinophil white blood cells. Progressive thickening occurs, and often redness, warmth, and hardness of the skin surface occur as well. Also known as Shulman syndrome.

**eosinophilic granuloma** A disease in which histiocytes multiply and attack the tissues, forming solitary or multiple eosinophilic granulomas. Eosinophilic granuloma predominantly affects children and young adults. It is the most common type of Langerhans cell histiocytosis. In patients with eosinophilic granuloma, granulomas may develop in bone, with overlying tender and sometimes warm areas of swelling with an inability to bear weight.

**ependymoma** A type of brain tumor that derives from the glial cells that line the cavities within the brain's ventricles. Because cerebrospinal fluid normally flows through these ventricles, blockage due to an ependymoma can cause buildup of fluid, pressure on the brain, and hydrocephalus.

**ephedrine** A vasoconstricting, bronchodilating drug that is used to treat asthma and also found in over-the-counter remedies for cold and flu symptoms and in some herbal remedies (in the form of the ephedrine-containing herbs ephedra or Ma Huang). Side effects of ephedrine can include jitteriness, racing heartbeat, nausea, sleeplessness, and headache. Ephedrine misuse or abuse can be dangerous and even life-threatening, especially for people with heart conditions.

**epicanthal fold** A fold of skin that comes down across the inner angle of the eye. Epicanthal folds appear most frequently in persons with Down syndrome and some other constellations of birth defects. To the untrained eye, an epicanthal fold may look similar to the eye fold found in peoples of Asian origin, but the normal Asian eye fold is actually quite distinct, whereas an epicanthal fold is continuous with the lower edge of the upper eyelid.

**epicardium** See *pericardium*, *visceral*.

**epidemic** The occurrence of more cases of a disease than would be expected to occur in a community or region during a given time period. A sudden outbreak (as, for example, of cholera). See also *endemic*; *pandemic*.

**epidemic hemorrhagic fever** See *hemorrhagic fever*, *viral*.

**epidemic myalgia** See *Bornholm disease*.

**epidemic typhus** See *typhus*, *epidemic*.

**epidemiologist** A person engaged in epidemiology. Epidemiologists can be people with MD, PhD, DPH (Doctor of Public Health), MPH (Master of Public Health), RN, or other degrees.

**epidemiology, classical** The study of populations in order to determine the frequency and distribution of diseases, and then to measure the risks of those diseases.

**epidemiology, clinical** Epidemiology focused specifically on patients with diseases of clinical importance.

**epidermis** The upper, or outer, layer of the two main layers of cells in the skin (the other being the dermis). The epidermis is mostly made up of flat, scale-like cells called squamous cells. Under the squamous cells are round cells called basal cells. The deepest part of the epidermis also contains melanocytes, cells that produce the substance melanin, which gives skin its color. See also *dermis*; *skin*.

**epidermoid carcinoma** See *carcinoma*, *squamous cell*.

**epidermolysis bullosa** One in a group of blistering skin conditions. The skin is so fragile in people with epidermolysis bullosa that even minor rubbing may cause blistering.

**epididymis** A structure within the scrotum that is attached to the back side of the testis. The epididymis is a coiled segment of the spermatic ducts that stores spermatozoa while they mature and then transports the spermatozoa between the testis and the tube connecting the testes with the urethra (vas deferens).

**epididymitis** Inflammation of the epididymis. Epididymitis can be caused by sexually acquired bacteria, such as gonorrhea and chlamydia; or by bacteria that come from somewhere else, such as *E. coli* from the bowel. Sometimes no bacteria are found to be associated. Bacterial epididymitis is treated with antibiotics. If no bacterial cause is detected, medications to reduce inflammation are sometimes helpful.

**epidural** Outside of the dura mater, the outermost and most fibrous of the three membranes (dura mater, arachnoid membrane, and pia mater) covering the brain and the spinal cord. See also *epidural anesthetic*.

**epidural anesthetic** An anesthetic that is injected into the epidural space surrounding the fluid-filled sac (the dura) around the spine to partially numb the abdomen and legs. An epidural is used fairly commonly in childbirth, if anesthesia is requested, and during birth by caesarean section.

**epidural hematoma** See *hematoma, epidural*.

**epigastrium** The part of the abdominal wall that is above the umbilicus (belly button).

**epiglottis** The flap that covers the trachea during swallowing, so that food does not enter the lungs.

**epilation** Removal of body hair, including the hair root, by means of electrical device, tweezers, or wax. Epilation may be performed by a dermatologist, but is more commonly done for cosmetic purposes by a facial technologist or esthetician. After epilation, the skin may be particularly sensitive. Also known as depilation.

**epilepsy** Seizure disorder. When nerve cells in the brain fire electrical impulses at a rate up to four times higher than normal, a sort of electrical storm, called a seizure, occurs in the brain. Epilepsy is characterized by a pattern of repeated seizures. Known causes of epilepsy include head injuries, brain tumors, lead poisoning, maldevelopment of the brain, and genetic and infectious illnesses. However, in half of cases, no cause can be found. Medication can control seizures for the majority of patients. In cases of epilepsy that cannot be managed with drugs, a ketogenic diet or brain surgery may be considered. See also *Aicardi's syndrome; Landau-Kleffner syndrome; Lennox-Gastaut syndrome; Ohtahara syndrome; Ramsey Hunt syndrome; Rasmussen syndrome; Rett syndrome; seizure; seizure disorder; seizure, tonic-clonic; Sturge-Weber syndrome; Tassinari syndrome*.

**epilepsy, akinetic** A seizure disorder that is characterized by drop seizures, in which the patient experiences a temporary loss of consciousness and lack of movement (akinesia).

**epilepsy, benign rolandic** The most common type of partial seizure disorder, which is usually characterized by partial seizures during sleep. The only outward sign of benign rolandic epilepsy may be movements of the face and mouth or staring spells. Benign rolandic epilepsy begins between the ages of 2 and 13 years, and it is called benign because it remits on its own by adulthood. Diagnosis is made through observation and via sleep-deprived or 24-hour EEG. On an EEG, benign rolandic epilepsy shows blunted, high-voltage central temporal ("rolandic") spiking, followed by

slow waves. Treatment with antiseizure medications may or may not be necessary. Also known as benign rolandic epilepsy of childhood (BREC) and benign partial epilepsy with centrotemporal spikes. See also *seizure, partial*.

**epilepsy, grand mal** Epilepsy that includes tonic-clonic (grand mal) seizures, which are the most obvious type of seizure. There are two parts to a tonic-clonic seizure. In the tonic phase, the body becomes rigid, and in the clonic phase, there is uncontrolled jerking. A tonic-clonic seizure may or may not be preceded by an aura, and these seizures are often followed by headache, confusion, and sleep. They may last for mere seconds or continue for several minutes. If a tonic-clonic seizure does not resolve or if such seizures follow each other in rapid succession, emergency help is needed because the patient could be in a life-threatening state known as status epilepticus. Treatment is with antiseizure medications.

**epilepsy, Jacksonian** A seizure disorder that is characterized by progressive spreading of abnormal sensations or movements from one local area of the body to more widespread areas. Jacksonian epilepsy is caused by the progressive spread of abnormal electrical activity in the motor cortex of the brain. Seizures of this type typically cause no change in awareness or alertness. They are transient, fleeting, and ephemeral. Jacksonian seizures are extremely varied and may involve, for example, apparently purposeful movements such as turning of the head, eye movements, smacking of the lips, mouth movements, drooling, rhythmic muscle contractions in a part of the body, abnormal numbness, tingling, and a crawling sensation over the skin. Diagnosis is made through observation and EEG. Treatment, if necessary, is with antiseizure medications. Also called Jacksonian seizure disorder. See also *seizure, partial*.

**epilepsy, juvenile myoclonic** A form of epilepsy that occurs in young people, most commonly in the teenage years. It is characterized by jerking (myoclonic) movements of the arms and upper torso, without loss of consciousness. Seizures are most likely to occur when a person is awakening from sleep. Many children with this disorder are sensitive to light (photosensitive) and may have myoclonic jerks or seizures when exposed to bright light. Diagnosis is made through observation and EEG. During a myoclonic seizure, polyspike-wave discharges occur over a normal EEG background. Juvenile myoclonic epilepsy appears to be an inheritable genetic disorder, with the gene located on chromosome 6. Treatment is with antiseizure medications.

**epilepsy, Landau-Kleffner** See *Landau-Kleffner syndrome*.

**epilepsy, partial** Epilepsy characterized by seizures that affects only one part of the brain. Symptoms depend on which part of the brain is affected. One part of the body, or multiple parts on one side of the body, may start to twitch uncontrollably. Partial seizures may involve head turning, eye movements, lip smacking, mouth movements, drooling, rhythmic muscle contractions in a part of the body, apparently purposeful movements, abnormal numbness, tingling, and a crawling sensation over the skin. Partial seizures can also include sensory disturbances, such as smelling or hearing things that are not there, or having a sudden flood of emotions. Although the patient may feel confused, consciousness is not lost. Also known as *focal seizures* and *local seizures*. See also *seizure*; *seizure disorder*; *seizure, partial*.

**epilepsy, petit mal** A form of epilepsy in which only absence (petit mal) seizures occur, with very brief, unannounced lapses in consciousness. See also *seizure, absence*.

**epilepsy, temporal lobe** Epilepsy characterized by abnormal electrical activity in the temporal lobe of the brain. This activity does not cause grand mal seizures; rather, it causes unusual behaviors and patterns of cognition. Temporal lobe epilepsy may, for example, cause sudden outbursts of unexpected aggression or agitation, or it may be characterized by aura-like phenomena. Temporal lobe epilepsy is difficult to diagnose because temporal lobe seizures may not show up on an EEG. Diagnosis may instead be made through observation of symptoms or the use of brain imaging technology. Temporal lobe epilepsy can often be treated with the same antiseizure medications that are used for other forms of epilepsy. See also *seizure*; *seizure disorders*; *temporal lobe*.

**epileptic aura** See *aura*.

**epilepticus, status** See *status epilepticus*.

**epinephrine** The official name for adrenaline in the British Pharmacopoeia. See also *adrenaline*.

**epiphyseal plate fracture** See *fracture, Salter-Harris*.

**epiphysis** The growth area near the end of a bone.

**episcleritis** Inflammation of the episclera, a thin membrane that covers the white of the eye (sclera). Episcleritis is typically benign, easily treated with topical anti-inflammatory drops, and usually quickly resolved. Episcleritis can sometimes accompany other diseases, such as rheumatoid arthritis and lupus.

**episiotomy** A surgical procedure for widening the outlet of the birth canal to facilitate delivery of the baby and to avoid a jagged rip of the area between the anus and the vulva (perineum). During an episiotomy, an incision is made between the vagina and the rectum. The usual cut goes straight down and does not involve the muscles around the rectum or the rectum itself. An episiotomy can decrease the amount of maternal pushing, and it may also decrease trauma to the vaginal tissues and expedite delivery of the baby when quick delivery is necessary. However, episiotomies are associated with increased incidence of extensions or tears into the muscle of the rectum or even the rectum itself. Episiotomies and natural tearing can often be avoided with the use of perineal massage during delivery. Repair of the episiotomy is by simple stitching.

**epispadias** A congenital malformation in which the opening of the urethra is on the top side of the penis. Hypospadias is a corresponding malformation in which the opening of the urethra is on the underside of the penis. Surgical repair is usually recommended for epispadias. See also *hypospadias*.

**epistaxis** See *nosebleed*.

**epistaxis, treatment of** See *nosebleed, treatment of*.

**epithelial** Relating to the epithelium.

**epithelial basement corneal dystrophy** See *Cogan corneal dystrophy*.

**epithelium** The cellular layer that covers internal and external organs of the body, including the skin, blood vessels, body cavities, and glands. Epithelium varies in the number of cellular layers and types of cells, depending upon the anatomic location. The endothelium is a type of epithelium that lines the inner surfaces of the blood vessels and heart. See also *endothelium*.

**EPO** 1 Erythropoietin. 2 Evening primrose oil.

**EPO test** A test of the amount of hormone erythropoietin (EPO) in blood. The EPO level can indicate bone marrow disorders, kidney disease, or EPO abuse. Testing EPO blood levels is of value because too little EPO might be responsible for too few red blood cells (such as in evaluating anemia); too much EPO can cause too many red blood cells (polycythemia), might be evidence of a kidney tumor, and in an athlete might suggest EPO abuse. Normal levels of EPO are 0 to 19 (some say up to 24) milliunits per milliliter (mU/ml). See also *erythropoietin*.

**eponym** Something named after someone. For example, a condition called Shiel syndrome might be named after (an eponym for) someone named Shiel who discovered it or who was the first to describe and clearly delineate it.

**Epstein-Barr virus** A virus in the herpes family that is best known as the cause of infectious mononucleosis (also called mono and glandular fever). Abbreviated EBV. EBV infection is characterized by fatigue and general malaise. Infection with EBV is common and is normally temporary and minor. However, in some individuals EBV can trigger chronic illness, including immune and lymphoproliferative syndromes. It is a particular danger to people with compromised immune systems, including those with AIDS. Treatment is with antiviral medication and rest. Also known as human herpesvirus 4 (HHV-4).

**ERCP** Endoscopic retrograde cholangio-pancreatography, a diagnostic procedure used to examine diseases of the liver, bile ducts, and pancreas. ERCP is usually performed under intravenous sedation rather than general anesthesia. ERCP provides important information that cannot be obtained by other means. Therapeutic measures can often be taken at the time of ERCP to remove stones in the bile ducts or to relieve obstructions of the bile ducts.

**erectile dysfunction** A consistent inability to sustain an erection sufficient for sexual intercourse. Commonly known as impotence. Medically, the term erectile dysfunction is used to properly differentiate this form of impotence from other problems that interfere with sexual intercourse, such as disease, injury, drug side effects, or a disorder that impairs the nerve supply or the blood flow to the penis. Other forms of impotence include lack of sexual desire and problems with ejaculation and orgasm. Erectile dysfunction is treatable in all age groups, and treatment includes using medication (notably Viagra) and penile implants. Abbreviated ED.

**erection, penile** The state of the penis when it is filled with blood and becomes rigid. The penis contains two chambers called the corpora cavernosa, which run the length of the organ, are filled with spongy tissue, and are surrounded by a membrane called the tunica albuginea. The spongy tissue contains smooth muscles, fibrous tissues, spaces, veins, and arteries. The urethra, which is the channel for urine and ejaculate, runs along the underside of the corpora cavernosa. Erection begins with sensory and mental stimulation. Impulses from the brain and local nerves cause the muscles of the corpora cavernosa to relax, allowing blood to flow in and fill the open spaces. The blood creates pressure in the

corpora cavernosa, making the penis expand. The tunica albuginea helps to trap the blood in the corpora cavernosa, thereby sustaining erection. Erection is reversed when muscles in the penis contract, stopping the inflow of blood and opening outflow channels.

**ERG** 1 Electrorretinography. 2 Electrorretinograph, the instrument used to perform electrorretinography. 3 An electrorretinogram, the recording produced by an electrorretinograph.

**ergonomics** The science of making things fit people. Ergonomics uses knowledge from the fields of anatomy, mechanics, physiology, and psychology to utilize human energy most effectively. Something that is ergonomic is designed for safe, comfortable, and efficient use. For example, a computer keyboard with an ergonomic design is intended to help the user avoid carpal tunnel syndrome and wrist pain.

**ergot** A fungus (*Claviceps purpurea*) that contaminates rye and wheat and that produces substances (alkaloids) called ergotamines. Ergotamines constrict blood vessels and cause the muscle of the uterus to contract. They have been much used for the treatment of migraines. They have also been used and misused to induce abortion. In excess, ergotamines can cause symptoms such as hallucinations, severe gastrointestinal upset, a type of dry gangrene, and a painful burning sensation in the limbs and extremities. Chronic ergot poisoning (ergotism) was rife during the Middle Ages due to the consumption of contaminated rye. Because of the burning pain, it was known as ignis sacer (holy fire) and ignis infernalis (hell's fire), and was one of the causes of St. Anthony's fire. A form of ergot was also the original basis for the illicit drug lysergic acid diethylamide (LSD).

**erotomania** The false yet persistent belief that one is loved by a person (often a famous or prominent person), or the pathologically obsessive pursuit of a disinterested object of love. Erotomania can be a symptom of schizophrenia or other psychiatric disorders that are characterized by delusional symptoms.

**error, alpha** See *alpha error*.

**error, beta** See *beta error*.

**error, type I** See *alpha error*.

**error, type II** See *beta error*.

**errors of metabolism, inborn** See *metabolic disease*.

**ERT** Estrogen replacement therapy.



**erythema** Redness of the skin that results from capillary congestion. Erythema can occur with inflammation, as in sunburn and allergic reactions to drugs.

**erythema chronicum migrans** The classic initial rash of Lyme disease. In the early phase of erythema chronicum migrans, within hours to weeks of the tick bite, the local skin develops an expanding ring of unraised redness. There may be an outer ring of brighter redness and a central area of clearing. See also *Lyme disease*.

**erythema infectiosum** See *fifth disease*.

**erythema nodosum** An inflammatory reaction that occurs deep in the skin and is characterized by the presence of tender, red, raised lumps or nodules that range in size from 1 to 5 centimeters and are most commonly located over the shins but occasionally on the arms or other areas. The causes of erythema nodosum include medications (such as sulfa-related drugs, birth control pills, estrogens, iodides, and bromides), strep throat, cat scratch fever, fungal diseases, infectious mononucleosis, sarcoidosis, Behcet's syndrome, inflammatory bowel disease (Crohn's disease and ulcerative colitis), and normal pregnancy. In many cases, no cause can be determined. Erythema nodosum may be self-limited. If treatment is needed, the underlying condition is treated, and treatment is simultaneously directed toward the erythema nodosum itself. Treatment can include anti-inflammatory drugs and cortisone given by mouth or injection. Colchicine is sometime used effectively to reduce inflammation.

**erythroblastosis** See *hemolytic disease of the newborn*.

**erythrocyanosis** Discoloration on the legs that has a bluish or purple hue.

**erythrocyte** See *red blood cell*.

**erythrocyte membrane protein band 4.1** See *elliptocytosis*.

**erythroleukemia** A form of acute myeloid leukemia (AML) that involves the cells that give rise to the erythrocytes (red blood cells). In erythroleukemia, the body produces large numbers of abnormal, immature red blood cells.

**erythromycin** An antibiotic that is commonly prescribed to treat bacterial infection. Erythromycin prevents bacteria from producing proteins and interferes with bacterial growth and multiplication. See also *macrolide antibiotic*.

**erythroplakia** An abnormal reddened patch with a velvety surface that is found in the mouth. Erythroplakia carries an increased risk for becoming a cancer in the oral cavity. Treatment methods include observation, topical ointments, and surgical techniques including laser surgery.

**erythropoietin** A hormone that is produced by the kidney and promotes the formation of red blood cells in the bone marrow. Abbreviated EPO. Human EPO is a glycoprotein (a protein with an attached sugar) that has a molecular weight of 34,000. The kidney cells that make EPO are specialized and are sensitive to low oxygen levels in the blood that comes into the kidney. These cells release EPO when the blood oxygen level is low. EPO stimulates the bone marrow to produce more red blood cells, which in turn increases the oxygen-carrying capacity of the blood. EPO is produced not only in the kidney but also, to a lesser extent, in the liver. The amount of EPO in the blood can indicate bone marrow disorders or kidney disease. Normal levels of EPO are 0 to 19 milliunits per milliliter (mU/ml). Elevated levels can be seen in polycythemia rubra vera, a disorder characterized by an excess of red blood cells. Lower-than-normal values of EPO are seen in chronic renal failure. Using recombinant DNA technology, EPO has been synthetically produced for use in persons with anemia due to kidney failure and other conditions. It has been misused as a performance-enhancing drug in endurance athletes, reportedly including cyclists, long-distance runners, speed skaters, and cross-country skiers. As such, EPO is thought to be especially dangerous, perhaps because dehydration can further increase the thickness of the blood, increasing the risk for heart attacks and strokes. See also *EPO test*.

**eschar** **1** The scab that is formed when a wound or skin is sealed by the heat of cauterization or burning. **2** The dark crusted ulcer (tache noire) at the site of the chigger (mite larva) bite in scrub typhus.

**Escherichia coli** See *E. coli*.

**esophageal** Related to the esophagus.

**esophageal cancer** A malignant tumor of the esophagus. The risk of cancer of the esophagus is increased by long-term irritation of the esophagus, such as from smoking, heavy alcohol intake, and Barrett esophagitis. Very small tumors in the esophagus usually do not cause symptoms. As a tumor grows, the most common symptom is difficulty in swallowing. There may be a feeling of fullness, pressure, or burning as food passes down the esophagus. Cancer of the esophagus can also cause indigestion, heartburn, vomiting, and frequent choking on food.



Because of these problems, weight loss is common. Esophageal cancer can be diagnosed through a barium X-ray study of the esophagus and endoscopy and biopsy of the tumor. Treatment includes chemotherapy and sometimes surgery.

**esophageal reflux** See *gastroesophageal reflux disease*.

**esophageal speech** Speech produced with air that is trapped in the esophagus and forced out again.

**esophageal stricture, acute** A narrowing or closure of the normal opening of the swallowing tube that leads to the stomach, usually caused by scarring from acid irritation. Acute, complete obstruction of the esophagus occurs when food (usually meat) is lodged in the esophageal stricture. This causes chest pain and inability to swallow saliva. Attempts to relieve the obstruction by inducing vomiting at home are usually unsuccessful. Patients with complete esophageal obstruction can breathe and are not at risk of suffocation. Endoscopy is usually used to retrieve the obstruction and relieve the condition.

**esophageal stricture, chronic** A long-standing narrowing or closure of the normal opening of the swallowing tube that leads to the stomach, usually caused by scarring from acid irritation. Chronic esophageal stricture is a common complication of chronic gastroesophageal reflux disease (GERD). Several procedures are available for stretching (dilating) the strictures without having to resort to surgery. One procedure involves placing a deflated balloon across the stricture at the time of endoscopy. The balloon is then inflated, thereby opening the narrowing caused by the stricture. Another method involves inserting tapered dilators of different sizes through the mouth and into the esophagus to dilate the stricture.

**esophageal ulcer** A crater in the lining of the esophagus that is created by the corrosive acidic digestive juices secreted by the stomach cells. Ulcer formation is related to the presence of *Helicobacter pylori* (*H. pylori*) bacteria in the stomach, use of anti-inflammatory medications, and cigarette smoking. Ulcer pain may not correlate with the presence or severity of ulceration. Diagnosis is made through barium X-ray or endoscopy. Complications of ulcers include bleeding and perforation. Treatment includes using antibiotics to eradicate *H. pylori*, eliminating risk factors, and preventing complications.

**esophagectomy** An operation to remove a portion of the esophagus.

**esophagitis** Inflammation of the esophagus.

**esophagogastric tamponade** See *balloon tamponade*.

**esophagogastrroduodenoscopy** See *endoscopy, upper*.

**esophagoscopy** Examination of the esophagus by using a thin, lighted instrument.

**esophagram** A series of X-rays of the esophagus. The X-ray pictures are taken after the patient drinks a barium solution that coats and outlines the walls of the esophagus. See also *barium swallow*.

**esophagus** The tube that connects the throat with the stomach. The esophagus lies between the trachea (windpipe) and the spine. In an adult, the esophagus is about 25 centimeters (10 inches) long. When a person swallows, the muscular walls of the esophagus contract to push food down into the stomach. Glands in the lining of the esophagus produce mucus, which keeps the passageway moist and facilitates swallowing. Also known as gullet.

**esotropia** A condition in which a person is cross-eyed or, in medical terms, has convergent or internal strabismus.

**essential** In medicine, of unknown cause, as in essential hypertension (high blood pressure of unknown cause). Also known as idiopathic.

**essential fatty acid** An unsaturated fatty acid that is essential to human health, but cannot be manufactured in the body. Abbreviated EFA. There are three types of EFAs: arachnoidic acid, linoleic acid, and linolenic acid. When linoleic acid is obtained in the diet, it can be converted to both arachnoidic and linolenic acid. Linoleic acid is commonly found in cold-pressed oils, especially oils extracted from cold-water fish and certain seeds. Supplementation with EFAs appears to be useful as a treatment for certain neurological disorders. However, arachnoidic acid may lower the seizure threshold. For that reason, it is important to consult a physician before starting a program of EFA supplementation.

**essential oil** An oil derived from a natural substance, usually either for its healing properties or as a perfume. Some pharmaceuticals, and many over-the-counter or "holistic" remedies, are based on or contain essential oils. For example, products containing camphor or eucalyptus essential oils can help relieve congestive coughs, and many essential oils are used in the practice of aromatherapy.

**estimated date of confinement** See *due date*.

**estrogen** A female steroid hormone that is produced by the ovaries and, in lesser amounts, by the adrenal cortex, placenta, and male testes. Estrogen helps control and guide sexual development, including the physical changes associated with puberty. It also influences the course of ovulation in the monthly menstrual cycle, lactation after pregnancy, aspects of mood, and the aging process. Production of estrogen changes naturally over the female lifespan, reaching adult levels with the onset of puberty (menarche) and decreasing in middle age until the onset of menopause. Estrogen deficiency can lead to lack of menstruation (amenorrhea), persistent difficulties associated with menopause (such as mood swings and vaginal dryness), and osteoporosis in older age. In cases of estrogen deficiency, natural and synthetic estrogen preparations may be prescribed. Estrogen is also a component of many oral contraceptives. An overabundance of estrogen in men causes development of female secondary sexual characteristics (feminization), such as enlargement of breast tissue.

**estrogen, designer** See *designer estrogen*.

**estrogen replacement therapy** The use of natural or synthetic estrogen to treat changes associated with menopause, such as hot flashes, disturbed sleep, and vaginal dryness, that are associated with decreased estrogen levels. Abbreviated ERT. ERT can also prevent osteoporosis, which can be a consequence of decreased estrogen levels. Vaginal ERT products help with vaginal dryness, more severe vaginal changes, and bladder effects. The use of unopposed ERT (that is, ERT alone) is associated with an increase in the risk of endometrial cancer (cancer of the lining of the uterus). However, taking the hormone progestogen along with estrogen reduces the risk of endometrial cancer substantially. See also *hormone replacement therapy*.

**estrogen-associated blood clots** See *estrogen-associated hypercoagulability*.

**estrogen-associated hypercoagulability** Hypercoagulable blood (a supranormal tendency for blood to clot) occurs as an occasional but serious side effect of estrogen therapy. The blood clots in this situation are dose-related; that is, they occur more frequently with higher doses of estrogen. All estrogen therapy preparations carry this risk. Cigarette smokers on estrogen therapy are at a higher risk for blood clots than nonsmokers. Therefore, patients requiring estrogen therapy are strongly encouraged not to smoke.

**ESWL** Extracorporeal shock wave lithotripsy.

**etiology** The study of causes, as in the causes of a disease. The form aetiology is generally used in the UK.

**eugenics** A pseudoscience with the stated aim of improving the genetic constitution of the human species by selective breeding. Eugenics is from a Greek word meaning "normal genes." The use of Albert Einstein's sperm to conceive a child by artificial insemination would represent an attempt at positive eugenics. The Nazis notoriously engaged in negative eugenics by genocide in world war II. It is important to note that no experiment in eugenics has ever been shown to result in measurable improvements in human health.

**eukaryote** An organism that consists of one or more cells with a nucleus and other well-developed compartments. Eukaryotes include all organisms except bacteria, viruses, and blue-green algae, which are prokaryotes, so people are eukaryotes. See also *prokaryote*.

**euphenics** A discipline that aims to improve the outcome of a genetic disease by altering the environment. The term euphenics is from a Greek word meaning "normal appearing." For example, people with phenylketonuria (PKU) can avoid the expression of their disease by staying on a low-phenylalanine diet and avoiding major sources of phenylalanine such as diet soft drinks sweetened with aspartame.

**euphoria** Elevated mood. Euphoria is a desirable and natural occurrence when it results from happy or exciting events. An excessive degree of euphoria that is not linked to events is characteristic of hypomania and mania, which are abnormal mood states associated with bipolar disorders. See also *bipolar disorder*.

**euploid** The normal number of chromosomes for a species. In humans, the euploid number of chromosomes is 46; with the notable exception of the unfertilized egg and sperm, in which it is 23.

**Eustachian tube** The tube that runs from the middle ear to the pharynx. The function of the Eustachian tube is to protect, aerate, and drain the middle ear and mastoid. The Eustachian tube permits the gas pressure in the middle ear cavity to adjust to external air pressure. When you are descending in an airplane, the Eustachian tube opens when your ears "pop." It is harder to get air into the middle ear than get it out, which is why we have more trouble with our ears when a plane is descending than when it takes off. Occlusion of the Eustachian tube can lead to the development of middle ear infection (otitis media). The Eustachian tube opens into the nasopharynx. The Eustachian tube measures only 17 to 18 mm, and it is horizontal at birth. As it grows to double that length, it grows to be positioned at an incline of 45 degrees in

adulthood. For this reason the nasopharyngeal opening in an adult is significantly below the tympanic opening, found in the middle ear near the eardrum. The shorter length and the horizontal orientation of the Eustachian tube in infancy protects the middle ear poorly, makes for poor drainage of fluid from the middle ear, and predisposes infants and young children to middle ear infection. The greater length and particularly the slope of the tube as it grows serve more effectively to protect, aerate, and drain the middle ear. The Eustachian tube in the adult is opened by two muscles, the tensor palati and the levator palati, but the anatomy of children permits only the tensor palati to work. Also known as otopharyngeal tube because it connects the ear to the pharynx and auditory tube.

**euthanasia** The hastening of death for a terminally ill patient. Euthanasia is from the Greek for "dying well." See also *active euthanasia*; *assisted suicide*; *eugenics*.

**euthyroid** The state of having normal thyroid gland function. See also *hyperthyroid*; *hypothyroid*.

**evacuation supplies kit** See *disaster supplies*.

**evening primrose oil** A natural source of essential fatty acids (EFOs).

**event, adverse** In pharmacology, an unexpected or dangerous reaction to a drug.

**evidence-based medicine** The judicious use of the best current available scientific research in making decisions about the care of patients. Evidence-based medicine (EBM) is intended to integrate clinical expertise with the research evidence and patient values.

**evolution** The continuing process of change.

**evolution, biologic** See *biologic evolution*.

**evolution, cultural** See *cultural evolution*.

**evolutionarily conserved gene** A gene that has remained essentially unchanged throughout evolution. Conservation of a gene indicates that it is unique and essential: There is not an extra copy of that gene with which evolution can tinker, and changes in the gene are likely to be lethal.

**evolutionarily conserved sequence** A base sequence in a DNA molecule (or an amino acid sequence in a protein) that has remained essentially unchanged throughout evolution.

**Ewing sarcoma** See *sarcoma, Ewing*.

**exacerbation** A worsening. In medicine, exacerbation may refer to an increase in the severity of a disease or its signs and symptoms. For example, an exacerbation of asthma might occur as a serious effect of air pollution, leading to shortness of breath.

**exaggerated startle disease** See *hyperplexia*.

**exam, pelvic** See *pelvic exam*.

**exam, rectal** See *digital rectal exam*.

**exanthem** A rash on the outside of the body. By contrast, a rash on the inside of the body (for example, inside the mouth) is called *enanthem*. A patient with measles can have both exanthem and enanthem. See also *enanthem*; *measles*; *rash*.

**exanthem subitum** A sudden rash. See also *measles*.

**excess iron** An overload of iron that can damage the heart, liver, gonads, and other organs. See also *iron excess*.

**excise** To cut out entirely. For example, a scalpel or laser beam may be used to excise a tumor. The terms excise and resect are not synonymous. Excise implies total removal, whereas resect does not.

**excisional biopsy** See *biopsy, excisional*.

**exclamation point hair** A short, broken-off hair that is found in an area of hair loss and is narrower closer to the scalp than at the other end (and therefore looks like an exclamation point). Exclamation point hair is a key diagnostic finding in a disorder called alopecia areata. See also *alopecia areata*.

**excrecence** An abnormal outgrowth as, for example, a wart.

**exercise, aerobic** See *aerobic exercise*.

**exercise treadmill** A machine used to obtain a continuous electrocardiogram recording of the heart as a patient performs increasing levels of exercise. An exercise treadmill permits the detection of abnormal heart rhythms (arrhythmias) and provides a screening test for the presence of narrowed arteries to the heart (coronary arteries). Narrowing of these arteries can limit the supply of oxygenated blood to the heart muscle during exercise.

**exercise-induced asthma** See *asthma, exercise-induced*.

**exercise-induced bronchospasm** See *asthma, exercise-induced*.

**exfoliate** 1 To peel off scaly skin spontaneously. For example, the skin exfoliates from the palms and soles in psoriasis, Kawasaki disease, and Reiter syndrome. 2 To deliberately wear away the top layer of skin, as may be done gently by a facial technologist who is applying a topical skin treatment for cosmetic purposes or more severely by a dermatologist treating acne. In the latter case, the most common exfoliating methods are sanding and chemical peels.

**exocrine** Pertaining to the secretion of a substance out of the body through a duct. The exocrine glands include the salivary glands, sweat glands, and glands within the gastrointestinal tract. Exocrine is as opposed to endocrine, which refers to the secretion of a substance (a hormone) within the body through the bloodstream. See also *endocrine*.

**exogenous** Originating from outside an organism. For example, insulin taken by a diabetic is exogenous insulin. See also *endogenous*.

**exon** A region of DNA in a gene that is transcribed (read) into mature messenger RNA. An exon is the protein-coding part of a gene. See also *intron*.

**exonuclease** An enzyme that cleaves nucleotide bases sequentially from the free ends of a nucleic acid (DNA or RNA).

**exophthalmos** A condition in which the patient has protruding eyeballs, as in Graves disease.

**exotropia** Divergent gaze. Also known as external strabismus and, pejoratively, walleye.

**expectorant** A medication that helps bring up mucus and other material from the lungs, bronchi, and trachea. An example of an expectorant is guaifenesin, which promotes drainage of mucus from the lungs by thinning the mucus, and also lubricates the irritated respiratory tract.

**exposure** In cognitive behavioral therapy, the process of exposing oneself to an event or a place that causes anxiety or panic. The intention of controlled exposure is to gradually lower the level of stress and anxiety associated with the stimulus, to eventually prevent panic attacks, obsessive-compulsive behaviors, and other unwanted reactions. See also *cognitive behavior therapy*.

**exposure and response prevention** A cognitive behavior therapy technique that uses planned exposures and exercises to reduce unwanted responses. Abbreviated E&RP. See also *cognitive behavior therapy*; *exposure*.

**expression, gene** See *gene expression*.

**expressivity** The consistency of a genetic disease. For example, Marfan syndrome shows variable expressivity. Some persons with Marfan syndrome merely have long fingers and toes, and others have the full-blown disease, with dislocation of the lens and dissecting aneurysm of the aorta.

**expulsion, stage of** The second stage of labor, lasting from the full dilation of the cervix until the baby is completely out of the birth canal.

**extension** The process of straightening or the state of being straight. The opposite of flexion or the state of being bent.

**external ear** See *ear, outer*.

**external jugular vein** The more superficial of the two jugular veins in the neck that drain blood from the head, brain, face, and neck and convey blood toward the heart. The external jugular vein collects most of the blood from the outside of the skull and the deep parts of the face. It lies outside the sternocleidomastoid muscle, passes down the neck, and joins the subclavian vein. See also *internal jugular vein*.

**external radiation therapy** See *radiation therapy, external*.

**extracorporeal shock wave lithotripsy** See *lithotripsy, extracorporeal shock wave*.

**extrapyramidal side effects** Physical symptoms, including tremor, slurred speech, akathisia, dystonia, anxiety, distress, paranoia, and bradyphrenia, that are primarily associated with improper dosing of or unusual reactions to neuroleptic (antipsychotic) medications.

**extrapyramidal system** The part of the nervous system that regulates muscle reflexes.

**extrasystole** A premature contraction of the heart that is independent of the normal rhythm of the heart. An extrasystole begins in a part of the heart other than the normal heartbeat origin, the sinoatrial (SA) node. Extrasystoles are followed by a pause, as the heart electrical system "resets" itself, and the contraction following the pause is usually more forceful than normal. These more forceful contractions can be perceived as palpitations. See also *palpitations*.

**extrauterine pregnancy** See *ectopic pregnancy*.

**extremity** An uttermost part of the body, such as a hand or a foot.

**eye** The organ of sight. The eye has a number of components, including the cornea, iris, pupil, lens, retina, macula, optic nerve, and vitreous humor. The cornea is the clear front window of the eye that transmits and focuses light into the eye. The iris is the colored part of the eye, and regulates the amount of light that enters the eye. The size of the pupil, the dark aperture in the iris, determines how much light is let into the eye. The lens is the transparent structure inside the eye that focuses light rays onto the retina. The retina is the nerve layer that lines the back of the eye, senses light, and creates impulses that travel through the optic nerve to the brain. The macula is a small area in the retina that contains special light-sensitive cells and allows people to see fine details clearly. The optic nerve is the nerve that connects the eye to the brain. It carries the impulses formed by the retina to the visual cortex of the brain to interpret vision. The vitreous humor is a clear, jelly-like substance that fills the middle of the eye.

**eye chart test** A test that measures vision ability at various distances. An eye chart is imprinted with block letters that line-by-line decrease in size, corresponding to the distance at which each line of letters is normally visible. See also *chart*, *Snellen*.

**eyedrop test** A test that involves putting certain liquids into the eye to produce a particular response. There are many types of eyedrops and many types of eyedrop tests. One of the most common eyedrop tests is pupil dilation. See also *dilation*, *pupil*.

**eyelid** The lid or cover of the eye, a movable fold of skin and muscle that can be closed over the eyeball or opened at will. Each eye has an upper and a lower lid. Also known as a palpebra.

**eyelids, adult ptosis of the** Drooping of the upper eyelids in adults, most commonly due to separation of the tendon of the lid-lifting (levator) muscle from the eyelid. This may occur with age, after cataract or other eye surgery, or due to an injury, an eye tumor, or a complication of another disease that involves the levator muscle or its nerve supply, such as diabetes. If treatment is necessary, it is usually surgical. Sometimes a small tuck in the lifting muscle and eyelid can raise the lid sufficiently. More severe ptosis requires reattachment and strengthening of the levator muscle.

**eyelids, congenital ptosis of the** Drooping of the upper eyelids at birth. Moderate or severe ptosis calls for surgical treatment to permit normal vision development. If moderate or severe ptosis is not corrected, amblyopia ("lazy eye") may develop, which can lead to permanently poor vision. Congenital ptosis is often caused by poor development of the levator muscle that lifts the eyelid. Children with ptosis may tip their heads back into a chin-up position to see underneath the eyelids or raise their eyebrows in an attempt to lift up the lids. Congenital ptosis rarely improves with time. Mild ptosis usually does not require surgery early in life. Treatment is usually surgery to tighten the levators. If the levator is very weak, the lid can be attached or suspended from under the eyebrow so that the forehead muscles can do the lifting. Even after surgery, focusing problems can develop as the eyes grow and change shape. All children with ptosis, whether they have had surgery or not, should therefore regularly visit ophthalmologists.

**eyes, flashing lights in the** Spontaneous flashing-light sensations in the eyes that can be caused by a number of factors. A sensation of flashing lights can be caused when the vitreous humor (the clear, jelly-like substance that fills the middle of the eye) shrinks and tugs on the retina. These flashes of light can appear off and on for several weeks or months. With age, flashes become increasingly common. Flashes usually do not reflect a serious problem. However, if one notices the sudden appearance of light flashes or a sudden increase in flashing lights, one should see an ophthalmologist immediately to see whether the retina has been torn or whether there is another cause. Flashes of light that appear as jagged lines or "heat waves" in both eyes, often lasting 10 to 20 minutes, are different from these benign flashes. They are usually caused by migraine, a spasm of blood vessels in the brain. These jagged lines can also occur without a headache, in which case they are termed ophthalmic migraine or migraine without headache. Treatment may or may not be necessary depending on the cause.

**eyes, spots in front of the** The spontaneous appearance of spots in the eyes. Also known as "floaters," spots are usually images formed by deposits of protein drifting about in the vitreous humor (the clear, jelly-like substance that fills the middle of the eye). The appearance of permanent or recurring white or black spots in the same area of the field of vision may be an early warning sign of cataracts or other serious problems.



Ff

**F** 1 Chemical symbol for the element flourine.  
2 Abbreviation for Fahrenheit. 3 The symbol for the coefficient of inbreeding. See also *coefficient of inbreeding*.

**Fabry disease** A genetic disease caused by a mutation in the GLA gene, resulting in a deficiency of the enzyme alpha-galactosidase A, also known as ceramide trihexosidase. This enzyme is essential to the metabolism of a fat compound known as globotriaosylceramide. Without alpha-galactosidase A, this fatty substance accumulates in the walls of blood vessels, leading to narrowing and decreased blood flow to the tissues normally supplied by these vessels. Small vessels in the skin, kidneys, heart, and nervous system are preferentially affected, impairing function of these organs. Males with Fabry disease are more severely affected than females with it because the gene for Fabry disease is on the X chromosome. Males have only one X, whereas females have a second X and therefore some enzyme activity. Females with partial enzyme activity may not show any symptoms, or may have symptoms as severe as affected males. Diagnosis is made by determining the level of alpha-galactosidase A in blood plasma or through genetic testing. Symptoms may include blood vessel-filled skin lesions known as angiokeratomas over the hips, buttocks, thighs, and lower belly with fever accompanying attacks of pain in the fingers and toes. Potentially life-threatening complications such as stroke, heart failure, and kidney failure may also occur. Treatment includes intravenously-administered enzyme replacement therapy with agalsidase beta (brand name: Fabrazyme), which reduces the fat accumulation in many types of cells and tissues. Episodes of pain in the hands and feet may benefit from medications such as diphenylhydantoin (brand name: Dilantin) or carbamazepine (brand name: Tegretol). Also known as Anderson-Fabry disease and angiokeratoma corporis diffusum universale.

**face, masklike** An expressionless face with little or no sense of animation; a face that is more like a mask than a normal face. Masklike face is seen in a number of disorders, including Parkinson's disease and myotonic dystrophy. Also known as masklike facies.

**facelift** A surgical procedure that is designed to make the face appear younger by pulling loose facial skin taut and tightening and repositioning the underlying facial musculature. Excessive skin and/or fat may be removed during the procedure. Supplemental procedures—including necklift, blepharoplasty (eyelid surgery), autologous fat injection, forehead lift, and browlift; chemical or laser peel; and malar (cheek), submalar, or chin implants—may be necessary to achieve the desired results. Although they are infrequent, risks and complications of facelift surgery include bleeding; hematoma; bruising; infection; neurological dysfunction (loss of muscle function or sensation), which is usually temporary; widened or thickened scars; loss of hair around the incision site; asymmetry (unevenness between two sides); and skin necrosis (loss of skin due to tissue death). Also known as rhytidectomy.

**facial canal introitus** The entrance to the facial canal, a passage in the temporal bone of the skull through which the facial nerve (the seventh cranial nerve) travels. In anatomy, an introitus is an entrance that goes into a canal or hollow organ.

**facial nerve** The seventh cranial nerve, a nerve that has fibers both going out and coming in (both efferent and afferent fibers). The facial nerve supplies the muscles of facial expression. See also *facial nerve paralysis*.

**facial nerve paralysis** Loss of voluntary movement of the muscles of one side of the face due to abnormal function of the facial nerve. Paralysis of the facial nerve causes a characteristic drooping of one side of the face, inability to wrinkle the forehead, inability to whistle, inability to close an eye, and deviation of the mouth toward the other side of the face. Numerous conditions can cause facial nerve paralysis including infections, inherited diseases, tumors, toxins, and trauma. Bell's palsy is the development of facial nerve paralysis without an identifiable cause. The disease causes paralysis of the muscles of the side of the face on which the facial nerve is affected. One goal of treatment is to protect the eye on the affected side from dryness. Sometimes corticosteroid medication is given to reduce inflammation during the first weeks of illness. Surgical decompression to reduce swelling and pressure on the affected nerve may also be performed.

**facies** Face.

**facio-genito-popliteal syndrome** See *popliteal pterygium syndrome*.

**factitious disorder** See *Munchausen syndrome*.

**factor VIII** A coagulation (clotting) factor. Classic hemophilia (hemophilia A) is due to a deficiency in factor VIII activity. Also known as antihemophilic factor (AHF) or antihemophilic globulin (AHG). Human factor VIII concentrates as well as recombinant (laboratory-produced) factor VIII are administered in the treatment of hemophilia A. See also *hemophilia A*.

**factor, rheumatoid** An antibody that is measurable in the blood. Rheumatoid factor is commonly used as a blood test for the diagnosis of rheumatoid arthritis. Rheumatoid factor is present in about 80 percent of adults (and a much lower proportion of children) with rheumatoid arthritis. It is also present in patients with other connective tissue diseases, such as systemic lupus erythematosus and Sjögren's syndrome, and in some with infectious diseases, including infectious hepatitis.

**FAE** Fetal alcohol effect.

**Fahr syndrome** A rare, inherited, progressive brain disorder that is characterized clinically by involuntary movements, prolonged muscle contractions, and dementia. It is characterized by abnormal deposits of calcium in the basal ganglia and cerebral cortex of the brain. The gene that is responsible for Fahr syndrome has been mapped to chromosome 14. There is no cure for Fahr syndrome. Also called idiopathic basal ganglia calcification. Treatment is directed toward relieving symptoms.

**failure, heart** See *congestive heart failure*.

**failure to thrive** The inability of a child to physically grow as quickly and as much as his or her peers. Abbreviated FTT. There is no official consensus as to what constitutes FTT. It usually refers to a child whose growth is below the 3rd or 5th percentiles for his or her age or whose growth has fallen off precipitously and crossed two major growth quartiles (for example, from above the 75th percentile to below the 25th percentile). FTT in early infancy sometimes results in death, and in older infancy or childhood it is an important disease marker. FTT has many causes, including exposure to toxins in utero, chronic diseases, infection, chronic kidney disease, gastrointestinal disorders, undiagnosed metabolic disorders, emotional deprivation and other psychosocial conditions, and other diseases. Treatment of FTT requires discovery and treatment of the underlying causes. In the interim, IV feeding is necessary in some cases, and in others, supplemental high-calorie feedings can help.

**fainting** See *syncope*.

**falciparum malaria** See *malaria, falciparum*.

**FALDH deficiency** See *Sjogren's syndrome*.

**fallopian tube** One of the two tubes that transport eggs from the ovary to the uterus. The Fallopian tubes have small hair-like projections called cilia on the cells of the lining. These tubal cilia are essential to the movement of the egg through the tube and into the uterus. If the tubal cilia are damaged by infection, an egg may not be pushed along normally but may stay in the tube. Infection can also cause partial or complete blockage of the tube with scar tissue, physically preventing eggs from getting to the uterus. Infection, endometriosis, tumors, scar tissue in the pelvis (pelvic adhesions), and any other process that damages a Fallopian tube or narrows its diameter increase the chance of an ectopic pregnancy. See also *ectopic pregnancy*.

**false negative** A result that appears negative when it should not. An example of a false negative would be if a particular test designed to detect cancer returns a negative result but the person actually does have cancer.

**false positive** A result that indicates that a given condition is present when it is not. An example of a false positive would be if a particular test designed to detect cancer returns a positive result but the person does not have cancer.

**false rib** One of the last five pairs of ribs. A rib is said to be false if it does not attach to the sternum (the breastbone). The upper three false ribs connect to the costal cartilages of the ribs just above them. The last two false ribs usually have no ventral attachment to anchor them in front and so are called floating, fluctuating, or vertebral ribs.

**familial** A condition that tends to occur more often in family members than is expected by chance alone. A familial disease may be genetic (such as cystic fibrosis) or environmental (such as chicken pox).

**familial adenomatous polyposis** A genetic disease characterized by the presence of numerous precancerous polyps in the colon and rectum. The polyps usually begin to form at puberty, and colon cancer almost always develops later in life. Abbreviated FAP. FAP is inherited as an autosomal dominant trait. Most people who receive the gene manifest the disease, although the expression of FAP can vary markedly from person to person. The gene that is mutated in FAP is the APC (adenomatous polyposis coli) gene on chromosome 5. Surgery is often necessary to remove the colon in order to prevent the development of cancer. A milder type of

familial adenomatous polyposis has been identified that is inherited in an autosomal recessive manner. This is referred to as autosomal recessive familial adenomatous polyposis and is caused by mutations in a different gene known as MUTYH. Also known as familial polyposis, familial polyposis coli.

**familial breast cancer** See *breast cancer, familial*.

**familial cancer** Cancer or a predisposition (tendency) to it that runs in families.

**familial hypercholesterolemia** The most common inherited type of hyperlipidemia (high lipid levels in the blood). Familial hypercholesterolemia is recognizable in childhood and is due to genetic defects in the receptor (target) for low-density lipoprotein (LDL). The most common autosomal dominant form of hypercholesterolemia is caused by mutation in the LDL receptor gene (LDLR) on chromosome 19. There are also a number of other less frequent forms of this disorder. Familial hypercholesterolemia predisposes a person to premature arteriosclerosis, including coronary artery disease, and can lead to heart attacks at an unusually young age. Treatment involves dietary modifications and the use of cholesterol-lowering medications.

**familial Mediterranean fever** A rare genetic disorder that is characterized by recurrent attacks of inflammation, with fever and pain in the abdomen, chest, and/or joints. Abbreviated FME. FMF attacks typically last for 12 to 72 hours. The symptoms may differ from patient to patient, even in the same family. In some cases, protein deposits, called amyloid, can accumulate in tissues (amyloidosis). When this injures the kidneys it can lead to kidney failure. Colchicine prevents the attacks of pain and the deposition of amyloid. FMF is inherited as an autosomal recessive trait. Molecular testing for mutations in the MEFV gene (on chromosome 16) confirms the diagnosis. Molecular genetic testing can also detect carriers and the prenatal presence of FME. Also known as recurrent pyroseritis.

**familial mental retardation 1** See *FMRI*.

**familial neurovisceral lipidosis** See *GM1-gangliosidosis*.

**familial polyposis** See *familial adenomatous polyposis*.

**family planning** See *birth control*.

**family tree** See *pedigree*.

**Fanconi anemia** A rare, inherited disease that adversely affects all the elements of bone marrow and is associated with malformations of the heart, kidney, and limbs, as well as pigmentary changes of the skin. Fanconi anemia predisposes a person to cancer, particularly to a disturbance of bone marrow growth called myelodysplasia and to acute myeloid leukemia. Patients also tend to develop cancers in areas of the body where cells normally reproduce rapidly, such as the mouth, the esophagus, the intestinal and urinary tracts, and the reproductive organs. Fanconi anemia is most common in Ashkenazi Jews. Mutations in multiple different genes can cause the disease, which is inherited as an autosomal recessive trait.

**FAO deficiency** See *Sjogren's syndrome*.

**FAP** Familial adenomatous polyposis.

**Farber lipogranulomatosis** A very rare, deadly genetic disease that is characterized by the onset, in the first few weeks of life, of swollen, painful joints; nodules under the skin; profound motor and developmental delay; cherry-red spots in the retina; and cardiorespiratory problems. The disease is inherited as an autosomal recessive trait and is due to a deficiency of the enzyme acid ceramidase. Farber lipogranulomatosis is one of the sphingolipidoses, a group of genetic diseases that involve overproduction or accumulation of fatty substances called sphingolipids in the brain and nervous system. See also *sphingolipidosis*.

**farsightedness** An error of refraction in the human eye that causes light rays to focus behind the retina instead of on it. A person who is farsighted has normal vision at a distance but has trouble focusing on nearby objects. Farsightedness can be corrected with refractive lenses—either glasses or contact lenses—and in some cases by surgery. Also known as hyperopia.

**fart** See *flatulence*.

**FAS** Fetal alcohol syndrome.

**fascia** A flat band of tissue below the skin that covers underlying tissues and separates different layers of tissue. Fascia also encloses muscles.

**fasciculation** Involuntary contractions or twitchings of groups of muscle fibers. Fasciculations can occur in normal individuals without an associated disease or condition, or as a result of illness, such as muscle cramps, nerve diseases, and metabolic imbalances.

**fasciitis** Inflammation of the fascia.

**fasciitis, eosinophilic** See *eosinophilic fasciitis*.

**fasciitis, plantar** Inflammation of the plantar fascia, the bowstring-like tissue that stretches from the heel bone to the base of the toes. Plantar fasciitis can be due to calcaneal spurs, which typically cause localized tenderness and pain that is made worse by stepping down on the heel. Plantar fasciitis may be related to physical activity overload, abnormal foot mechanics, or may be due to underlying diseases that cause arthritis, such as Reiter disease, ankylosing spondylitis, and diffuse idiopathic skeletal hyperostosis. Treatment is designed to decrease inflammation and avoid reinjury. Icing reduces pain and inflammation. Anti-inflammatory agents, such as ibuprofen and injections of cortisone, can help. Infrequently, surgery is done on chronically inflamed spurs. A donut-shaped shoe insert can take pressure off a calcaneal spur and lessen plantar fasciitis.

**fasting blood glucose** A test to determine how much glucose (sugar) is in a blood sample after an overnight fast. The fasting blood glucose test is commonly used to detect diabetes mellitus. A blood sample is taken in a lab, physician's office, or hospital. The test is done in the morning, before the person has eaten. The normal range for blood glucose is 70 to 100 mg/dl. Levels between 100 and 126 mg/dl are referred to as impaired fasting glucose or pre-diabetes. Diabetes is typically diagnosed when fasting blood glucose levels are 126 mg/dl or higher.

**fasting blood sugar** See *fasting blood glucose*.

**fat** **1** Along with proteins and carbohydrates, one of the three nutrients used as energy sources by the body. The energy produced by fats is 9 calories per gram. Proteins and carbohydrates each provide 4 calories per gram. **2** Total fat; the sum of saturated, monounsaturated, and polyunsaturated fats. **3** A slang term for obese or adipose. **4** In chemistry, a compound formed from chemicals called fatty acids. These fats are greasy, solid materials found in animal tissues and in some plants. **5** A kind of body tissue that contains fats stored as energy that also insulates and cushions internal organs, also known as adipose tissue.

**fat, trans** See *trans fatty acid*.

**fatty acid, trans** See *trans fatty acid*.

**fatty liver of pregnancy, acute** See *acute fatty liver of pregnancy*.

**fauces** Throat.

**fava bean** A broad bean to which many people react adversely. Fava beans look like large, tan lima beans. They are popular in Mediterranean and Middle Eastern cuisines, are eaten raw when very young, can be cooked in soups and many other dishes, or may be made into fava brittle candy. Fava beans are the main commercial source of the drug L-dopa. Also known as broad beans. See also *favism*.

**favism** A condition characterized by hemolytic anemia (breakup of red blood cells) that occurs after a person eats fava beans or is exposed to the pollen of the fava plant. This dangerous reaction occurs exclusively in people with a deficiency of the enzyme glucose-6-phosphate dehydrogenase (G6PD), an X-linked genetic trait. However, not all G6PD-deficient families appear to be at risk for favism; this indicates that an additional genetic factor is needed in order to create susceptibility to favism. See also *deficiency, G6PD*.

**FDA** Food and Drug Administration.

**febrile** Feverish.

**febrile headache** See *headache, febrile*.

**febrile seizure** See *seizure, febrile*.

**fecal incontinence** See *encopresis*.

**fecal occult blood test** A test to check for hidden blood in the stool.

**fecalith** A hard stony mass of feces in the intestinal tract. A fecalith can obstruct the appendix, leading to appendicitis. Fecaliths can also obstruct diverticuli. Also known as coprolith and stercolith.

**feces** The excrement discharged from the intestines.

**fecund** See *fertile*.

**fecundity** See *fertility*.

**feedback** A process in which the factors that produce a result are themselves modified, corrected, and strengthened by that result. Many biologic processes are controlled by feedback, just as the temperature in a home (from a furnace or air conditioner) can be regulated by a thermostat. This principle is the basis for the practice of biofeedback. See also *biofeedback*.

**feeding, breast** See *breastfeeding*.

**feet** As a measure of length, the plural of foot.

**Felty syndrome** An uncommon complication of long-standing rheumatoid arthritis defined by the presence of an enlarged spleen (splenomegaly) and an abnormally low white blood cell count. Patients may have an increased susceptibility to infection. The cause of Felty syndrome is not known. Treatment of Felty syndrome is not always required beyond treatment for the underlying rheumatoid arthritis, but splenectomy can benefit some patients with very low white blood cell counts and recurring infections. See also *rheumatoid arthritis*.

**female** An individual of the sex that bears young or that produces ova or eggs, or a person who has a particular physical appearance, chromosome constitution, or gender identification. See also *female chromosome complement*.

**female chromosome complement** The whole set of chromosomes for a female. The large majority of females have a 46, XX chromosome complement (46 chromosomes, including 2 X chromosomes). A minority of females have other chromosome complements, such as 45, X (45 chromosomes, including 1 X chromosome) or 47, XXX (47 chromosomes, including 3 X chromosomes).

**female external genitalia** The external genital structures of the female, including the labia minora, labia majora, and the clitoris.

**female genital mutilation** See *circumcision, female*.

**female gonad** See *ovary*.

**female internal genitalia** The internal genital structures of the female, which include the ovaries, the Fallopian tubes, the uterus, the uterine cervix, and the vagina. These are, collectively, the female organs of reproduction.

**female organs of reproduction** The ovaries, which produce eggs (ova) and female hormones; the Fallopian tubes, which transport the egg from the ovaries to the uterus; the uterus, which receives the egg for fertilization and provides a growth environment for the developing embryo and fetus; the cervix, the lower, narrow part of the uterus that opens into the vagina; and the vagina, the muscular canal that extends from the cervix to the outside of the body and enables sperm to enter the female reproductive tract.

**female pelvis** The lower part of the abdomen that is located between the hip bones in a female. The female pelvis is usually more delicate than,

wider than, and not as high as the male pelvis. The angle of the female pubic arch is wide and round. The female sacrum is wider than the male's, and the iliac bone is flatter. The pelvic basin of the female is more spacious and less funnel-shaped than the male's. From a purely anatomic viewpoint, the female pelvis is better suited than the male pelvis to accommodate a fetus during pregnancy and permit the baby to be born.

**female urethral meatus** See *female urethral opening*.

**female urethral opening** The external opening of the transport tube that leads from the bladder to discharge urine outside the body in a female. The urethra in a female is shorter than the urethra in the male. The meatus (opening) of the female urethra is below the clitoris and just above the opening of the vagina.

**femoral** Having to do with the femur.

**femoral artery** The continuation of the external iliac artery after it passes under the inguinal ligament. The femoral arteries supply oxygenated blood from the heart to the lower extremities.

**femoral vein** The large vein in the groin that passes with the femoral artery under the inguinal ligament to enter the abdomen, at which point it becomes the external iliac vein. The femoral vein is a continuation of the popliteal vein, and it carries blood back to the heart from the lower extremities.

**femur** The single bone in the thigh, which is the largest bone in the human body. Also known as the thighbone.

**fenestration** The creation of a new opening. From the Latin for "the making of a window."

**ferritin** The major protein concerned with iron storage. The blood ferritin level serves as an indicator of the amount of iron stored in the body, and it can become elevated due to the presence of conditions featuring significant inflammation.

**fertile** Able to conceive and bear offspring. Also known as fecund.

**fertility** The ability to conceive and bear children, the ability to become pregnant through normal sexual activity.

**fertilization** The process of combining the male gamete, or sperm, with the female gamete, or ovum. The product of fertilization is a cell called a zygote.



**fetal alcohol effect** A condition in which a child has some signs of fetal alcohol syndrome (FAS) but does not meet all of the necessary criteria for FAS and there is a history of alcohol exposure before birth. Abbreviated FAE. The Institute of Medicine (IOM) has replaced the term FAE with the terms alcohol-related birth defects (ARBD) and alcohol-related neurodevelopmental disabilities (ARND), which together with FAS make up the fetal alcohol spectrum disorders (FASDs). ARNDs and ARBDs can still have severe and lifelong consequences for the child, including mental retardation and facial malformation. See also *fetal alcohol spectrum disorders*; *fetal alcohol syndrome*.

**fetal alcohol spectrum disorders** Conditions reflecting the possible effects of prenatal exposure to alcohol. Abbreviated FASDs. The FASDs include fetal alcohol syndrome (FAS), alcohol-related birth defects (ARBDs), and alcohol-related neurodevelopmental disabilities (ARNDs). See also *fetal alcohol syndrome*.

**fetal alcohol syndrome** A syndrome of damage that occurs to a child before birth as a result of the mother drinking alcohol during pregnancy. Abbreviated FAS. FAS always involves brain damage, impaired growth, and head and face abnormalities. FAS is one of the leading causes of mental retardation in the US. FAS is the extreme end of the fetal alcohol spectrum disorders (FASDs), the terms used to describe the range of effects that prenatal exposure to alcohol may have. In addition to FAS, the FASDs also include conditions in which the individuals have some, but not all, of the characteristics of FAS. These conditions include alcohol-related birth defects (ARBD) and alcohol-related neurodevelopmental disabilities (ARND). Besides education of women and surgery on children with FAS to correct major physical defects, there is no treatment for FAS. No amount of alcohol has been proven safe during pregnancy. To establish the diagnosis of FAS, the following signs must be present: small size and weight before and after birth (pre- and postnatal growth retardation); evidence of brain delay in development, intellectual impairment, or neurologic abnormalities; and specific appearance of the head and face. At least two of the following groups of signs must be present: small head size (microcephaly); small eyes (microphthalmia) and/or short eye openings (palpebral fissures); and underdevelopment of the upper lip, indistinct groove between the lip and nose (the philtrum), and flattened cheekbones. See also *fetal alcohol spectrum disorders*.

**fetal circulation** See *circulation, fetal*.

**fetal development** See *prenatal development*.

**fetal distress** Compromise of a fetus during the antepartum period (before labor) or intrapartum period (during the birth process). The term fetal distress is commonly used to describe fetal hypoxia (low oxygen levels in the fetus), which can result in fetal damage or death if it is not reversed or if the fetus is not promptly delivered. Fetal distress can be detected via abnormal slowing of labor, changes in fetal heart rate, the presence of meconium (dark green fecal material from the fetus) or other abnormal substances in the amniotic fluid, or fetal monitoring with an electronic device that shows a fetal scalp pH of less than 7.2.

**fetal dystocia** See *dystocia, fetal*.

**fetal hemoglobin** See *hemoglobin F*.

**fetal mortality rate** The number of fetal deaths divided by the sum of all births plus late fetal deaths in a given year. In the US, the fetal mortality rate plummeted from 19.2 per 1,000 births plus late fetal deaths in 1950 to 6.6 per 1,000 in 2000. However, the fetal mortality rate is higher than this in certain ethnic groups and among mothers with health problems during pregnancy, especially if the mother does not receive adequate personal and prenatal health care. The fetal mortality rate is considered a good measure of the quality of health care in a country or a medical facility.

**fetal movement** Movement of the fetus in the womb. The first fetal movements felt by the mother usually occur between 18 and 22 weeks of pregnancy but may occur earlier. Also known as quickening.

**fetoprotein, alpha-** See *alpha-fetoprotein*.

**fetoscope** A device used to obtain information about a fetus within the uterus. There are two types of fetoscopes: A fiberoptic scope for looking directly at the fetus within the uterus and a stethoscope designed for listening to the fetal heart beat.

**fetoscopy** Examination of a fetus within the uterus by using a fetoscope.

**fetus** An unborn offspring, from the embryo stage (the end of the eighth week after conception, when the major structures have formed) until birth.

**fever** Technically, any body temperature above the normal oral measurement of 37°C (98.6°F) or the normal rectal temperature of 99°F. However, fever is not considered medically significant until the temperature is above 38°C (100.4°F). Fever is part of the body's own disease-fighting arsenal: Rising body temperatures are apparently capable of

killing many disease-producing organisms. For that reason, low fevers should normally go untreated, unless they are accompanied by troubling symptoms. As fevers range to 40°C (104°F) and above, however, there can be unwanted consequences, such as delirium and convulsions, particularly for children. A fever of this sort demands immediate home treatment and then medical attention. Home treatment possibilities include the use of aspirin or, in children, nonaspirin pain killers such as acetaminophen, cool baths, or sponging to reduce the fever. Fever may occur with almost any type of infection or illness. Also called pyrexia.

**fever, breakbone** See *dengue fever*.

**fever, cat scratch** See *cat scratch fever*.

**fever, dengue** See *dengue fever*.

**fever, Ebola virus** See *Ebola virus*.

**fever, epidemic hemorrhagic** See *hemorrhagic fever, viral*.

**fever, five-day** See *trench fever*.

**fever, intermittent** A type of fever that rises and falls, often becoming worse at night and being accompanied by drenching sweats.

**fever, Lassa** An acute viral infection found in the tropics, especially in West Africa. Lassa fever is caused by a single-stranded RNA virus that is animal borne (zoonotic). Lassa fever can cause a potentially fatal illness, is highly contagious, and can rapidly spread. The reservoir, or host, of the Lassa virus is a rodent known as the "multimammate rat." People can become infected by eating this infected rat or by eating food contaminated by the rat's excretions. Person-to-person transmission also occurs via direct contact, contamination of skin breaks with infected blood, and aerosol spreads (virus particles moving through the air). The first symptoms typically occur 1 to 3 weeks after the patient comes into contact with the virus and may include high fever, sore throat, cough, eye inflammation (conjunctivitis), facial swelling, pain behind the breastbone, back pain, abdominal pain, vomiting, diarrhea, and general weakness that lasts for several days. The antiviral drug ribavirin is used for treatment along with supportive care.

**fever, Mediterranean** See *familial Mediterranean fever*.

**fever, Q** See *Q fever*.

**fever, remittent** A type of fever that gradually decreases in intensity over time.

**fever, Rocky Mountain spotted** See *Rocky Mountain spotted fever*.

**fever, scarlet** See *scarlet fever*.

**fever, spotted** See *Rocky Mountain spotted fever*.

**fever, tick** See *Rocky Mountain spotted fever*.

**fever, trench** See *trench fever*.

**fever, undulant** See *Brucellosis*.

**fever blister** See *canker sore*.

**fever of unknown origin** The presence of fever greater than 38.3°C (101°F) "off and on" for more than three weeks without a specific cause identified for the fever. Abbreviated FUO. Extensive diagnostic testing can determine the cause in the majority of cases of FUO. FUO may be related to infections such as HIV or other viral infections, cancers, or chronic inflammatory diseases such as sarcoidosis.

**fever therapy** A treatment in which abnormal elevations in body temperature are used to treat disease. Fever therapy was done in the past but is rarely, if ever, used today.

**fever with renal syndrome, hemorrhagic** See *hemorrhagic fever, viral*.

**FGF** Fibroblast growth factor.

**fiber** The parts of fruits and vegetables that cannot be digested. Fiber is of vital importance to digestion; it helps the body move food through the digestive tract, reduces serum cholesterol, and contributes to disease protection. Also known as bulk and roughage.

**fiber, bowel disorders and** High-fiber diets help delay the progression of diverticulosis and, at least, reduce the number of bouts of diverticulitis. In many cases, fiber helps reduce the symptoms of irritable bowel syndrome and constipation.

**fiber, cholesterol and** Cholesterol blood levels can be influenced by intake of fiber. Soluble fiber substances are effective in helping reduce the level of blood cholesterol.

**fiber, constipation and** Constipation can be influenced by intake of fiber. Insoluble fiber retains water in the colon, resulting in softer and larger

stools. Fiber is used effectively in treating constipation that results from poor dietary habits. Bran is particularly rich in insoluble fiber.

**fiber, diabetes and** Diabetes can be influenced by intake of fiber. Soluble fibers found in oat bran, apples, citrus fruits, pears, peas and beans, psyllium, and other foods slow down the digestion of carbohydrates (sugars), which results in improved glucose metabolism. A diet high in cereal fiber has been linked to a decreased risk for developing type II diabetes.

**fiber, insoluble** Fiber that cannot dissolve in water. Insoluble fiber is found in wheat bran, cabbage, peas and beans, and other foods. Both are important diet components for optimal health. See also *fiber, soluble*.

**fiber, soluble** Fiber that can at least partially be dissolved in water. Soluble fiber is found in oat bran, apples, citrus, pears, peas and beans, psyllium, and other foods. Both soluble and insoluble fiber are important diet components for optimal health. See also *fiber, insoluble*.

**fibrates** Cholesterol-lowering drugs that are effective in lowering triglycerides and, to a lesser extent, in increasing HDL cholesterol levels. Gemfibrozil (brand name: Lopid), the fibrate most widely used in the US, can be effective for patients with high triglyceride levels, but it is not very effective for lowering LDL cholesterol. As a result, it is used less often than other drugs for patients with heart disease for whom LDL cholesterol lowering is the main goal of treatment. Fibrates are generally well tolerated by most patients. Fibrates appear to increase a patient's likelihood of developing cholesterol gallstones and can increase the effects of medications that thin the blood.

**fibril** A small fiber, a fine thread.

**fibrillation** In cardiology, an abnormal and erratic twitching of the heart muscle.

**fibrillation, atrial** An abnormal and irregular heart rhythm in which electrical signals are generated chaotically throughout the upper chambers (atria) of the heart. Many people with atrial fibrillation have no symptoms. Among those who do, the most common symptom is an uncomfortable awareness of the rapid and irregular heartbeat (palpitations). Atrial fibrillation can promote the formation of blood clots that travel from the heart to the brain, resulting in stroke. Treatment of atrial fibrillation involves risk-factor control, use of medications to slow the heart rate and/or convert the heart to

normal rhythm, and prevention of blood clots. Also known as auricular fibrillation.

**fibrillation, auricular** See *fibrillation, atrial*.

**fibrillation, ventricular** An abnormal and irregular heart rhythm in which there are rapid uncoordinated fluttering contractions of the lower chambers (ventricles) of the heart. Ventricular fibrillation disrupts the synchrony between the heart-beat and the pulse beat. Ventricular fibrillation is commonly associated with heart attacks and scarring of the heart muscle from previous heart attacks. Ventricular fibrillation is life threatening.

**fibrin** The protein that is formed during normal blood clotting and that is the essence of the clot.

**fibrinogen** The protein from which fibrin is formed in normal blood clotting.

**fibroadenoma** The most common benign tumor of the breast and the most common breast tumor in women under 30 years of age. Fibroadenomas are usually solitary and may increase in size during pregnancy. The most common signs of fibroadenoma are a painless, rubbery or firm, moveable mass of the breast. The diagnosis of fibroadenoma is made by biopsy. Treatment may involve surgical removal. Fibroadenomas are rare in postmenopausal women. Juvenile fibroadenomas are rapidly growing, benign breast tumors that occur in adolescent females.

**fibroblast** A type of cell found in connective tissue throughout the body that produces collagen and other proteins found in the extracellular (between cells) spaces.

**fibroblast growth factors** A family of signaling molecules that bind to surface receptors and exert actions on cells known as fibroblasts. Abbreviated FGFs. There are multiple types of FGFs, and FGF molecules bind to a family of fibroblast growth factor receptor molecules (FGFR1, FGFR2, FGFR3, and FGFR4). This interaction plays a role in wound healing and embryonic development. Disruption of FGFs or FGFRs can result in disease. Mutations in FGFR2 cause the best-known type of acrocephalosyndactyly, Apert syndrome. Different mutations in FGFR2 are responsible for other genetic diseases, including Pfeiffer syndrome (a type of acrocephalosyndactyly) and Crouzon syndrome (a craniofacial disorder). All these disorders are inherited as autosomal dominant traits. See also *acrocephalosyndactyly*; *Apert syndrome*; *Crouzon syndrome*; *Pfeiffer syndrome*.

**fibrocystic breast condition** The presence of lumpiness and/or discomfort in one or both breasts. The condition is very common and benign. Fibrocystic breast condition was formerly referred to as fibrocystic breast disease and primarily affects women between the ages of 30 and 50; it tends to become less of a problem after menopause. The diagnosis of fibrocystic breasts is complicated by the fact that the condition can vary widely in its severity. The symptoms can also be limited in duration, usually occurring only premenstrually. Normal hormonal variation during the menstrual cycle is the primary contributing factor to fibrocystic breast condition. The foremost concern is not fibrocystic breast condition itself but the impaired detection of breast cancer, as the lumps in fibrocystic breast condition can mimic and mask breast cancer.

**fibroid** A common benign tumor of the uterus. Fibroids can be present without symptoms. However, in about 25 percent of women, fibroids cause symptoms such as prolonged or heavy menstrual bleeding, pelvic pressure or pain, and, in rare cases, reproductive dysfunction. Drugs that manipulate the levels of steroid hormones can be effective in treating fibroids, but side effects limit their long-term use. Fibroids may be removed if they cause discomfort or if they are associated with uterine bleeding. In addition to hysterectomy and abdominal myomectomy, various minimally invasive procedures have been developed to remove or diminish the size of fibroids. Also known as leiomyoma and myoma of the uterus.

**fibroma** A benign tumor consisting of a mass of connective tissue cells that have a spindle shape.

**fibroma, cemento-ossifying** A reactive lesion of the gingiva that may grow to very large size, unless treated. Abbreviated COF. A COF has a hard, fibrous consistency. Treatment is surgery. Also known as ossifying fibroma.

**fibroma, collagenous** See *fibroma, desmoplastic*.

**fibroma, desmoplastic** A rare type of primary bone tumor that is characteristically composed of well-differentiated cells that produce collagen. Desmoplastic fibromas are discovered most often in the first three decades of life, in the mandible (the femur and pelvis are also favored sites). Although benign, these tumors infiltrate locally and may cause pain and swelling or fluid accumulation. Treatment is surgical removal, but desmoplastic fibromas may recur. Also known as collagenous fibroma.

**fibroma, ossifying** See *fibroma, cemento-ossifying*.

**fibromatosis** A condition characterized by multiple fibromas. See also *fibroma*.

**fibromyalgia** A disease characterized by chronic pain, stiffness, and tenderness of muscles, tendons, and joints, without detectable inflammation. Fibromyalgia does not cause body damage or deformity. However, undue fatigue plagues 90 percent of patients with fibromyalgia. Sleep disorder is also common in patients with fibromyalgia. Fibromyalgia can be associated with other rheumatic conditions, and irritable bowel syndrome (IBS) can occur with fibromyalgia. There is no definitive medical test for the diagnosis of fibromyalgia, so diagnosis is made by eliminating other possible causes of the symptoms. The most effective treatment is a combination of education, stress reduction, exercise, and medication. Formerly known as fibrositis.

**fibrosarcoma** A malignant tumor consisting of fibroblasts (connective tissue cells that produce the collagen found in scar tissue). Fibrosarcoma may occur as a mass in the soft tissues or may be found in bone. An infantile form of fibrosarcoma which occurs in children less than one year of age has an excellent prognosis when appropriately treated. Symptoms may include a lump or mass with or without associated pain and soreness.

**fibrosis, radiation** Scarring of the lungs from radiation. Radiation fibrosis is a consequence of the repair process that follows radiation pneumonitis (inflammation of the lungs due to radiation), as from radiation therapy. Radiation fibrosis typically occurs within months to a few years after the completion of radiation treatments. Whereas the inflammation of radiation pneumonitis is often reversible with medications, radiation fibrosis is usually irreversible and permanent.

**fibrositis** See *fibromyalgia*.

**fibrous dysplasia, monostotic** See *monostotic fibrous dysplasia*.

**fibrous dysplasia, polyostotic** See *polyostotic fibrous dysplasia*.

**fibula** The smaller of the two bones in the lower leg. The end of the fibula forms the bony prominence of the outer ankle.

**fièvre boutonneuse** See *typhus, African tick*.



**fifth disease** A mild disease occurring typically in children that is caused by parvovirus B-19. The characteristic symptoms of fifth disease include low-grade fever, fatigue, a “slapped cheeks” rash, and a rash over the whole body. Transmission is by droplets in the air (respiratory secretions) or through blood. Some children with immunodeficiency (such as those with AIDS or leukemia) or with certain blood disorders (such as sickle cell anemia or hemolytic anemia) may become seriously ill with fifth disease including the development of anemia. About 80 percent of adults with fifth disease have joint aches and pains (arthritis), which may persist for months. Pregnant women who have not previously had fifth disease should avoid contact with patients who have it because parvovirus B-19 can infect a fetus prior to birth. Although no birth defects have been reported as a result of fifth disease, it can cause the death of an unborn fetus. This occurs in less than 5 percent of pregnant women who become infected with the virus. The odd name, fifth disease, comes from the prevaccination era, when this disease was often the fifth disease that a child contracted. Also known as erythema infectiosum.

**filariasis** A parasitic disease caused by the African eye worm, a microscopic thread-like worm. The adult worms can only live in the human lymph system. Lymphatic filariasis affects people in the tropics and sub-tropics of Asia, Africa, the Western Pacific, and parts of Central and South America. The disease spreads from person to person by mosquito bites. The microscopic worms travel to the lymph vessels and grow into adults. The adult worms mate and release millions of microscopic worms into the blood. The disease usually is not life threatening, but it can cause permanent damage to the lymphatic system and kidneys. Because of the damage to the lymphatic system, fluid collects and causes swelling (known as lymphedema) in the arms, breasts, legs, and, for men, the genital area. Also known as lymphatic filariasis. See also *lymphedema*.

**film** Slang shortening of X-ray film.

**film, AP** An X-ray picture in which the beams pass from front to back (anteroposterior). See also *film, PA*.

**film, lateral** An X-ray picture taken from the side.

**film, PA** An X-ray picture in which the beams pass from back to front (posteroanterior). See also *film, AP*.

**filovirus** A virus in the family filoviridae that causes hemorrhagic fever. Filoviruses have single-stranded RNA as their genetic material. Ebola virus and the Marburg virus are both filoviruses.

**fine needle aspiration** The use of a thin needle to withdraw material from the body for analysis. For example, when a nodule is felt in the thyroid, fine needle aspiration may be done to remove a tissue sample that can be examined to determine whether the nodule is benign or malignant. The aspirated material is examined under the microscope by a pathologist.

**finger nail** A covering for the tip of the finger that is produced by living skin cells in the finger. A fingernail consists of several parts, including the nail plate (the visible part of the nail), the nail bed (the skin beneath the nail plate), the cuticle (the tissue that overlaps the plate and rims the base of the nail), the nail folds (the skin folds that frame and support the nail on three sides), the lunula (the whitish half-moon at the base of the nail), and the matrix (the hidden part of the nail unit under the cuticle). A fingernail grows from the matrix and is composed largely of keratin, a hardened protein that is also found in skin and hair. See also *nail; nail care*.

**fingers, six** See *hexadactyly*.

**fire, St. Anthony's** An intensely painful burning sensation in the limbs and extremities that is caused by ergot, which is the consequence of a fungus (*Claviceps purpurea*) that contaminates rye and wheat. See also *ergot*.

**fire ant** Originally from South America, a red or yellowish ant of small to medium size that has a severe sting that burns like fire. The sting of a fire ant causes a pustule to form within 24 hours that takes several days to resolve. Fire ant toxin can trigger an allergic reaction, particularly in people allergic to bee, wasp, and yellow jacket stings. Avoidance and prompt treatment are essential.

**fire supplies kit** See *disaster supplies*.

**first do no harm** A classic slogan that is used in medicine, often in the Latin wording *primum non nocere* that is attributed to Hippocrates.

**first stage of labor** The part of labor when the cervix dilates fully, to approximately 10 centimeters in diameter. Also known as the stage of dilatation.

**FISH** Fluorescence in situ hybridization, a molecular cytogenetic technique that tags genetic material



with fluorescent molecules. FISH is useful for identifying chromosomes and parts of chromosomes, deciphering chromosome rearrangements, detecting chromosome abnormalities, and detecting and mapping genes. For example, a FISH probe to chromosome 21 allows the detection of cells with trisomy 21 (an extra chromosome 21, which is the cause of Down syndrome).

**fishbowl granuloma** See *granuloma, fishbowl*.

**Fisher's exact test** A statistical test used to determine whether there is a nonrandom association between two variables that is much used in medical research. It tests the independence of rows and columns in a  $2 \times 2$  contingency table (a table with two horizontal rows crossing two vertical columns, creating four places for data) based on the exact sampling distribution of the observed frequencies. Hence it is an "exact" test.

**fish-odor syndrome** An inborn error of metabolism that is associated with an offensive body odor whose scent is similar to the smell of rotting fish. Fish-odor syndrome is due to the excessive excretion of trimethylamine (TMA) in urine, sweat, and breath. This syndrome is caused by a mutation in the gene for the enzyme flavin-containing monooxygenase-3 (FMO3). Dietary modifications to reduce the consumption of triethylamine precursors may provide some relief of symptoms. Also known as trimethylaminuria.

**fistula** An abnormal passageway between organs, vessels, or other structures that are not normally connected. For example, an anal fistula is an opening in the skin near the anus: This opening may lead to a tunnel into the rectal canal or to a passage that ends in a blind pouch.

**five-day fever** See *trench fever*.

**flail chest** A condition that occurs when enough ribs are broken (usually from a crush injury) to compromise the rigidity of the chest wall. On inspiration, the chest wall moves inward instead of outward, and it does the opposite on expiration.

**flat feet** Absence of an arch in the sole of the foot that causes the foot to lie flat when the person is standing. All babies have flat feet because their arches are not yet built up (and their feet tend to be plump). This condition may persist into adulthood, or an arch may form as the child grows. Flat feet can also be acquired, as in jobs that require a great deal of walking and carrying of heavy objects. Also called pes planus.

**flatulence** The passing of gas from the intestinal tract. Also commonly known as farting. See also *flatus*.

**flatus** Gas in the intestinal tract or gas passed through the anus. Intestinal gas contains numerous gases including oxygen, nitrogen, hydrogen, carbon dioxide, hydrogen sulfide, ammonia, and methane. The foul smell usually is caused by small traces of gases such as hydrogen sulfide, ammonia, and methane.

**flavin-containing monooxygenase-3** FMO3.

**flavivirus** One of a family of viruses transmitted by mosquitos and ticks that cause some important diseases, including dengue, yellow fever, tick-borne encephalitis, and West Nile fever. Flaviviruses have single-stranded RNA as their genetic material.

**flexion** The process of bending, or the state of being bent. For example, flexion of the fingers results in a clenched fist.

**Flexner Report** A report, the full name of which is "Medical Education in the United States and Canada." The 1910 report is named for its author, professional educator Abraham Flexner, who researched and wrote this report for the Carnegie Foundation. At the time that the report was written, many medical schools were proprietary schools operated more for profit than for education. In their stead, Flexner proposed medical schools in the German tradition of strong biomedical sciences, together with hands-on clinical training. The Flexner Report caused many medical schools to close, and most of the remaining schools were reformed to conform to the Flexnerian model.

**floaters** Spots in the field of vision due to deposits of protein drifting about in the vitreous humor (the clear jelly-like substance that fills the middle of the eye). Also known as spots in front of the eyes.

**floating rib** The last two false ribs, which usually have no ventral attachment to anchor them in front. Also known as fluctuating or vertebral rib. See also *false rib*.

**flood supplies kit** See *disaster supplies*.

**floppy baby syndrome** An abnormal condition of newborns and infants manifested by inadequate tone of the muscles. Floppy baby syndrome can be due to a multitude of neurologic and muscle problems. See also *hypotonia*.

**flow cytometry** Analysis of biological material via detection of the light-absorbing or fluorescing properties of cells, or of subcellular fractions such as chromosomes, as they pass in a narrow stream through a laser beam. Flow cytometry can be used with automated sorting devices to sort successive droplets of a stream into different fractions, depending on the fluorescence emitted by each droplet.

**flow karyotyping** Use of flow cytometry to analyze and/or separate chromosomes on the basis of their DNA content.

**flu** See *influenza*.

**flu, stomach** A gastrointestinal illness caused by a microorganism. Stomach flu is not related to the influenza (flu) virus.

**flu shot** See *influenza vaccine*.

**flu vaccine** See *influenza vaccine*.

**fluctuating rib** See *floating rib*.

**fluid, cerebrospinal** See *cerebrospinal fluid*.

**fluorescence in situ hybridization** FISH.

**fluorescence microscope** A microscope that is equipped to examine material that fluoresces under ultraviolet (UV) light.

**fluoroscopy** An X-ray procedure that makes it possible to see internal organs in motion. Fluoroscopy uses X-rays to produce real-time video images. Instead of using film, fluoroscopy captures X-rays with a device called an image intensifier and converts the X-rays into light. The light is then captured by a camera and displayed on a video monitor.

**fluorouracil** An anticancer drug whose chemical name is 5-fluorouracil (5-FU).

**flush** 1 A redness of the skin, typically over the cheeks or neck. A flush is usually temporary and brought on by excitement, exercise, fever, or embarrassment. Flushing is an involuntary (uncontrollable) response of the nervous system that leads to widening of the capillaries of the involved skin. Also referred to as a blush (or, may be used as a verb). Flushing may also be caused by medications or other substances that cause widening of the capillaries. 2 To wash out a wound, body area, or medical device.

**fluvastin** A cholesterol-lowering drug (brand name: Lescol) that is prescribed to prevent medical problems associated with high cholesterol levels, such as atherosclerosis and heart disease. Fluvastin is also used to treat inherited lipid disorders and similar disorders caused by liver or kidney disease.

**FMF** Familial Mediterranean fever.

**FMO3** Flavin-containing monooxygenase-3, an enzyme that is encoded on chromosome 1 and normally metabolizes trimethylamine. See also *fish-odor syndrome*.

**FMR1** Familial mental retardation 1, the gene that is responsible for the production of the protein familial mental retardation protein (FMRP). See also *fragile X syndrome*.

**FMRP** Familial mental retardation protein, the lack of which results in fragile X syndrome, the most common inherited cause of mental retardation. See also *FMR1*; *fragile X syndrome*.

**focused H and P** A medical history (H) and physical examination (P) that focuses on the patient's present problem. For example, if a patient is complaining of an earache, the physician concentrates on the ear rather than doing a complete clinical exam.

**folate** See *folic acid*.

**Foley catheter** See *catheter*; *Foley*.

**folic acid** A B vitamin that is an important factor in nucleic acid synthesis. A deficiency of folic acid causes megaloblastic anemia. Lack of folic acid during pregnancy can lead to neural tube birth defects, including spina bifida and anencephaly. An adequate intake of folic acid reduces the risks for a remarkably broad range of birth defects and appears to be important to the health of arteries, reducing the risk of second heart attacks and strokes. See Appendix C, "Vitamins."

**follicle** A shaft in the skin through which hair grows. Inflammation of the follicle is referred to as folliculitis.

**follicle-stimulating hormone** A hormone produced by the pituitary gland that controls estrogen production by the ovaries. Abbreviated FSH. See also *gonadotropin*.

**follicular cyst of the ovary** See *cyst of the ovary*, *follicular*.

**Fondation Jean Dausset** The Centre d'Etudes du Polymorphisme Humain (CEPH), an internationally renowned research laboratory created in Paris in 1984 by Professor Jean Dausset to provide the scientific community with resources for human genome mapping.

**Fong disease** See *nail-patella syndrome*.

**fontanel** A soft spot of the skull of a newborn infant where the cartilage has not yet hardened into bone between the skull bones. There are normally two fontanels, both in the midline of the skull. The anterior fontanel is well in front of the posterior fontanel. The posterior fontanel closes first, at latest by the age of 8 weeks in a full-term baby. The anterior fontanel closes at around 18 months of age, but it can close normally as early as 9 months. Also known as fontanelle.

**food** Any substance that is eaten to provide nutritional support for the body.

**food, functional** A modified food that claims to improve health or well-being by providing benefit beyond that of the traditional nutrients it contains. Functional foods may include such items as cereals, breads, beverages that are fortified with vitamins, some herbs, and nutraceuticals.

**food, "super"** Food with alleged healing or health-promoting capabilities. Not all items advertised as "super" foods or healing foods have been proven to promote health, however, and some may be contraindicated for people with certain health conditions.

**Food and Drug Administration** An agency within the US Public Health Service that provides a number of health-related services. Abbreviated FDA. The FDA's services include inspecting food and food-processing facilities to ensure wholesomeness and safety; scrutinizing food and drugs for pets and farm animals; ensuring that cosmetics will not cause harm; monitoring the health of the nation's blood supply; ensuring that medicines, medical devices, and biologicals (such as insulin and vaccines) are safe and effective; and testing radiation-emitting products such as microwave ovens to protect the public. The FDA also oversees health and safety labeling of these products. All new prescription and over-the-counter drugs are subject to FDA approval. The FDA must determine that a new drug produces the benefits it's supposed to produce, without causing side effects that would outweigh the benefits. It does so by looking at the results of clinical trials done outside the FDA. When serious adverse effects from a medication are reported, the FDA has the power to force the manufacturer to make

changes in the drug, change its safety labeling or marketing practices, or remove the medication from the market.

**food poisoning** Disease caused by food-borne infectious organisms, such as the *Clostridium botulinum* bacteria that produces deadly botulism toxin. Symptoms may include stomach upset, nausea, vomiting, and weakness, depending on the organism involved. The most prominent causes of food poisoning are noroviruses (often from shellfish and salads), *Campylobacter jejuni* (the leading cause of bacterial food poisoning, often from undercooked poultry), *Salmonella* (often from raw or undercooked eggs), *Listeria monocytogenes* (often from unpasteurized milk and cheese), *Vibrio vulnificus* (through raw or inadequately cooked seafood), and *E. coli* 0157:H7 (often from undercooked hamburger). See also *botulism*; *E. coli*; *listeriosis*; *salmonellosis*.

**foodborne disease** See *food poisoning*.

**foot 1** The extremity at the end of the leg, with which a person stands and walks. The foot is a complex structure, made up of dozens of bones that work together with muscles and tendons to execute precise movements. The bones of the foot include the 10 metatarsals and the 28 phalanges (toe bones). **2** As a measurement, 12 inches, or one-third of a yard. The foot was originally the length of a man's foot, and it served as a measurement of land. Abbreviated ft.

**foot, athlete's** See *athlete's foot*.

**foot drop brace** See *ankle-foot orthosis*.

**foot fungus** See *athlete's foot*.

**footling birth** A foot- or feet-first birth. A footling birth is called single-footling or double-footling, depending on whether the presenting part of the baby at delivery is just one foot or both feet. Also known as footling presentation.

**footling presentation** See *footling birth*.

**foramen** A natural opening. Although a foramen is usually through bone, it can be an opening through other types of tissue, as with the foramen ovale in the heart. The plural of foramen is foramina.

**foramen, interventricular** An opening between the lateral and third ventricles in the brain.

**foramen magnum** The large hole at the base of the skull that allows passage of the spinal cord.

**foramen of Magendie** An opening from the fourth ventricle in the brain to the central canal of the upper end of the spinal cord.

**foramen ovale** An oval opening between the two upper chambers of the heart (the atria) that is a normal feature of fetal and newborn circulation. The foramen ovale normally closes by 3 months of age.

**foramina of Luschka** A pair of openings from the fourth ventricle of the brain to the central canal of the upper end of the spinal cord.

**forceps** An instrument that has two blades and a handle and is used for handling, grasping, or compressing.

**forceps, obstetrical** A forceps designed as an aid in the vaginal delivery of a baby. Forceps may be used to ease delivery or to cope with problems of fetal distress or fetal position. The decision to use forceps must be made by an obstetrician.

**forearm** The portion of the upper limb from the elbow to the wrist. The forearm has two bones: the radius and ulna.

**foreign body airway obstruction** Partial or complete blockage of the breathing tubes to the lungs due to the presence of a foreign body, such as food or another object. See also *airway obstruction*.

**forensic medicine** The branch of medicine dealing with the application of medical knowledge to establish facts in civil or criminal legal cases, such as an investigation into the cause and time of a suspicious death. Also known as forensic pathology.

**foreskin** The fold of skin that covers the head (glans) of the penis. The inside of the foreskin has preputial glands, a special type of sebaceous (oil) glands that secrete an oily lubricant known as smegma. The foreskin is often surgically removed via circumcision. Also known as prepuce. See also *circumcision, male*.

**foreskin, inflammation of the** See *posthitis*.

**foreskin, tight** See *phimosis*.

**foreskin and glans, inflammation of the** See *balanoposthitis*.

**Forestier disease** See *diffuse idiopathic skeletal hyperostosis*.

**formula** A prepared substitute for breast milk. Formula does not contain the special immunity factors found in breast milk that help the baby to fight off infections, and it may not include all the vitamins, minerals, and enzymes found in human breast milk. For that reason, experts in infant nutrition agree that breast milk is the best source of nutrition for infants.

**formula feeding** Feeding an infant or toddler prepared formula instead of or in addition to breastfeeding. Formula feeding is indicated when the mother has an illness that could be passed on to the baby through breast milk or through the close physical proximity required for breastfeeding. Otherwise, experts in infant nutrition agree that breastfeeding is best.

**fornices** Plural of fornix.

**fornix** In anatomy, any vaultlike or arched structure, such as the fornix cerebri (an arching fibrous band in the brain).

**fornix cerebri** One of two arching fibrous bands in the brain that connect the two lobes of the cerebrum. Each of the two fornices in the brain is an arched tract of nerves.

**fornix conjunctivae** The loose arching folds that connect the conjunctival membrane lining the inside of the eyelid with the conjunctival membrane covering the eyeball.

**fornix uteri** The anterior (front) and posterior (back) recesses into which the upper vagina is divided. These vaultlike recesses are formed by protrusion of the cervix into the vagina. The fornix uteri is also known as the fornix vaginae (or the vaginal fornices) and the uterine fornices.

**fornix vaginae** See *fornix uteri*.

**founder effect** The positive effect on gene frequency when a population (colony) has only a small number of original settlers, one or more of whom had that gene. For example, the gene for Huntington's disease was introduced into the Lake Maracaibo region in Venezuela early in the nineteenth century. This is now the largest known aggregation of the Huntington's gene in the world.

**fourth stage of labor** The hour or two after delivery when the tone of the uterus is reestablished as the uterus contracts again, expelling any remaining contents. These contractions are hastened by breastfeeding, which stimulates production of the hormone oxytocin.

**fourth ventricle** One cavity in a system of four communicating cavities within the brain, which are continuous with the central canal of the spinal cord. The fourth ventricle is the most inferior (lowest) of these. It extends from the aqueduct of the midbrain to the central canal of the upper end of the spinal cord, with which it communicates via the foramina of Luschka and the foramen of Magendie. It is filled with cerebrospinal fluid that is formed by structures called choroid plexuses located in the walls and roofs of the ventricle.

**fraction, ejection** See *ejection fraction*.

**fracture** A break in bone or cartilage. Although usually a result of trauma, a fracture can be the result of an acquired disease of bone, such as osteoporosis, or of abnormal formation of bone in a congenital disease of bone, such as osteogenesis imperfecta ("brittle bone disease"). Fractures are classified according to their character and location (for example, greenstick fracture of the radius).

**fracture, buckle** See *fracture, torus*.

**fracture, clay-shoveler's** An uncommon breakage of the spine, of the vertebrae from the lower neck or upper back, that results from stress. Clay-shoveler's fracture usually occurs in laborers who rapidly lift heavy weights with their arms extended, such as in shoveling. Symptoms of clay-shoveler's fracture include burning, knife-like pain at the level of the fractured spine, between the upper shoulder blades. Clay-shoveler's fracture is diagnosed via X-ray examination of the spine. Most patients require no treatment other than rest and avoidance of activities that stress the area of the fracture. Occasionally surgical removal of the tip of the broken spine is performed for those with long-standing pain.

**fracture, comminuted** A fracture in which a bone is broken, splintered, or crushed into a number of pieces.

**fracture, compound** A fracture in which a bone is sticking through the skin. Also known as an open fracture.

**fracture, compression** A fracture caused by compression, the act of pressing together. Compression fractures of the vertebrae are especially common in elderly people.

**fracture, greenstick** A fracture in which one side of a bone is broken and the other is bent (like a green stick).

**fracture, open** See *fracture, compound*.

**fracture, Salter-Harris** A traumatic fracture of the physal and/or epiphysal growth plate. Salter-Harris fractures occur in the extremities of children at the point where new bone is being formed as the bones grow.

**fracture, spiral** See *fracture, torsion*.

**fracture, stress** A fracture caused by repetitive stress, as may occur in sports, strenuous exercise, or heavy physical labor. Stress fractures are especially common in the metatarsal bones of the foot, particularly in runners. Osteoporosis increases the possibility of stress fractures. Treatment includes rest, disuse, and sometimes splinting or casting to prevent reinjury during healing.

**fracture, toddler's** A torsion fracture of the tibia that occurs without bone displacement. This fracture is called toddler's fracture because it occurs in infants who are early on in their walking, causing a stress breakage of bone in the large bone of the leg below the knee.

**fracture, torsion** A fracture in which a bone has been twisted apart. Also called a spiral fracture. See also *fracture, toddler's*.

**fracture, torus** A fracture in which one side of a bone bends but does not actually break. Torus fractures normally heal on their own within a month, with rest and disuse. Also known as incomplete fracture or buckle fracture.

**fracture, transverse** A fracture in which the break is across a bone, at a right angle to the long axis of the bone.

**fracture, Y** A fracture with a Y-like shape that occurs at the end of a bone.

**fragile site** A point on a chromosome where gaps and breaks tend to occur, which can be passed on from one generation to another.

**fragile X chromosome** An X chromosome that has a fragile site and is associated with a common form of mental retardation. Fragile X chromosome is due to a mutation (a trinucleotide repeat) in the DNA at that spot. Not all people who inherit the fragile site have the fragile X syndrome, and it is not yet known what genetic or environmental factors cause the breaks or deletions at this fragile site. Also known as FRAXA (as is fragile X syndrome). See also *fragile X syndrome*.

**fragile X syndrome** The most common heritable form of mental retardation. Fragile X syndrome is due to a dynamic mutation (a trinucleotide



repeat) at an inherited fragile site on the X chromosome; therefore, it is an X-linked disorder. Characteristics of fragile X syndrome in boys may include, in addition to mental impairment, prominent or long ears, a long face, delayed speech, hyperextensible joints, hyperactivity, tactile defensiveness, gross motor delays, and autistic-like behaviors. Boys are typically more severely affected than girls with fragile X syndrome. Only about half of all females who carry the genetic mutation for fragile X syndrome have symptoms themselves. Because the mutation is dynamic, it can vary in length and hence in severity of its effects from generation to generation, from person to person, and even within a given individual. The diagnosis of the syndrome is confirmed by molecular genetic testing. Also known as FRAXA (as is the fragile X chromosome itself) and Martin-Bell syndrome.

**frambesia** See *yaws*.

**FRAXA** See *fragile X chromosome*.

**free radical** An unstable compound containing unpaired electrons whose behavior is characterized by rapid reactions. Free radicals have been implicated in the aging process, cancer, and other kinds of physical damage to body tissues.

**frenulum** A physical structure that has a restraining function. For example, the lingual frenulum attaches the tongue to the floor of the mouth and appears to restrain it.

**Freudian** Pertaining to Sigmund Freud, the neurologist, psychiatrist, and founder of psychoanalysis, or to the theory and practice of psychoanalysis and psychotherapy developed by Freud. Freudian psychoanalysis concentrates on finding the roots of adult behavior in childhood conflicts. The term Freudian also refers to interpretations of behavior based on Freud's precepts.

**Frey syndrome** Sweating on one side of the forehead, face, scalp, and neck that occurs soon after ingestion of food, as a result of damage to a nerve that goes to the large saliva gland in the cheek (the parotid gland). The symptoms are usually mild, but more severe cases may require medical treatment.

**frontal lobe** The part of each hemisphere of the brain located behind the forehead that serves to regulate and mediate the higher intellectual functions. The frontal lobes are important for controlling thoughts, reasoning, and behaviors.

**frostbite** Damage to tissues that results from exposure to extreme cold. The tissues become injured from blood clotting and ice-crystal forma-

tion. Severe frostbite can result in death of the tissues (gangrene). The best way to warm a frozen part is to put it into a tub of hot water at 40°C to 42°C (104°F to 108°F). The extremity should not be thawed if there is a risk of it refreezing, which could further damage tissue. Warming over a fire or next to a heater should be avoided due to the risk of burns or dehydration of the injured tissue. The extremity should not be rubbed with snow because any rubbing may aggravate the injury. There may be considerable pain when the frostbitten area is rewarmed. See also *cold injury*.

**frozen shoulder** Permanent severe limitation of the range of motion of the shoulder due to inflammation and subsequent scarring around the shoulder joint (adhesive capsulitis). Frozen shoulder may occur following an injury or immobilization of the shoulder joint, and it occurs more commonly in people with diabetes and certain other health conditions than in the general population.

**FSH** Follicle-stimulating hormone.

**ft.** Abbreviation for foot, a measure of length.

**FTT** Failure to thrive.

**fucosidosis** An inherited lysosomal storage disease characterized by lack of the enzyme fucosidase. Without fucosidase, there is accumulation of fucose in the tissues. Fucosidosis is an autosomal recessive disorder. The gene that is responsible for fucosidosis, FUC1A, is on chromosome 1. Fucosidosis in its most severe form can cause neurologic deterioration, growth retardation, visceromegaly (enlargement of the internal organs), and seizures.

**fugue state** An altered state of consciousness in which a person may move about purposely and even speak but is not fully aware. A fugue state is usually a type of complex partial seizure. See also *seizure*, *complex partial*.

**functional food** See *food*, *functional*.

**functional gene test** A test for a specific protein which indicates not only that the corresponding gene is present but also that it is active.

**fundoplication** A surgical treatment for GERD. Usually a specific type of this procedure, called Nissen fundoplication, is performed, in which the upper part of the stomach is wrapped around the lower esophageal sphincter to strengthen this structure, prevent acid reflux, and repair a hiatal hernia. The procedure may be performed by laparoscopy. See also *gastroesophageal reflux disease*.

**fundus** In medicine, the bottom or base of an organ. For example, the fundus of the eye is the retina. However, the fundus of the stomach is inexplicably the upper portion. From the Latin for “the bottom.”

**fungal nail infection** See *onychomycosis*.

**fungiform** Mushroom-shaped.

**fungiform papillae** Broad, flat structures that house taste buds in the central portion of the dorsum (back) of the tongue. Fungiform papillae were once thought to resemble little mushrooms.

**fungus** A plantlike organism that does not contain chlorophyll and feeds on organic matter. An example of a common fungus is the yeast organism that causes thrush and diaper rash (diaper dermatitis).

**fungus, foot** See *athlete's foot*.

**funnel chest** “Caved-in” chest. Usually an unimportant isolated finding first evident at birth, funnel chest can occasionally be part of a connective-tissue disorder such as Marfan syndrome. Also known as pectus excavatum.

**funny bone** A sensation, rather than an actual bone, that one gets when the elbow is bumped and the ulnar nerve that runs past the elbow is stimulated and produces a strange, almost painful, sensation.

**FUO** See *fever of unknown origin*.

**furosemide** A common diuretic medication (brand name: Lasix) that is prescribed to rid the body of excess fluid. Furosemide may be recommended to treat fluid accumulation as a result of kidney disease, fluid in the lungs, congestive heart failure, high blood pressure, and other conditions. See also *diuretic, loop*.

**furuncle** See *boil*.

**fusiform** Formed like a spindle: wider in the middle and tapering toward the ends. For example, a fusiform aneurysm is a vascular outpouching that is shaped like a spindle.

**fusiform aneurysm** An outpouching or widening of an artery or a vein that is shaped like a spindle.



# Gg

**G** In genetics, guanine, one member of the G-C base pair (guanine-cytosine) in DNA. See also *DNA*; *guanine*; *RNA*.

**G protein** A guanine nucleotide binding protein in cells that interacts with cell surface receptors and affects biochemical actions within cells.

**G6PD** Glucose-6-phosphate dehydrogenase, an enzyme that red blood cells rely heavily on because it protects the cells against oxidative stresses. See also *deficiency*, *G6PD*.

**GAG** Glycosaminoglycan.

**gait** A manner of walking. Observation of gait can provide early diagnostic clues for a number of disorders, including cerebral palsy, Parkinson's disease, and Rett syndrome.

**galactose** A sugar found in milk. Galactose is a disaccharide that is made up of two sugars, galactose and glucose, that are bound together.

**galactosemia** An inherited disorder of galactose metabolism that occurs in newborns and can result in damage to the liver, brain, kidneys, and other organs in infants due to the accumulation of galactose derivatives in the body. Individuals with galactosemia cannot tolerate any amount of human or animal milk intake. The symptoms of galactosemia resolve if a diet that restricts the intake of galactose and lactose is started during the first 10 days of life. Galactosemia is inherited as an autosomal recessive trait. Galactosemia is due to deficient activity of the enzyme galactose-phosphate uridylyltransferase (GALT). Molecular testing for the gene that produces GALT permits carrier detection, genetic counseling, and prenatal diagnosis.

**galactosylceramidosis** See *Krabbe disease*.

**gallbladder** A pear-shaped organ located below the liver that stores the bile secreted by the liver. During and after a fatty meal, the gallbladder contracts, delivering the bile through the bile ducts into the intestines to help with digestion.

**gallbladder absence** See *agenesis of the gallbladder*.

**gallium** A rare metal with the atomic weight 69. There are several isotopic forms of gallium that differ from it in atomic weight. One is gallium-68, which is produced by cyclotrons and emits gamma rays. The citrate form of gallium-68 is used as a radiotracer to locate sites of inflammation and tumor tissue within the body.

**gallium scan** A test to detect sites in the body where cells are multiplying rapidly, such as tumors or areas of inflammation. A small amount of radioactive gallium is injected into a vein, and the element is taken up by cells that are rapidly dividing. A scanner is used to detect the areas of gallium uptake. See also *gallium*.

**gallop rhythm** An abnormal heart rhythm that pounds in the chest resembling the gallop of a horse when heard during examination with a stethoscope.

**gallstone** A stone of varying size that forms when substances in bile harden. There can be just one large stone, hundreds of tiny stones, or any combination and number. Gallstones can block the normal flow of bile if they lodge in any of the ducts that carry bile from the liver to the small intestine. Bile trapped in these ducts can cause inflammation in the gallbladder, the ducts, or, rarely, the liver. If a gallstone blocks the opening to the pancreatic duct, which opens into the common bile duct, digestive enzymes can become trapped in the pancreas and cause extremely painful inflammation called gallstone pancreatitis. Gallstones may not cause symptoms or may lead to pain for up to several hours in the upper back or under the right shoulder, together with nausea, vomiting, abdominal bloating, or indigestion. There are two types of gallstones: cholesterol stones and pigment stones. Gallstones are most common among women, Native Americans, Mexican Americans, and people who are overweight. Laparoscopic surgery to remove the gallbladder is the most common treatment. Also known as cholelithiasis.

**gallstone, microscopic** See *biliary sand*.

**gamete** Germ cell.

**gamete intrafallopian transfer** An assisted reproductive procedure for the treatment of infertility in which a woman's eggs are removed, mixed with sperm, and placed into the fallopian tube via a laparoscopic procedure. Abbreviated GIFT. GIFT allows the fertilization process to take place inside the fallopian tubes rather than inside the laboratory. GIFT involves stimulation of the ovaries to produce multiple eggs, aspiration of the eggs, mixing with mobile sperm, and injection of the egg-sperm mixture into the fallopian tube.

**gamma knife** A tool that uses highly focused beams of gamma radiation to perform neurosurgery without making an incision. A gamma knife is used

to treat many types of brain tumors as well as arteriovenous malformations and other conditions of the brain. See also *radiation therapy*, *stereotactic*.

**ganglion** 1 An aggregation of nerve cell bodies.  
2 A tendon cyst, commonly near the wrist.

**gangliosidosis, GM1** See *GM1-gangliosidosis*.

**gangliosidosis, GM2** See *Sandboff disease*.

**gangrene** Tissue death due to loss of adequate blood supply. Sometimes bacteria invade such tissue and accelerate its decay. Dry gangrene is the death of tissue due to vascular insufficiency without bacterial invasion in which the tissue dies, loses sensation and simply dries up, blackens, and shrivels. Dry gangrene eventually requires amputation. Gas gangrene occurs when body tissue is invaded by bacteria that thrive in areas of low oxygen content. These bacteria are called anaerobic bacteria and include the *Clostridium* family of bacteria. The bacteria generate gas and pus; the tissues swells and can become painful. Wet gangrene requires urgent antibiotic treatment and sometimes surgical drainage.

**Gardner syndrome** A variant of familial adenomatous polyposis characterized by the combination of polyps of the colon, tumors in extra-bowel sites (especially osteomas), and a characteristic abnormality of the retina of the eye. See also *familial adenomatous polyposis*.

**Gareis-Mason syndrome** See *MASA syndrome*.

**gargoylism** See *Hurler syndrome*.

**gas, intestinal** See *flatulence*; *flatus*.

**gas, laughing** See *nitrous oxide*.

**gas chromatography** See *chromatography*, *gas*.

**gastrectomy** Surgery to remove part or all of the stomach.

**gastric** Having to do with the stomach.

**gastric atrophy** A condition in which the stomach muscles shrink and become weak. Gastric atrophy may result in a lack of digestive juices due to accompanying shrinkage of the digestive glands.

**gastric banding** A surgical procedure that converts the upper part of the stomach into a very small pouch, forcing the patient to eat only tiny portions yet still feel full. Gastric banding is a type of bariatric surgery that is normally done only in severe cases of obesity. The operation is sometimes called gastric

stapling, and inflatable bands and/or staples may be used to create the stomach pouch. See also *bariatric surgery*.

**gastric bypass** A type of bariatric surgery that involves stapling or banding techniques to reduce the stomach to a small pouch and connecting the new, smaller stomach directly to the middle portion of the small intestine, thereby bypassing the remainder of the stomach and a portion of the small intestine. The procedure is performed to treat severe cases of obesity. See also *bariatric surgery*.

**gastric cancer** See *cancer*, *gastric*.

**gastric emptying study** A test that evaluates the process of emptying food from the stomach. For a gastric emptying study, a patient eats a meal in which the food or beverage is mixed with a small amount of radioactive material. A scanner that acts like a Geiger counter is placed over the stomach to monitor the amount of radioactivity in the stomach for several hours after the test meal. In patients with abnormal emptying of the stomach, the food and radioactive material stay in the stomach longer than normal (usually for hours) before emptying into the small intestine.

**gastric ulcer** A hole in the lining of the stomach that is caused by the acidic digestive juices secreted by the stomach cells. Ulcer formation is related to infection with *H. pylori* bacteria in the stomach, the use of anti-inflammatory medications, and cigarette smoking. Ulcer pain may not correlate with the presence or severity of ulceration. Diagnosis is made via barium X-ray endoscopy. See also *Helicobacter pylori*.

**gastritis** Inflammation of the stomach.

**gastroenteritis** Inflammation of the stomach and the intestines. Gastroenteritis can cause nausea, vomiting, and diarrhea. Gastroenteritis has numerous causes, including infections (viruses, bacteria, and parasites), food poisoning, and stress.

**gastroenterologist** A physician who specializes in the diagnosis and treatment of diseases of the digestive system.

**gastroesophageal reflux disease** A condition in which the stomach contents return back up into the esophagus. Abbreviated GERD. GERD frequently causes heartburn because of irritation of the esophagus by stomach acid. GERD can lead to scarring and stricture of the esophagus, which requires stretching (dilating) of the esophagus. Ten percent of patients with GERD develop Barrett esophagus, which increases the risk of cancer of the esophagus. Eighty



percent of patients with GERD also have hiatal hernias. Treatment may involve the use of antacids or medications to decrease acid production or accelerate stomach emptying. See also *Barrett esophagus*, *hiatal hernia*.

**gastrointestinal stromal tumor** A type of tumor that usually begins in cells in the wall of the gastrointestinal tract. It can be benign or malignant. Abbreviated GIST. Malignant GISTs can occur from the esophagus to the rectum, but occur most commonly in the stomach and small intestine. Treatment for GIST includes STI571 (Gleevec), the first approved drug to directly turn off the signal of a protein known to cause a cancer.

**gastrointestinal tract** The stomach and intestines. Abbreviated GI tract.

**gastroparesis** A disease of the muscles of the stomach or the nerves controlling the muscles that causes the muscles to stop working. Gastroparesis results in inadequate grinding of food by the stomach and poor emptying of food from the stomach into the intestine. Gastroparesis may be associated with paralysis of the small intestine and colon. The most common underlying cause is diabetes mellitus. Gastroparesis is diagnosed via gastric emptying study. It is usually treated with medications that stimulate the stomach muscle to contract.

**gastroscope** A flexible, lighted instrument that is put through the mouth and esophagus to view the stomach. Tissue from the stomach can be removed through a gastroscope.

**gastrostomy** A surgical opening into the stomach. A gastrostomy may be used for feeding, usually via a feeding tube called a gastrostomy tube. Feeding can also be done through a percutaneous endoscopic gastrostomy (PEG) tube.

**gastrostomy, percutaneous endoscopic** A surgical procedure for placing a feeding tube that does not necessitate performing an open laparotomy operation on the abdomen. Abbreviated PEG. An endoscope is passed through the mouth, throat, and esophagus to the stomach. The surgeon then makes a small incision in the skin of the abdomen, pushes an IV tube through the skin into the stomach, and then sutures (ties) the tube in place. PEG is used for feeding as well as administering medications.

**Gaucher disease** A series of disorders that are due to deficient activity of the enzyme glucocerebrosidase, which leads to accumulation of glucocerebroside in tissues of the body. The five types of Gaucher disease encompass a continuum of clinical

findings from a lethal form that occurs before or just after birth to a form so mild that it may not be diagnosed until old age. All types of Gaucher disease are inherited in an autosomal recessive manner.

**gender identity disorder** See *transsexualism*.

**gene** **1** In classical genetics, a unit of inheritance. **2** In molecular genetics, a sequence of chromosomal DNA that is required to make a functional product.

**gene, breast cancer susceptibility** See *breast cancer susceptibility gene*.

**gene, evolutionarily conserved** A gene that has remained essentially unchanged throughout evolution. Conservation of a gene indicates that it is unique and essential. Changes in the gene are likely to be lethal.

**gene, target** The primary gene of concern. See also *gene, marker*.

**gene, zygotic lethal** A gene that is fatal for the zygote, the cell formed by the union of a sperm and an egg. The zygote would normally develop into an embryo, as instructed by the genetic material within the unified cell. However, a zygotic lethal gene kills prenatal development at its earliest point. A zygotic lethal gene is a mutated version of a normal gene that is essential to the survival of the zygote.

**gene deletion** The total loss or absence of a gene. Gene deletion plays a role in birth defects and in the development of cancer.

**gene duplication** An extra copy of a gene. Gene duplication is a key mechanism in evolution. After a gene is duplicated, the once-identical genes can undergo changes and diverge to create two different genes.

**gene expression** The translation of information encoded in a gene into protein or RNA structures that are present and operating in the cell. Expressed genes include genes that are transcribed into messenger RNA (mRNA) and then translated into protein, as well as genes that are transcribed into RNA, such as transfer and ribosomal RNAs, but not translated into protein.

**gene family** A group of genes that are related in structure and often in function. The genes in a gene family are descended from an ancestral gene. For example, the hemoglobin genes belong to one gene family that was created by gene duplication and divergence.

**gene mapping** The charting of the positions of genes on a DNA molecule or chromosome and the distance, in linkage units or physical units, between genes.

**gene marker** A detectable genetic trait or distinctive segment of DNA that serves as a landmark for a target gene. Markers are on the same chromosome as the target gene. They must be near enough to the target gene to be genetically linked to it and to be inherited, usually together with that gene, and thereby serve as signposts to it.

**gene product** The RNA or protein that results from the expression of a gene. The amount of gene product is a measure of the degree of gene activity.

**gene testing** The testing of a sample of blood (or another fluid or tissue) for evidence of a gene. The aim of gene testing is usually to learn whether a gene for a disease is present or absent.

**gene therapy** The treatment of disease by replacing, altering, or supplementing a gene that is absent or abnormal and that is responsible for the disease.

**general paresis** Progressive dementia and generalized paralysis due to chronic inflammation of the covering and substance of the brain (meningoencephalitis). General paresis is a part of late (tertiary) syphilis and is very rare today. It occurs a decade or more after the initial infection.

**genetic** Having to do with genes and genetic information.

**genetic code** See *code, genetic*.

**genetic counseling** An educational counseling process for individuals and families who have a genetic disease or may be at risk for a disease to facilitate informed decision-making.

**genetic counselor** A health professional who has a graduate degree or specialized training in the areas of genetics and genetic counseling.

**genetic infantile agranulocytosis** See *severe congenital neutropenia*.

**genetic screening** Testing of a population to identify individuals who are at risk for a genetic disease or for transmitting a gene for a genetic disease.

**genetic transport disease** An inherited disease resulting from a malfunction in the receptors and/or carrier proteins responsible for the transport of molecules across cell membranes. Several dozen diseases are known to be due to transport

defects. An example of a transport disease is cystinuria, the most common defect known in the transport of an amino acid (namely, cystine) and a significant cause of kidney stones.

**genital** Pertaining to the external and/or internal organs of reproduction.

**genital herpes** An infection by human herpes virus that is transmitted through intimate contact with the moist mucous linings of the genitals. This contact can involve the mouth, the vagina, or the genital skin. Following infection, the virus travels to nerve roots near the spinal cord and settles there permanently. When an infected person has a herpes outbreak, the virus travels down the nerve fibers to the site of the original infection; when it reaches the skin, redness and blisters occur. Commonly called herpes.

**genital warts** Warts confined primarily to the moist skin of the genitals or around the anus. Genital warts are caused by the human papillomaviruses (HPVs), which are transmitted through sexual contact. The virus can also be transmitted from mother to baby during childbirth. Also known as condyloma acuminatum, condylomata, and venereal warts. See also *HPV*.

**genitalia** The male or female reproductive organs. The genitalia include internal and external structures. The female internal genitalia are the ovaries, Fallopian tubes, uterus, cervix, and vagina. The female external genitalia are the labia minora and majora (the vulva) and the clitoris. The male internal genitalia are the testes, epididymis, and vas deferens. The male external genitalia are the penis and scrotum.

**genitourinary** Pertaining to the genital and urinary systems.

**genome** All the genetic information possessed by any organism (for example, the human genome, the elephant genome, the mouse genome, the yeast genome, and the genome of a bacterium). Humans and many other higher animals actually have two genomes—a chromosomal genome and a mitochondrial genome—that together make up their genome.

**genome, chromosomal** All the genetic information in the chromosomes of an organism. For humans, the chromosomal genome is all the DNA contained in the normal complement of 46 chromosomes in virtually every cell in the body. Together with the mitochondrial genome, the chromosomal genome constitutes the genome of the human being. Also known as nuclear genome.

**genome, human** All the genetic information in a person. The human genome is made up of the DNA in chromosomes as well as the DNA in mitochondria.

**genome, mitochondrial** The sum of the genetic information contained in the chromosome of the mitochondrion, a structure located in the cytoplasm outside the nucleus of the cell. The mitochondrial genome is composed of mitochondrial DNA (mtDNA), a double-stranded circular molecule that contains a limited number of genes. During fertilization, mtDNA is transmitted only by the mother. Together, the mitochondrial genome and the chromosomal genome constitute the entire human genome.

**genome, nuclear** See *genome, chromosomal*.

**genomic library** A collection of clones that is made from a set of randomly generated overlapping DNA fragments and that represents the entire genome of an organism. Also known as clone bank.

**genomics** The scientific study of the genome, the complete genetic information contained within an organism. See also *genome*.

**genotype** The genetic constitution (genome) of a cell, an individual, or an organism. The genotype is distinct from the expressed features, or phenotype, of the cell, individual, or organism. The genotype of a person is that person's genetic makeup. It can pertain to all genes or to a specific gene.

**genu** The Latin word for knee, as in genu recurvatum (hyperextension of the knee), genu valgum (knock knee), and genu varum (bowleg). See *knee*.

**GERD** Gastroesophageal reflux disease.

**germ cell** Either the egg or the sperm cell; a reproductive cell. Each mature germ cell is haploid, meaning that it has a single set of 23 chromosomes containing half the usual amount of DNA and half the usual number of genes. Except for the egg and the sperm, most cells in the human body contain the entire human genome. Also known as a gamete.

**germ cell tumor** A tumor that arises from a germ cell. A germ cell tumor may arise within the gonads (in the ovary or testis). Most testicular tumors, in fact, are germ cell tumors. Germ cell tumors also may arise in extragonadal sites, reflecting the fact that germ cells travel to diverse areas of the body, such as the chest, abdomen, and brain.

**German measles** See *rubella*.

**German measles immunization** See *MMR*.

**germinoma** A rare cancer of the germ cells (the tissue that normally differentiates to become the eggs or sperm cells).

**gestalt therapy** An older psychotherapeutic concept that stresses understanding mental processes as holistic entities (gestalts) rather than as discrete steps. Gestalt therapy often uses group therapy techniques to help patients gain this type of insight. See also *group therapy*.

**gestation** The period of time from conception to birth.

**gestational diabetes** See *diabetes, gestational*.

**GI tract** See *gastrointestinal tract*.

**giant cell arteritis** See *arteritis, cranial*.

**giant cell pneumonia** See *pneumonia, giant cell*.

**giant cell tumor of bone** A tumor of bone characterized by massive destruction of the end (epiphysis) of a long bone. The site most commonly involved by this tumor is the knee, both the far end of the femur and the near end of the tibia. The term "giant cell" reflects the fact that microscopic analysis of the tumor reveals large multinucleate cells (cells with more than one nucleus). The tumor is often coated by new bony growth. It causes pain, restricts movement, and is usually malignant. Treatment is by surgery, usually followed by chemotherapy.

**giant platelet syndrome** See *Bernard-Soulier syndrome*.

**Giardia lamblia** A parasite responsible for a common form of infectious diarrhea. The parasite lives in two stages: trophozoites and cysts. Trophozoites are the active form of the parasite inside the body. Cysts represent the resting stage that enables the parasite to survive outside the body. Infection begins from swallowing the Giardia cysts. The acid in the stomach activates the cysts, which in turn release the disease-causing trophozoites. The parasites attach to the lining of the small intestine, reproduce, and are swept down the intestine in the fecal stream. Cysts form in the lower intestines and are then passed in the feces. See also *giardiasis*.

**giardiasis** A contagious form of diarrhea caused by the parasite *Giardia lamblia*. Transmission is most common by direct contact with infected feces or by eating food or drinking water contaminated by feces. *Giardia* is one of the most common intestinal parasites in the world, and the disease is most prevalent in developing countries. *Giardia* is also a major

cause of waterborne outbreaks of diarrhea in the US. It particularly affects diapered children and toddlers being toilet-trained. Symptoms include a sudden explosive, watery, foul-smelling diarrhea; excessive gas; abdominal pain; bloating; nausea; tiredness; and loss of appetite. Fever is unusual. If not treated, giardiasis can last for months or even years. The diagnosis is made by microscopic identification of the parasite in stool. Tests that detect antigens (proteins) to *Giardia* in the feces are especially useful for screening children in day-care settings, and for testing adults after treatment. Treatment may be with metronidazole (Flagyl). See also *Giardia lamblia*.

**GIFT** Gamete intrafallopian transfer.

**gigantism** **1** Extreme growth in height. Gigantism is usually associated with disorders of the pituitary gland, which secretes human growth hormone (somatotrophin) during childhood, before the bones fuse. **2** Extreme growth of specific body parts. See also *gigantism, focal*.

**gigantism, eunuchoid** Extremely tall stature due to the delayed onset of puberty that permits the continued growth of the long bones before their growing ends (epiphyses) fuse and growth stops.

**gigantism, focal** Extreme growth of specific body parts, such as one arm, the tongue, or a combination of parts, as seen in Beckwith-Wiedemann syndrome or acromegaly. Focal gigantism may occur before or after the bones fuse. If it occurs afterward, it causes disfigurement. Surgery for mass reduction can help improve function, and other treatments may be available for specific conditions.

**gigantism, pituitary** Extreme growth in height caused by oversecretion of growth hormone (somatotrophin) by the anterior pituitary gland. Other features of pituitary gigantism include thickening of the skin, enlargement of the bones, and elongation of the jaw and other areas. Pituitary gigantism may be caused by an adenoma of the pituitary gland, a benign tumor of the pituitary gland, or other causes. Treatment is usually possible with hormones, surgery, or both. See also *acromegaly*.

**Gilbert syndrome** A common but harmless genetic condition in which UDP-glucuronosyltransferase, a liver enzyme that is essential to the disposal of bilirubin, is abnormal. Mutations in the same gene cause the Crigler-Najjar syndrome, which is a more severe and dangerous form of hyperbilirubinemia (high bilirubin in the blood). Also known as hyperbilirubinemia type 1.

**gingiva** The gums.

**gingivitis** Gum disease with inflammation of the gums. The gums appear red and puffy and usually bleed during tooth-brushing or dental examination. Treatment involves improved cleaning. Antiseptic mouthwashes may also be recommended. See also *acute membranous gingivitis; gum disease*.

**GIST** Gastrointestinal stromal tumor.

**gland** A group of cells that secrete a substance for use in the body. For example, the thyroid gland.

**gland, mammary** One of the glands within the breast that secretes milk when prompted to do so by special hormones. The mammary glands become enlarged when they are engorged with milk. See also *mastitis*.

**gland, Meibomian** One of the small glands in the eyelids that make a lubricant called sebum that is discharged through tiny openings in the edges of the lids. The Meibomian glands can become inflamed, a condition termed meibomianitis or meibomitis. Chronic inflammation leads to cysts of the Meibomian glands, called chalazions. Also known as the palpebral gland, tarsal gland, and tarsoconjunctival gland. See also *cyst, Meibomian; sebum*.

**gland, palpebral** See *gland, Meibomian*.

**gland, parotid** See *parotid gland*.

**gland, prostate** A gland in the male reproductive system that is located just below the bladder. The prostate gland surrounds part of the urethra, the canal that empties the bladder. The prostate is composed of glandular tissue and bundles of smooth muscle. The prostate gland secretes a milky fluid that is discharged into the urethra at the time of ejaculation of semen and is part of semen. See also *prostate enlargement; prostatitis*.

**gland, sebaceous** One of the skin glands that empty an oily secretion called sebum into the hair follicles near the surface of the skin. Sebum helps to keep skin moist and protected. See also *cyst, sebaceous*.

**gland, sudoriferous** See *gland, sweat*.

**gland, sweat** A small tubular gland that is situated in the subcutaneous tissue within and under the skin. Sweat glands discharge sweat through tiny openings in the surface of the skin. The sweat itself is a transparent, colorless, acidic fluid that contains some fatty acids and mineral matter. Also known as sudoriferous gland.

**gland, tarsal** See *gland, Meibomian*.

**gland, thyroid** A gland that makes and stores hormones that help regulate heart rate, blood pressure, body temperature, and the conversion of food to energy (metabolism). Thyroid hormones are also essential for proper growth and development. The thyroid gland is located in the lower part of the neck, below the Adam's apple, wrapped around the windpipe (the trachea). It has the shape of a butterfly: two wings (lobes) attached to one another by a middle part. The thyroid uses iodine, a mineral found in some foods and in iodized salt, to make its hormones. The two most important thyroid hormones are thyroxine (T4) and triiodothyronine (T3). Thyroid stimulating hormone (TSH), which is produced by the pituitary gland, acts to stimulate hormone production by the thyroid gland. The thyroid gland also makes the hormone calcitonin, which is involved in calcium metabolism and stimulating bone cells to add calcium to bone. See also *calcitonin*; *hyperthyroid*; *hypothyroidism*; *thyroxine*; *triiodothyronine*.

**glandular fever** Infectious mononucleosis. See also *mononucleosis*.

**glans** **1** The glans penis, the rounded head of the penis. **2** The rounded head of the clitoris.

**glans and foreskin, inflammation of the** See *balanoposthitis*.

**glans penis, inflammation of the** See *balanitis*.

**glaucoma** A common eye condition in which the fluid pressure inside the eye rises because of slowed fluid drainage from the eye. If untreated, glaucoma may damage the optic nerve and other parts of the eye, causing the loss of vision or even blindness. There are no symptoms in the early stages of glaucoma. As the disease progresses the field of vision narrows, and blindness may eventually result. There are several types of glaucoma, including open-angle glaucoma and acute angle-closure glaucoma. Open-angle glaucoma is the common adult-onset type of glaucoma. Acute angle-closure glaucoma is a less common form of glaucoma, but one that can rapidly impair vision. Glaucoma treatment may include medication, surgery, or laser surgery.

**glaucoma, angle-closure** See *angle-closure glaucoma*.

**gliadin** A protein found in wheat and some other grains that is part of wheat gluten. People with celiac sprue, Crohn's disease, and related conditions may be sensitive to gliadin in the diet. See also *celiac sprue*; *Crohn's disease*; *dermatitis herpetiformis*.

**glial cell** A supportive cell in the central nervous system. Unlike neurons, glial cells do not conduct electrical impulses. The glial cells surround neurons and provide support for and insulation between them. Glial cells are the most abundant cell types in the central nervous system. Types of glial cells include oligodendrocytes, astrocytes, ependymal cells, Schwann cells, microglia, and satellite cells.

**glioblastoma multiforme** A highly malignant, rapidly growing type of brain tumor that arises from glial cells in the brain. Early symptoms may include sleepiness, headache, and vomiting. Also called a grade IV astrocytoma. Treatment can involve surgery and radiation treatment.

**glioma** A brain tumor that begins in a glial cell in the brain or spinal cord. Malignant gliomas are the most common primary tumors of the central nervous system. They are often resistant to treatment and carry a poor prognosis. Astrocytomas are the most common glial tumors. See also *glioma, optic*.

**glioma, optic** A rare, most commonly benign tumor on the optic nerve or the optic chiasm (the crossing of the two optic nerves). Optic gliomas cause pressure and destruction of normal optic nerve tissue. They are most common in children and teens. Optic gliomas are strongly associated with neurofibromatosis (NF1).

**gliosis** A process leading to scars in the central nervous system that involves the production of a dense fibrous network of glial cells (supporting cells) in areas of damage. Gliosis is a prominent feature of many diseases of the central nervous system, including multiple sclerosis and stroke. After a stroke, nerve cells die and are replaced by areas of gliosis. See also *glial cell*.

**globus** **1** A globe or sphere, used in various contexts in medicine. **2** The sensation of having a lump in the throat when nothing is really there. Also known as globus hystericus.

**globus hystericus** See *globus*.

**globus major** The head of the epididymis, the structure just behind the testis.

**globus minor** The tail of the epididymis, a cord-like structure just behind the testis.

**globus pallidus** A comparatively pale-looking, spherical area in the brain. The globus pallidus is specifically part of the lentiform nucleus, which in turn is part of the striate body, a component of the basal ganglia. Also called pale globe, palladum, and paleostriatum.



**glossitis** Inflammation of the tongue. There are many possible causes of glossitis, including vitamin B12 deficiency, Sjogren's syndrome, and side effects of medications or chemotherapy.

**glossolalia** **1** A condition in which a person makes nonsensical sounds that mimic the rhythms and inflections of actual speech. Glossolalia may be seen in deep sleep or in trance states. **2** The scientific term for the religious phenomenon known as "speaking in tongues."

**glossopharyngeal nerve** The ninth cranial nerve, which supplies the tongue, throat, and one of the salivary glands (the parotid gland). Problems with the glossopharyngeal nerve result in difficulties with tasting and swallowing.

**glottis** The middle part of the larynx, where the vocal cords are located.

**glucocerebrosidase deficiency** An enzyme deficiency that causes Gaucher disease. See also *Gaucher disease*.

**glucocorticoid** See *corticosteroid*.

**glucometer** A portable device used to check blood glucose concentrations. After pricking the skin with a lancet, a drop of blood is placed on a test strip in the glucometer. The meter analyzes the blood glucose concentration and displays the result on the meter's digital display. See also *glucose*.

**glucosamine** A molecule derived from the sugar glucose by the addition of an amino group. Glucosamine is a component of a number of structures, including the blood group substances and cartilage. Glucosamine is currently in use as a nutritional supplement (often in combination with chondroitin) and is touted as a remedy for arthritic symptoms.

**glucose** The simple sugar that is the chief source of energy. Glucose is found in the blood and is the main sugar that the body manufactures. The body makes glucose from all three elements of food—protein, fats, and carbohydrates—but the largest amount of glucose derives from carbohydrates. Glucose serves as the major source of energy for living cells. However, cells cannot use glucose without the help of insulin. Also known as dextrose.

**glucose, fasting blood** See *fasting blood glucose*.

**glucose tolerance test** A test of carbohydrate metabolism that is used primarily in the diagnosis of type II diabetes and gestational diabetes. Abbreviated

GTT. After the patient has fasted overnight, but before breakfast, a specific amount of glucose is given by mouth, and the blood levels of this sugar are measured every 30–60 minutes. The GTT result depends on a number of factors, including the ability of the intestines to absorb glucose, the power of the liver to take up and store glucose, the capacity of the pancreas to produce insulin, and the amount of "active" insulin.

**glucose-6-phosphate dehydrogenase** See *G6PD*.

**glucosylceramidosis** See *Gaucher disease*.

**glucuronosyltransferase, UDP-** A liver enzyme that is essential to the disposal of bilirubin. An abnormality of UDP-glucuronosyltransferase results in a condition called Gilbert syndrome. See also *Gilbert syndrome*.

**gluteal** Pertaining to the buttocks region, which is formed by the gluteus maximus, gluteus medius, and gluteus minimus muscles.

**gluten** A protein that is found in wheat and related grains. Gluten can be found in a large variety of processed foods, including soups, salad dressings, and natural flavorings. Unidentified starches, hydrolyzed proteins, and binders and fillers used in medications or vitamins can be unsuspected sources of gluten. People with celiac sprue, Crohn's disease, or related disorders may need to avoid gluten products. See also *gliadin*.

**gluten enteropathy** See *celiac sprue*.

**glycemic index** An indicator of the rapidity and extent to which carbohydrate-containing foods raise the blood glucose levels in the two hours after consumption. Foods containing carbohydrates that break down most quickly during digestion have the highest glycemic index. Also called the dietary glycemic index. See also *glucose*.

**glycogen storage disease** One of the multiple inherited disorders of metabolism that interfere with glycogen synthesis or breakdown, leading to the storage of carbohydrates as glycogen in the body. The conditions may affect the liver or the skeletal (striated) muscle, both primary glycogen storage sites. Symptoms and signs depend upon the exact type but can include enlargement of the liver (hepatomegaly), hypoglycemia, and muscle weakness or cramps eventually accompanied by muscle wasting. McArdle disease (glycogen storage disease type V) is the most common type of glycogen storage disease. McArdle disease is an autosomal recessive disorder caused by mutations in the gene that

encodes myophosphorylase, an enzyme that is essential for glycogenolysis. Other types of glycogen storage disease include von Gierke disease and Pompe disease.

**glycosaminoglycan** A negatively charged chain of polysaccharides (modified sugars) that is composed of repeating disaccharide units. Abbreviated GAG. Important GAGs in the human body include chondroitin sulfate, dermatan sulfate, heparan sulfate, heparin, hyaluronate, and keratan sulfate. GAGs are involved as lubricants and components of bone, cartilage, blood vessels, and certain types of cells. Also known as mucopolysaccharides.

**GM1-gangliosidosis** A rare genetic lipid storage disorder that is similar to Hurler syndrome and Tay-Sachs disease but that affects both the brain and the viscera. Symptoms include skeletal deformities and severe effects on the brain and organs. The mutation that is responsible for the disease is located on chromosome 3. There is no treatment for GM1-gangliosidosis. Also known as familial neurovisceral lipidosis and Landing disease. See also *Hurler syndrome*; *sphingolipidosis*; *Tay-Sachs disease*.

**GM2-gangliosidosis** One of a group of genetic lipid storage disorders that affect the brain. The main types of GM2 gangliosidoses are Tay-Sachs disease and its variants (due to hexosaminidase A deficiency) and Sandhoff disease and its variants (due to hexosaminidase B deficiency). See also *Sandhoff disease*; *Tay-Sachs disease*.

**goiter** A noncancerous enlargement of the thyroid gland. With a goiter, the levels of thyroid hormones may be normal (euthyroid), elevated (hyperthyroidism), or decreased (hypothyroidism).

**goiter, diffuse toxic** See *Graves disease*.

**goiter, exophthalmic** See *Graves disease*.

**goiter, iodide** A goiter caused by prolonged intake of too much iodine that results in abnormally low thyroid activity (hypothyroidism). Certain foods and medications contain large amounts of iodine. Examples include seaweed; iodine-rich expectorants (Brand names: SSKI and Lugol solution) used in the treatment of cough, asthma, and chronic pulmonary disease; and amiodarone (brand name: Cardorone), an iodine-rich medication used in the control of abnormal heart rhythms.

**goiter, toxic multinodular** A condition in which the thyroid gland contains multiple lumps (nodules) that are overactive and that produce excess thyroid hormones. Also known as Parry disease and Plummer disease.

**goiter-deafness syndrome** See *Pendred syndrome*.

**golfer's cramp** A dystonia that affects the muscles of the hand and sometimes the forearm and that occurs only when a person is playing golf. Similar focal dystonias have also been called typist's cramp, pianist's cramp, musician's cramp, and writer's cramp. See also *dystonia*; *dystonia, focal*.

**golfer's elbow** See *elbow*; *golfer's*.

**gonad** A reproductive gland that produces germ cells (gametes): an ovary or testis.

**gonad, female** See *ovary*.

**gonad, indifferent** A gonad in an embryo that has not differentiated into a definitive testis or ovary. An indifferent gonad becomes a testis if the embryo has a Y chromosome, but if the embryo has no Y chromosome, the indifferent gonad becomes an ovary. The absence of a Y chromosome permits the indifferent gonad to become an ovary, but both X chromosomes are needed for the ovary to function normally.

**gonad, male** See *testis*.

**gonadotropin** One of the hormones that are secreted by the pituitary gland and that affect the function of the male or female gonads. See also *follicle-stimulating hormone*; *human chorionic gonadotropin*; *luteinizing hormone*.

**gonadotropin, human chorionic** See *human chorionic gonadotropin*.

**gonorrhea** A bacterial infection that is transmitted by sexual contact. Gonorrhea is one of the oldest known sexually transmitted diseases (STDs), and it is caused by the *Neisseria gonorrhoeae* bacteria. Men with gonorrhea may have a yellowish discharge from the penis accompanied by itching and burning. More than half of women with gonorrhea do not have any symptoms. If symptoms occur, they may include burning or frequent urination, yellowish vaginal discharge, redness and swelling of the genitals, and a burning or itching of the vaginal area. If untreated, gonorrhea can lead to severe pelvic infections and even sterility. Complications in later life can include inflammation of the heart valves, arthritis, and eye infections. Gonorrhea can also cause eye infections in babies born of infected mothers. Gonorrhea is treated with antibiotics.

**Goodpasture syndrome** An autoimmune disease characterized by a combination of lung and kidney disease. Hallmarks of the disease are pulmonary hemorrhage (bleeding in the lungs) and

glomerulonephritis (inflammation of the glomerulus) due to severe inflammation in the basement membranes of the alveolus of the lung and the glomerulus in the kidney, with the formation of antibodies to components of the basement membrane at both sites. Symptoms include cough with bloody sputum, bloody urine, decreased urine output, fatigue (weakness), and weight loss. Hypertension and swelling (edema) are also common findings on physical examination. The syndrome is also referred to as anti-glomerular basement membrane antibody disease.

**goose bumps** A temporary local change in the skin that starts with a stimulus, such as cold or fear. That stimulus causes a nerve discharge from the sympathetic nervous system, which is part of the autonomic nervous system. The nerve discharge causes contraction of the hair erector muscle (arrectores pilorum), elevating the hair follicles above the rest of the skin. Also called *cutis anserina*, *goose flesh*, and *horripilation*.

**goose flesh** See *goose bumps*.

**Gottron sign** A scaly, patchy redness over the knuckles that is seen in patients with dermatomyositis, an inflammatory muscle disorder. See also *polymyositis*.

**gout** A condition that is characterized by abnormally elevated levels of uric acid in the blood, recurring attacks of joint inflammation (arthritis), deposits of hard lumps of uric acid in and around the joints. It is sometimes associated with decreased kidney function and kidney stones. Uric acid is a breakdown product of purines, which are part of many foods we eat. The tendency to develop gout and elevated blood levels of uric acid (hyperuricemia) is often inherited, and it can be promoted by obesity, weight gain, alcohol intake, high blood pressure, abnormal kidney function, and certain drugs. The most reliable diagnostic test for gout is the identification of crystals in joints, body fluids, and tissues. The treatment of an attack of gouty arthritis includes taking measures to reduce inflammation such as ice applications, resting the inflamed joint, and anti-inflammatory medications. See also *gout*, *tophaceous*; *gouty arthritis*; *hyperuricemia*.

**gout, tophaceous** A form of chronic gout that is characterized by the deposit of nodular masses of uric acid crystals (tophi) in different soft tissue areas of the body. Even though tophi are most commonly found as hard nodules around the fingers, at the tips of the elbows, and around the big toe, tophi nodules can appear anywhere in the body. See also *gout*.

**gouty arthritis** An attack of joint inflammation that is due to deposits of uric acid crystals in the joint fluid (synovial fluid) and joint lining (synovial lining). Gouty arthritis attacks can be precipitated by dehydration, injury, fever, heavy eating, heavy drinking of alcohol, and recent surgery. Intense joint inflammation occurs when white blood cells engulf the uric acid crystals, causing pain, heat, and redness of the joint tissues. The term gout is commonly used to refer to these painful arthritis attacks, but gouty arthritis is only one manifestation of gout. See also *gout*.

**Gower syndrome** See *syncope, situational*.

**graft** Healthy skin, bone, kidney, liver, or other tissue that is taken from one part of the body to replace diseased or injured tissue removed from another part of the body. For example, skin grafts can be used to cover areas of skin that have been burned.

**graft-versus-host disease** A complication of bone marrow transplants in which the donor bone marrow attacks the host's organs and tissues. Abbreviated GVHD. GVHD is seen in cases where the blood marrow donor is unrelated to the patient or when the donor is related to the patient, but is not a perfect match. There are two forms of GVHD: acute GVHD and chronic GVHD. Both types can vary in the severity of the symptoms. Acute GVHD typically occurs within the first 3 months after a transplant and can affect the skin, liver, stomach, and/or intestines. Chronic GVHD typically occurs 2 to 3 months after the transplant and causes symptoms similar to those of autoimmune disorders such as lupus and scleroderma. Patients may develop a skin rash, hair loss, dry eyes and mouth, liver damage, and almost any organ can be affected by chronic GVHD. Preventive measures include immunosuppressive drugs such as cyclosporine and methotrexate as well as techniques to deplete the donor marrow of the T cells that cause GVHD. Severe GVHD is usually treated with steroids and sometimes a drug called antithymocyte globulin.

**grand mal seizure** See *seizure, tonic-clonic*.

**granular cell tumor** A typically benign, uncommon tumor characterized by the presence of cells with a striking granularity of the cytoplasm when viewed under the microscope. The tumors are derived from neural cells, and the granularity of the cytoplasm is due to the accumulation of secondary lysosomes. Granular cell tumors are generally slow-growing, solitary, painless nodules that can occur anywhere in the body. Malignant granular cell tumors occur rarely.

**granulation** That part of the healing process in which lumpy, pink tissue containing new connective tissue and capillaries forms around the edges of a wound. Granulation of a wound is normal and desirable.

**granulocyte** A type of white blood cell that is filled with microscopic granules, little sacs containing enzymes that digest microorganisms. Granulocytes are part of the innate immune system, and they have somewhat nonspecific, broad-based activity. They do not respond exclusively to specific antigens, as do B-cells and T-cells. Neutrophils, eosinophils, and basophils are all types of granulocytes, and their names are derived from the staining features of their granules in the laboratory, a naming scheme that dates back to a time when certain structures could be identified in cells by histochemistry, but the functions of these intracellular structures were still not known.

**granulocytopenia** A marked decrease in the number of granulocytes that results in frequent chronic bacterial infections of the skin, lungs, throat, and other tissues. Granulocytopenia can be inherited, or it can be acquired. For example, it may be acquired as an aspect of leukemia. Granulocytopenia can more specifically be neutropenia (shortage of neutrophils), eosinopenia (shortage of eosinophils), and/or basopenia (shortage of basophils). The term neutropenia is sometimes used interchangeably with granulocytopenia. See also *agranulocytosis*; *agranulocytosis, infantile genetic*; *neutropenia*; *severe congenital neutropenia*.

**granulocytosis** An elevated number of granulocytes in the peripheral blood. The term is often used to refer to an increase in the number of neutrophils, the predominant type of granulocyte. Granulocytosis may be a sign of numerous abnormal conditions, including infection or cancer. See also *granulocyte*.

**granuloma** One of several forms of localized, nodular inflammation found in tissues. Granulomas have a typical pattern when examined under a microscope. They can be caused by a variety of biologic, chemical, and physical irritants of tissue. See also *granuloma, calcified*; *granuloma, fishbowl*.

**granuloma, calcified** A granuloma that contains calcium deposits. Because it usually takes time for calcium to be deposited in a granuloma, a calcified granuloma is generally assumed to be an old granuloma.

**granuloma, fishbowl** Localized nodular skin inflammation (small, reddish, raised areas of skin) that is caused by the bacterium *Mycobacterium*

*marinum* (*M. marinum*). Fishbowl granuloma is typically acquired by occupational or recreational exposure to salt or fresh water; often it is the result of scratches or scrapes of the skin during the care of aquariums. The diagnosis is confirmed through a culture of tissue specimens that yield *M. marinum*. The infection can be treated with a variety of antibiotics. Also known as swimming pool granuloma.

**granuloma, swimming pool** See *granuloma, fishbowl*.

**granuloma annulare** A benign, chronic skin condition characterized by raised, reddish bumps arranged in a circular or ring pattern. Usually, there are no other symptoms. Granuloma annulare is most common in children, predominantly girls. Its cause is unknown. Granuloma annulare typically disappears on its own within several years. Treatment is generally unnecessary except for cosmetic reasons.

**granuloma tropicum** See *yaws*.

**granulomatosis, allergic** See *Churg-Strauss syndrome*.

**granulomatosis, Wegener** An inflammatory disease of small arteries and veins (vasculitis) that can involve any organ but classically involves vessels supplying the tissues of the lungs, nasal passages (sinuses), and kidneys. Symptoms include fatigue, weight loss, fever, shortness of breath, bloody sputum, joint pains, and sinus inflammation, sometimes with nasal ulcerations and bloody nasal discharge. Wegener granulomatosis most commonly affects young or middle-aged adults. The diagnosis of Wegener granulomatosis is confirmed by finding evidence of vasculitis and granulomas on biopsy of tissue that is inflamed. Treatment is directed toward stopping the inflammation process by suppressing the immune system.

**granulomatous colitis** See *colitis, Crohn's*.

**granulosa cell tumor** A tumor belonging to the sex cord-stroma group of tumors of the ovary, sometimes referred to as granulosa-theca cell tumors. Abbreviated GCT. GCTs commonly produce estrogen, and the accompanying symptoms of excess estrogen are often the reason for early diagnosis. Adult GCTs make up the majority of GCTs and usually occur in postmenopausal women. Most juvenile GCTs develop in individuals younger than 30 years and tend to recur within the first 3 years. Treatment of GCTs involves surgical removal, and the prognosis is generally good.



**Graves disease** An autoimmune disease that produces general overactivity (toxicity) of the thyroid gland, which becomes enlarged into a goiter. Graves disease is the most common disease that causes an excess of thyroid hormone (hyperthyroidism). Grave's disease is frequently associated with protrusion of the eyes (ophthalmopathy). Dermopathy is a rare, painless, reddish lumpy skin rash that occurs on the front of the leg in some patients. Graves disease can be diagnosed via a typical thyroid scan (which shows diffuse, increased uptake), or by testing the blood for thyroid-stimulating immunoglobulin (TSI) and finding abnormally high levels. Treatment includes antithyroid medications, removal of thyroid tissue via surgery (subtotal thyroidectomy), and radioiodine (RAI). Also known as diffuse toxic goiter.

**gravid** Pregnant.

**gray matter** The cortex of the brain, which contains nerve cell bodies. The gray matter is so named because it is darker than the white matter, the part of the brain that contains myelinated nerve fibers.

**Gray's Anatomy** A book that was originally titled *Anatomy Descriptive and Surgical*, by Henry Gray, that appeared in 1858. Known as *Gray's Anatomy*.

**Great Plague** The typhus outbreak that swept London in 1665. See also *bubonic plague*; *typhus, epidemic*.

**great saphenous vein** The larger of the two saphenous veins, the principal veins that run up the leg near the surface. The great saphenous vein goes from the foot all the way up to the saphenous opening, an oval aperture in the broad fascia of the thigh. The vein then passes through this fibrous membrane. Also known as large saphenous vein.

**green tea** A tea brewed from fresh leaves from the *Camellia sinensis* plant used in traditional Chinese and Indian medicine. Green tea contains a high concentration of powerful antioxidants called polyphenols. Laboratory studies suggest that green tea may help protect against or slow the growth of certain cancers, but studies in humans have shown mixed results. Some studies have also shown that green tea may help lower blood cholesterol levels and have a protective effect against other diseases ranging from diabetes to liver disease. Extracts of green tea leaves are also available as capsules and liquid preparations. The scientific or medical benefits of green tea have not been firmly established, and green tea may have harmful interactions with certain prescription medications.

**greenstick fracture** See *fracture, greenstick*.

**groin** The area where the thigh meets the hip.

**gross anatomy** See *anatomy, gross*.

**gross hematuria** See *hematuria, gross*.

**Group A strep** See *streptococcus pyogenes*.

**Group B strep** See *streptococcus, group B*.

**group therapy** **1** A type of psychiatric care in which several patients meet with one or more therapists at the same time. Patients form a support group for each other, and they receive expert care and advice. The group therapy model is particularly appropriate for psychiatric illnesses that are support intensive, such as anxiety disorders, but is not well suited for treatment of some other psychiatric disorders, such as schizophrenia. **2** A type of psychoanalysis in which patients analyze each other, with the assistance of one or more psychotherapists, as in an "encounter group." See also *gestalt therapy*.

**growing pains** Mysterious pains in growing children, usually in the legs, likely occurring as a result of overuse. Growing pains are typically somewhat diffuse, and they are not associated with physical changes of the area, such as swelling or redness. The pains are usually easily relieved by massage, acetaminophen, or rest. If pain persists for over a week or there are physical changes, the child should be seen by a physician.

**growth chart** A chart used to evaluate the progress of a child's growth and development using parameters of physical development, typically height and weight. Growth charts are developed from information obtained by measuring and weighing thousands of children and determining the averages for weight and height for each age and sex within a given population.

**growth factor** Any one of a number of naturally-occurring chemicals in the body that stimulate cells to divide and multiply. Growth factors are necessary for the control of processes such as embryonic development, wound healing, and tissue growth. Growth factors may also influence the growth rate of some tumors. Growth factors stimulate cell division by attaching to specific receptor molecules on the surface of cells.

**gtt.** Abbreviation for drops, as of a liquid medication. See also Appendix A, "Prescription Abbreviations."



**guanine** One of the five nitrogenous bases found in nucleic acids; guanine is one of the purine bases and is a member of the G-C (guanine-cytosine) pair of bases in DNA.

**guarding, abdominal** See *abdominal guarding*.

**guided imagery** An alternative medicine technique in which patients use their imagination to visualize improved health, or to “attack” a disease, such as a tumor. Guided imagery may be utilized as complementary medicine in some oncology centers and other medical facilities.

**Guillain-Barre syndrome** A rare disorder characterized by a misdirected immune response against the peripheral nervous system associated with progressive symmetrical paralysis and loss of reflexes, usually beginning in the legs. In most cases of Guillain-Barre syndrome, the patient has a complete or nearly complete recovery. Guillain-Barre syndrome is not associated with fever. It usually occurs after a respiratory infection or may follow other triggering infections or events, including vaccinations. Treatment includes plasmapheresis, intravenous gamma globulin (IVIG) and supportive care. See also *demyelination*; *Landry ascending paralysis*.

**gum disease** Inflammation of the soft tissue (gingiva) and abnormal loss of the bone surrounding the teeth. Gum disease is caused by toxins secreted by bacteria in the plaque that accumulates over time along the gum line. Plaque is a mixture of food, saliva, and bacteria. Early symptoms of gum disease include gum bleeding, and pain is a symptom of more advanced gum disease, as the loss of bone around the teeth leads to the formation of gum pockets. Bacteria in these pockets cause gum infection, swelling, pain, and further bone destruction. See also *acute membranous gingivitis*; *gingivitis*.

**gustatory sweating** See *sweating, gustatory*.

**Guthrie test** A blood test to screen for phenylketonuria (PKU) and the original impetus for the screening of newborns for metabolic diseases. See *phenylalanine*; *phenylalanine hydroxylase deficiency*; *PKU*; *PKU, maternal*.

**gutta percha** A natural material derived from tree sap that can be formed to various shapes under heat. Because gutta percha does not cause allergic reactions, it is often used to pack the empty spaces left when a root canal is performed.

**GVHD** Graft-versus-host disease.

**gyn** Short for gynecology and gynecologist.

**gynecoid** Like a woman; womanly, female.

**gynecoid obesity** Overweight with a fat distribution generally characteristic of a woman, with the largest accumulation around the hips.

**gynecoid pelvis** A pelvis that is characteristic of a woman; see *female pelvis*.

**gynecologic oncologist** A physician who specializes in treating cancers of the female reproductive organs.

**gynecologist** A physician who specializes in treating diseases of the female reproductive organs and providing well-woman health care that focuses primarily on the reproductive organs.

**gynecology** The branch of medicine that is particularly concerned with the health of the female organs of reproduction.

**gynecomastia** Excessive development of the male breasts. Temporary enlargement of the breasts is not unusual or abnormal in boys during adolescence or during recovery from malnutrition. Gynecomastia may also be a sign of an abnormal condition, as, for example, in Klinefelter syndrome.