

# B

**β** (bā'tā) Beta, second letter of the Greek alphabet. SEE: *beta*.

**β-glucan** (bā'tā-gloo'kän) Any one of a class of complex carbohydrate nutrients, derived from yeast, with immunostimulating and antimicrobial activity in laboratory experiments. They are promoted as dietary supplements.

**β-glucuronidase** (bā'tā-gloo'kü-rön'ī-dās) An enzyme found in lysosomes. It is involved in the breakdown of glycosaminoglycan.

**B 1.** Symbol for the element boron. **2.** *Bacillus*; *Balantidium*; *barometric*; *base*; *bath*; *behavior*; *buccal*.

**Ba** Symbol for the element barium.

**BAAM** *Beck airway airflow monitor*.

**Babcock's operation** (bāb'kōks) [William Wayne Babcock, U.S. surgeon, 1872–1963] Extirpation of the saphenous vein; a treatment for varicose veins.

**Babesia** (bā-bē'zē-ä) [Victor Babès] Genus of protozoa of the family Babesiidae that causes babesiosis, a febrile illness that causes symptoms similar to those found in influenza, accompanied by hemolytic anemia. *Babesia microti* is the principal human pathogen, transmitted to humans by tick bite. Other hosts include cattle, sheep, horses, and dogs.

**B. bigemina** The causative organism of Texas fever in cattle.

**B. bovis** The causative organism of hemoglobinuria and jaundice (red-water fever) in cattle.

**babesiosis** (bā-bē-zē-ō'sīs) A rare, usually self-limited disease caused by an intraerythrocytic protozoan, *Babesia microti*, and perhaps other *Babesia* species. The disease is transmitted by deer ticks, and occurs most often in New England in the U.S. It has also been reported elsewhere. Severe forms are most likely to occur in elderly people and in people without functioning spleens. Rarely, the infection is transmitted by blood transfusion from an asymptomatic carrier. The incubation period may last from weeks to months.

**SYMPTOMS:** Symptoms include fever, chills, headache, sweats, myalgia, arthralgia, and nausea and vomiting.

**DIAGNOSIS:** The diagnosis is suggested when a patient with an appropriate outdoor exposure presents with typical symptoms, plus hemolytic anemia. Thick and thin blood smears and other laboratory techniques (e.g., the polymerase chain reaction) may be used for definitive confirmation.

**PREVENTION:** The skin should be

protected from tick exposure. Splenic persons should avoid endemic areas. After possible exposure, removal of ticks or their nymphs may prevent infection.

**TREATMENT:** Drugs used include atovaquone and quinine plus clindamycin or azithromycin, both given orally. Splenic patients may require exchange transfusion.

**Babinski's reflex** (bā-bin'skēz) [Joseph Babinski, Fr. neurologist, 1857–1932] Dorsiflexion of the great toe when the sole of the foot is stimulated. Normally, when the lateral aspect of the sole of the relaxed foot is stroked, the great toe flexes. If the toe extends instead of flexes and the outer toes spread out, Babinski's reflex is present. It is a normal reflex in infants under the age of 6 months but indicates a lesion of the pyramidal (corticospinal) tract in older individuals. Care must be taken to avoid interpreting voluntary extension of the toe as Babinski's reflex.

**Babinski's sign** Loss of or diminished Achilles tendon reflex in sciatica.

**baby** [ME. *babie*] Infant.

**battered b.** A baby or child whose body provides evidence of physical abuse such as bruises, cuts, scars, fractures, or abdominal visceral injuries that have occurred at various times in the past. SEE: *battered child syndrome*.

**blue b.** An infant born with cyanosis, which may be caused by anything that prevents proper oxygenation of the blood, esp. a congenital anomaly that permits blood to go directly from the right to the left side of the heart without going through the lungs. The most common cyanotic congenital heart defects are tetralogy of Fallot, transposition of the great vessels, and hypoplastic left heart syndrome.

**boarder b.** An infant kept in a hospital nursery until status permits discharge to family care or transfer to another agency for maintenance or adoption.

**collodion b.** A newborn covered with a collodion-like layer of desquamated skin; may be due to ichthyosis vulgaris.

**baby bottle syndrome** Decay of primary teeth in older infants and toddlers related to taking a bottle of punch or other sweet liquid to bed and retaining the liquid. This creates massive caries. SYN: *bottle mouth caries*; *nursing-bottle syndrome*.

**Baby Doe regulations** Federal, state, and hospital policies insuring that handicapped infants will receive nourish-

ment, warmth, and life-saving treatment without regard to the quality of life.

**baby lung hypothesis** In neonatal critical care medicine, the loss of functioning alveoli in acute lung injury or the acute respiratory distress syndrome. In both of these diseases large sections of the lungs lose their compliance, collapse, or fill with fluids, leaving only a remnant of the lung available for ventilation. Ventilatory strategies designed for fully operational, adult-sized lungs may provide too much air at too high a volume and pressure to the limited lung tissue that can be potentially recruited. This hypothesis suggests that overtaxing an infant-sized lung with adult ventilation can result in further injury to an already damaged lung.

**BAC** *blood alcohol concentration.*

**bacciform** (bāk'sī-form) [f + *forma*, form] Berry-shaped; coccal.

**Bach flower therapy** [Edward Bach, British physician, 1886–1936] A form of aromatherapy in which the essences of wildflowers are used to promote wellness.

**Bacillaceae** (bās-ī-lā'sē-ē) A family of rod-shaped, usually gram-positive bacteria of the order Eubacteriales that produce endospores and are commonly found in soil. Genera of this family include *Bacillus* and *Clostridium*.

**bacillar, bacillary** (bās'īl-ār, bās'īl-ār-ē) 1. Pert. to or caused by bacilli. 2. Rod-like.

**bacille Calmette-Guérin** (bā-sēl') An organism of the strain *Mycobacterium bovis*, weakened (attenuated) by long-term cultivation on bile-glycerol-potato medium. SEE: *BCG vaccine.*

**bacillemia** (bās-ī-lē'mē-ā) [L. *bacillus*, rod, + Gr. *haima*, blood] The presence of rod-shaped bacteria in the blood.

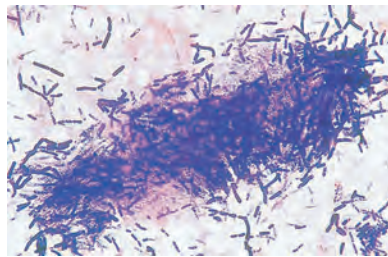
**bacilli** (bā-sil'ī) Pl. of bacillus.

**bacilliform** (bā-sil'ī-form) [f + *forma*, form] Resembling a bacillus in shape.

**bacillosis** (bās'ī-lō'sīs) [f + Gr. *osis*, infection] Infection by rod-shaped bacteria.

**Bacillus** (bā-sil'ūs) [L.] A genus of gram-positive, spore-forming, often aerobic, rod-shaped bacteria in the family Bacillaceae; they grow singly or in chains. Most inhabit soil and water. Some, such as *Bacillus anthracis* and *Bacillus cereus*, cause serious human diseases. SEE: *illus.*; *bacterium.*

**B. cereus** A gram-positive spore-forming food pathogen that causes two types of food poisoning syndromes: emesis and diarrhea. Type 1, the emetic syndrome, is caused by the production of a heat-stable cereulide (a small, heat-stable dodecadepsipeptide), which can damage the host cell mitochondria and in rare cases cause liver damage. Foods containing large amounts of rice are



### BACILLUS

Gram stain of *Bacillus* species (spores visible in upper left quadrant)

more likely to cause the type 1 syndrome. The emetic toxin may not be destroyed by brief cooking. Type 2, the diarrheal syndrome, is caused by production of the heat-labile enterotoxins hemolysin BL and nonhemolytic enterotoxin. These enterotoxins stimulate the adenylate cyclase-cyclic adenosine monophosphate system in intestinal epithelial cells, leading to profuse watery diarrhea. Foods commonly associated with type 2 syndrome are meat and vegetables.

**bacillus pl. bacilli** 1. Any rod-shaped microorganism. 2. A rod-shaped microorganism belonging to the class Schizomycetes. SEE: *Bacillus*; *bacterium.*

**acid-fast b.** ABBR: AFB. A bacillus not readily decolorized by acids or other means when stained. *Mycobacterium tuberculosis* is one example of an acid-fast bacillus.

**Bacillus species** ABBR: *Bacillus* spp. All of the species of *Bacillus*.

**Bacillus stearothermophilus** A spore-forming bacillus that may survive disinfection or sterilization. Its presence on a clinical instrument or surface is used as an indicator of inadequate sterility.

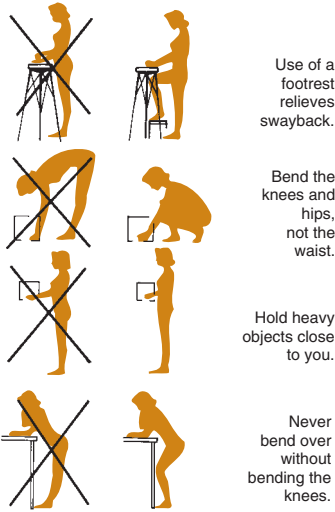
**bacitracin** (bās-ī-trā'sin) An antibiotic obtained from a strain of *Bacillus subtilis*. Its antibacterial actions are similar to those of penicillin. It treats gram-positive cocci and bacilli and some gram-negative organisms. Because bacitracin is toxic when used parenterally, it is usually applied topically in ointment form.

**back** 1. The dorsum. 2. The posterior region of the trunk from neck to pelvis.

Health care workers often strain their backs; therefore, it is important to learn basic concepts in back care. SEE: *illus.*; *back pain.*

**backache** (bāk'āk") [f + "] Back pain.

**back board** A stiff board on which a spine-injured patient is secured so that the patient's back, neck, and head are maintained in-line during transport to the hospital. This device should be used with a head immobilization device and



Use of a footrest relieves swayback.

Bend the knees and hips, not the waist.

Hold heavy objects close to you.

Never bend over without bending the knees.

#### HOW TO STAY ON YOUR FEET WITHOUT TIRING YOUR BACK

a cervical collar. SYN: *spine board*. SEE: *Philadelphia collar* for illus.

**long b.b.** A flat or slightly concave board approx. 6 ft long and 2 ft wide, often made of laminated wood or plastic, that is used to immobilize a patient with a mechanism for a potential neck or back injury. This device is used in combination with a cervical/head immobilization device or blanket roll and a rigid extrication collar.

**short b.b.** A flat board, approx. 3 ft long and 2 ft wide, often made of laminated wood or plastic that is used to immobilize a seated patient with a mechanism for a potential neck or back injury. This device is used in combination with a cervical/head immobilization device or blanket roll and a rigid extrication collar. The short backboard is used to remove a stable injured patient from a vehicle onto a long backboard. Most ambulance services have moved to a more modern vest-style device such as a KED.

**backbone** (băk'bôn") The vertebral column; spinal column. SEE: *vertebra*.

**backcross** (băk'krôs") In genetics the pairing of a first filial generation hybrid with an organism whose genotype is identical to the parental strain.

**backflow** Abnormal backward flow of fluids.

**background level** The concentration of a substance in the air, soil, or water; independent of or prior to any artificial contamination of the environment.

**back pain** SEE: under *pain*.

**backrest** An adjustable device that supports the back in bed.

**backscatter** (băk'skăt'ër) In radiation

physics, the deflection of ionizing radiation back more than 90° from interactions with intervening matter.

**back school** A term for educational programs, often sponsored by industry, that emphasize body mechanics and ergonomic principles with the goal of preventing initial or recurring injuries to the spine.

**backup** Anything that serves to replace a function or system that fails.

**backwash** A reverse flow; reflux.

**backtam** (băk'tăm") [Fm *b(eta)* + (*l*)*actam(ase)*] A suffix used to designate an antibiotic that inhibits bacterial beta lactamase.

**bacteremia** (băk-tēr-ē'mē-ă) [Gr. *bakterion*, rod, + *haima*, blood] Bacteria in the blood. SEE: *sepsis*.

**bacteri-** SEE: *bacterio-*.

**bacteria** (băk-tēr'rē-ă) [Gr. *bakterion*, rod] Pl. of bacterium.

**heterotrophic b.** Bacteria that rely on organic compounds (compounds containing carbon molecules) to grow and reproduce. **bacterial** (-ăl), *adj.*

**bacterial interference** The limitation of the growth of one bacterium by another, e.g., in a culture or in a susceptible organism.

**bacterial plasmid** SEE: *plasmid*.

**bacterial synergism** The interaction of indigenous flora to allow a strain of bacteria to become pathogenic when it would normally be harmless.

**bacterial vaginosis** (văj'ti-nō'sis) ABBR: BV. Inflammation of the vagina and upper genital tract caused by *Gardnerella vaginalis*. Previously referred to as "gardnerella" or nonspecific vaginitis, BV is the most common form of vaginitis in the United States and is characterized by vaginal discharge with the absence of lactobacilli and an overgrowth of anaerobic bacteria.

Diagnosis is confirmed by characteristic "fishy" odor produced when the vaginal discharge is mixed with 10% potassium hydroxide. A wet smear reveals vaginal epithelial cells that are heavily stippled with bacteria, called clue cells. The pH of the discharge is always greater than 5.5. Treatment is with metronidazole or clindamycin, antibiotics which in pill, cream, or gel form, are effective against anaerobes, while maintaining lactobacilli. Asymptomatic bacterial vaginosis during pregnancy has been implicated in causing preterm labor. Treatment during pregnancy to reduce preterm delivery is controversial and is not recommended during the first trimester. SEE: *Gardnerella vaginalis vaginitis*.

**bactericidal** (băk'tēr-î-sî'dăl) Capable of killing bacteria.

**bactericide** (băk'tēr-î-sîd) [Gr. *bakterion*, rod, + L. *caedere*, to kill] An

agent that destroys bacteria, but not necessarily their spores.

**bactericidin** (bāk-tēr'ī-sīd'īn) Anything lethal to bacteria.

**bacteriemia** (bāk-tēr-ē-ē'mē-ā) Bacteremia.

**bacterio-, bacteri-** (bāk-tēr'ē-ō) Combining forms meaning *bacteria*.

**bacterioagglutinin** (bāk-tēr'ē-ō-ā-gloo'tī-nīn) [*l'* + *L. agglutinans*, gluing] An antibody in serum that causes agglutination, or clumping, of bacteria in vitro.

**bacteriocidal** (bāk'tēr-ē-ō-sī'dāl) Bactericidal.

**bacteriocin** (bāk-tēr'ē-ō-sīn) Protein produced by certain bacteria that exerts a lethal effect on closely related bacteria. In general, bacteriocins are more potent but have a narrower range of activity than antibiotics. SEE: *colicin*.

**bacteriogenic** (bāk-tēr'ē-ō-jēn'īk) [*l'* + *gennan*, to produce] 1. Caused by bacteria. 2. Producing bacteria.

**bacteriohemagglutinin** (bāk-tēr'ē-ō-hēm'ā-gloo'tī-nīn) [*l'* + *haima*, blood, + *L. agglutinans*, gluing] A bacterial toxin that clumps (agglutinates) red blood cells.

**bacteriohemolysin** (bāk-tēr'ē-ō-hē-mōl'ī-sīn) [*l'* + *l'* + *lysis*, dissolution] A bacterial toxin that destroys (lyses) red blood cells.

**bacteriologic, bacteriological** (bāk-tēr'ē-ō-lōj'īk, -āl) [*l'* + *logos*, word, reason] Pert. to bacteriology.

**bacteriologist** (bāk-tēr'ē-ō-l'ō-jīst) An individual trained in the field of bacteriology.

**bacteriology** (bāk-tēr'ē-ō-l'ō-jē) Scientific study of bacteria.

**bacteriolysin** (bāk-tēr'ē-ō-l'ī-sīn) [*l'* + *lysis*, dissolution] A substance, esp. an antibody produced within the body of an animal, that is capable of bringing about the lysis of bacteria.

**bacteriolysis** (bāk-tēr'ē-ō-l'ī-sīs) The destruction or dissolution of bacteria. **bacteriolytic** (-ō-līt'īk), *adj.*

**bacteriophage** (bāk-tēr'ē-ō-fāj'j) [*Gr. bakterion*, rod, + *phagein*, to eat] A virus that infects and lyses bacteria. It consists of a head that contains either DNA or RNA and a tail by which it attaches to the host cell. SYN: *bacterial virus*; *phage*. SEE: *virus* for illness.

**bacteriophytoma** (bāk-tēr'ē-ō-fi-tō'mā) [*l'* + *phyton*, plant, + *oma*, tumor] A tumor-like growth caused by bacteria.

**bacterioprecipitin** (bāk-tēr'ē-ō-prē-sīp'ī-tīn) Antibodies that bring about precipitation of bacterial antigens.

**bacterioprotein** (bāk-tēr'ē-ō-prō'tē-īn) Any of the proteins within the cells of bacteria.

**bacteriopsonin** (bāk-tēr'ē-ōp'sō-nīn) An opsonin, acting on bacteria.

**bacteriosis** (bāk-tēr'ē-ō-sīs) [*l'* + *osis*, condition] Any disease caused by bacteria.

**bacteriostasis** (bāk-tēr'ē-ōs'tā-sīs) [*l'* + *stasis*, standing still] The arrest of bacterial growth.

**bacteriostatic** (bāk-tēr'ē-ō-stāt'īk) Inhibiting or retarding bacterial growth.

**bacteriotoxic** (bāk-tēr'ē-ō-tōk'sīk)

1. Toxic to bacteria. 2. Due to bacterial toxins.

**bacteriotoxin** (bāk-tēr'ē-ō-tōk'sīn) [*l'* + *toxikon*, poison] Toxin specifically produced by or destructive to bacteria.

**bacteriotropin** (bāk-tēr'ē-ōt'rō-pīn) [*l'* + *tropos*, a turn] An opsonin or a substance that enhances the ability of phagocytes to engulf bacteria.

**bacteristatic** (bāk-tēr'ē-stāt'īk) Inhibiting the growth of bacteria. SEE: *bactericidal*.

**bacterium** (bāk-tēr'ē-ūm) *pl.* **bacteria** A one-celled organism without a true nucleus or cell organelles, belonging to the kingdom Prokaryotae (Monera). The cytoplasm is surrounded by a rigid cell wall composed of carbohydrates and other chemicals that provide the basis for the Gram stain. Some bacteria produce a polysaccharide or polypeptide capsule, which inhibits phagocytosis by white blood cells. Bacteria synthesize DNA, RNA, and proteins, and they can reproduce independently but may need a host to provide food and a favorable environment. Millions of nonpathogenic bacteria live on human skin and mucous membranes; these are called *normal flora*. Bacteria that cause disease are called *pathogens*. SEE: *table*.

**CHARACTERISTICS:** *Shape:* There are three principal forms of bacteria. *Spherical* or *ovoid* bacteria occur as single cells (micrococci) or in pairs (diplococci), clusters (staphylococci), chains (streptococci), or cubical groups (sarcinae). *Rod-shaped* bacteria are called bacilli, more oval ones are called coccobacilli, and those forming a chain are called streptobacilli. *Spiral* bacteria are rigid (spirilla), flexible (spirochetes), or curved (vibrios). SEE: *illus.*

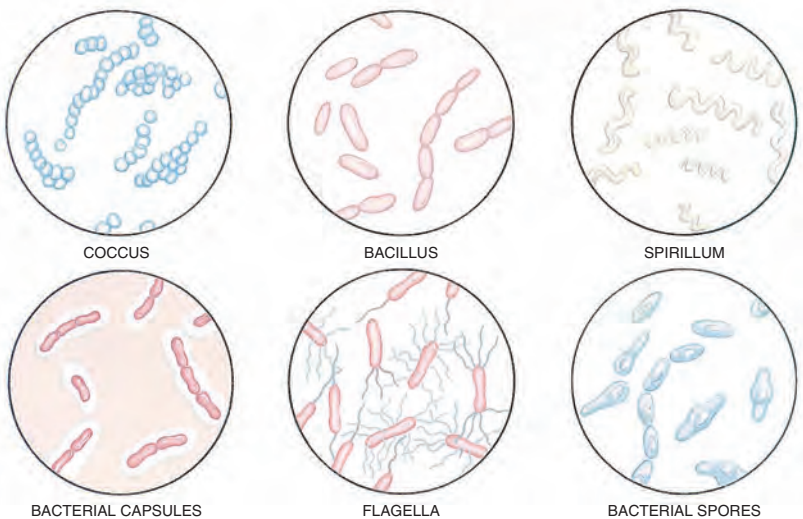
*Size:* On average, bacilli measure about 1  $\mu\text{m}$  in diameter by 4  $\mu\text{m}$  in length. They range in size from less than 0.5 to 1.0  $\mu\text{m}$  in diameter to 10 to 20  $\mu\text{m}$  in length for some of the spirilla.

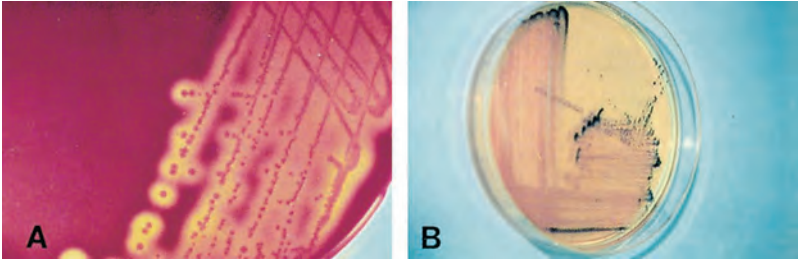
*Reproduction:* Binary fission is the usual method of reproduction, but some bacteria exchange genetic material with members of the same species or different species. Reproductive rate is affected by changes in temperature, nutrition, and pH. If the environment becomes unfavorable, some bacilli form spores, in which their genetic material is condensed and surrounded by a thick wall. Spores are highly resistant to heat, drying, and disinfectants. When the environment again becomes favorable, the spores germinate.

*Mutation:* Bacteria, like all living

## Common Bacterial Infections

| Organism                                       | Type and/or Site of Infection   |
|--|---|
| <b>Gram-Positive Bacteria</b>                  |   |
| <i>Clostridium difficile</i>                   | Pseudomembranous colitis  |
| <i>Staphylococcus aureus</i>                   | Pneumonia, cellulitis, boils, impetigo, toxic shock, postoperative bone/joints, eyes, peritonitis |
| <i>Staphylococcus epidermidis</i>              | Postoperative bone/joints, IV line-related phlebitis  |
| <i>Streptococcus pneumoniae</i> (pneumococcus) | Pneumonia, meningitis, otitis media, sinusitis, septicemia  |
| <i>Streptococcus pyogenes</i>                  | Scarlet fever, pharyngitis, impetigo, rheumatic fever, erysipelas                                 |
| viridans group streptococci                    | Endocarditis  |
| <b>Gram-Negative Bacteria</b>                  |   |
| <i>Campylobacter jejuni</i>                    | Diarrhea (most common worldwide cause)  |
| <i>Escherichia coli</i>                        | Urinary tract, pyelonephritis, septicemia, gastroenteritis, peritonitis                           |
| <i>Haemophilus influenzae</i>                  | Pneumonia, meningitis, otitis media, epiglottitis   |
| <i>Klebsiella pneumoniae</i>                   | Pneumonia, wounds   |
| <i>Legionella pneumophila</i>                  | Pneumonia   |
| <i>Neisseria gonorrhoeae</i>                   | Gonorrhea   |
| <i>Neisseria meningitidis</i> (meningococcus)  | Meningitis  |
| <i>Pseudomonas aeruginosa</i>                  | Wounds, urinary tract, pneumonia, IV lines  |
| <i>Salmonella enteritidis</i>                  | Gastroenteritis, food poisoning   |
| <i>Salmonella typhi</i>                        | Typhoid fever   |
| <i>Shigella dysenteriae</i>                    | Dysentery   |
| <i>Vibrio cholerae</i>                         | Cholera   |

**BACTERIA**Bacterial shapes and specialized structures ( $\times 1000$ )



## BACTERIA

(A) Group A streptococci; beta-hemolysis on blood agar; (B) Salmonella; H<sub>2</sub>S production (black) on SS (*Salmonella-Shigella*) agar

things, undergo mutations, and the environment determines which mutations are beneficial and have survival value. Certainly beneficial to bacteria, though not at all to humans, are the mutations that provide resistance to the potentially lethal effects of antibiotics.

**Motility:** None of the cocci are capable of moving, but most bacilli and spiral forms can move independently. Locomotion depends on the possession of one or more flagella, slender whiplike appendages that work like propellers.

**Food and oxygen requirements:** Most bacteria are heterotrophic (require organic material as food). If they feed on living organisms, they are called *parasites*; if they feed on nonliving organic material, they are called *saprophytes*. Bacteria that obtain their energy from inorganic substances, including many of the soil bacteria, are called *autotrophic* (self-nourishing). Bacteria that require oxygen are called *aerobes*; those that grow only in the absence of oxygen are called *anaerobes*. Bacteria that grow both with and without oxygen are *facultative anaerobes*. Most bacteria in the human intestines are *anaerobic*. SEE: *infection, opportunistic*.

**Temperature requirements:** Although some bacteria live at very low or very high temperatures, the optimum temperature for most human pathogens is 97° to 99°F (36° to 38°C).

**ACTIVITIES:** **Enzyme production:** Bacteria produce enzymes that act on complex food molecules, breaking them down into simpler materials; they are the principal agents of decay and putrefaction. Putrefaction, the decomposition of nitrogenous and other organic materials in the absence of air, produces foul odors. Decay is the gradual decomposition of organic matter exposed to air by bacteria and fungi.

**Toxin production:** Cell wall molecules called *adhesins* bind bacteria to the host cells. Once attached, the bacteria may produce poisonous substances called toxins. There are two types: exotoxins,

enzymes that are released by bacteria into their host, and endotoxins, which are parts of the cell walls of gram-negative bacteria and are toxic even after the death of the cell. Exotoxins include hemolysins, leukocidins, coagulases, and fibrinolysins. Endotoxins stimulate production of cytokines that can produce widespread vasodilation and shock. SEE: *endotoxin; sepsis*.

**Miscellaneous:** Some bacteria produce pigments; some produce light. Soil bacteria are essential for the nitrogen cycle in the processes of nitrogen fixation, nitrification, and denitrification.

**IDENTIFICATION:** Several methods are used to identify bacteria in the laboratory: SEE: *illus*.

**Culture:** Bacteria are grown on various culture media; a visible colony containing millions of cells may be visible within several hours. A colony is usually composed of the descendants of a single cell. Each species of bacteria grows in colonies with a characteristic color, shape, size, texture, type of margin or edge, and particular chemical features. Groups of cells can then be examined under a microscope, usually with Gram's stain. In addition, colonies can be separated and antibiotics applied to assess their sensitivity to different drugs.

**Hanging drop:** Unstained bacteria in a drop of liquid are examined under ordinary or dark-field illumination.

**Gram's stain:** Gram-positive bacteria retain dye, turning purple; gram-negative bacteria can be decolorized by alcohol and colored red by a second dye; acid-fast bacteria retain the dye even when treated with an acid alcohol decolorizer. Bacteria are often described by a combination of their response to Gram's stain and their appearance. For example, "gram-positive staphylococcus" indicates a cluster of spheres that stain purple, whereas gram-negative bacilli are rod-shaped and pink.

**Immunofluorescence:** Bacteria stained with fluorescein and examined under a

microscope equipped with fluorescent light appearing yellow-green.

**antibody-coated b.** 1. A bacterium coated with an antibody that acts as an opsonin to make the bacterium more susceptible to phagocytosis. 2. A laboratory test using fluorescein-labeled antibodies to locate antigens with which the antibody links. SEE: *opsonin*.

**flesh-eating b.** A colloquial name given in the popular media to a rare invasive infection of the skin and underlying soft tissue by group A streptococcus. The infection is difficult to treat with antibiotics alone because it progresses rapidly through tissue planes. Emergency surgical debridement is required. SEE: *necrotizing fasciitis*.

**probiotic b.** A bacterium that prevents illness, e.g., the *Lactobacillus* species found in yogurt.

**bacteriuria** (bāk-tēr'ē-ūrē-ā) [Gr. *bakterion*, rod, + *ouron*, urine] The presence of bacteria in the urine.

**asymptomatic b.** Bacteria in the urine without symptoms of urinary tract infection or pyelonephritis. This condition may occasionally precede symptomatic urinary tract infection. It is common in elderly women and in patients with indwelling urinary catheters. In children, it may be a sign of underlying urinary tract abnormalities. Screening for asymptomatic bacteriuria is recommended for pregnant women at 12 to 16 weeks' gestation. Screening school-age children is not beneficial.

**significant b.** Concentration of pathogenic bacteria in the urine of  $10^5$  per ml or greater. Concentrations above this level have been thought to represent evidence of urinary tract infection, although infection may be present at much lower levels.

**bacteroid** (bāk'tēr-oyd) [" + *eidōs*, form, shape] 1. Resembling a bacterium. 2. A structurally modified bacterium.

**Bacteroides** (bāk-tēr-oyd'ēz) A genus of gram-negative, anaerobic, non-spore-forming bacilli that forms most of the intestinal flora and may be found in smaller numbers on the oral, upper respiratory, and genital mucous membranes. Members of the species release an endotoxin that contributes to tissue destruction. They are often found in abscesses or in infections in which gas is found, e.g., on radiographic studies. All species multiply rapidly in necrotic tissue; infections that start in the colon, e.g., may spread to neighboring tissues or the bloodstream producing intra-abdominal abscesses, peritonitis or septicemia.

**B. fragilis** A species that may produce life-threatening infections in blood vessels, the peritoneum, or the pelvis.

**baculovirus** (bāk'ū-lō-vī'rūs) [L. *bacu-*

*lum*, staff, walking stick + ""] A double-stranded DNA virus that infects insects. It has been used experimentally in recombinant DNA technology, e.g., in manufacturing vaccines.

**bad breath** SEE: under *breath*.

**Baer's plane** [Karl Ernst von Baer, Prussian-Estonian anatomist, 1792–1876] A plane through the upper border of the zygomatic arches.

**affle** (bā'fīl) In respiratory care, a component of a nebulizer designed to remove large aerosol particles.

**bag** [ME. *bagge*] A sack or pouch.

**colostomy b.** Colostomy pouch.

**Douglas b.** SEE: *Douglas bag*.

**b. of waters** Amnion.

**Politzer b.** SEE: *Politzer bag*.

**bagassosis** (bāg-ā-sō'sis) [Sp. *bagazo*, husks, + Gr. *osis*, condition] A form of hypersensitivity pneumonitis, due to inhalation of bagasse dust, the moldy, dusty fibrous waste of sugar cane after removal of the sugar-containing sap. The dust contains antigens from thermophilic actinomycetes.

**bag mask device** A manually operated resuscitator used to ventilate a non-breathing patient or assist the ventilation of a patient who is not breathing at an effective rate or tidal volume. The device consists of a bag, an oxygen reservoir system, a one-way flow valve, and a clear face mask. It is designed to be attached to an oxygen source by tubing to deliver concentrations approaching 100%. SEE: *illus.*

**Bailey, Harriet** (bā'lē) [U.S. nurse educator, b. 1875] The first nurse educator to write a textbook on psychiatric nursing. *Nursing Mental Diseases* was published by Macmillan in 1920 and was the standard text for psychiatric nursing for two decades.

**Bainbridge effect** (bān'brij'ē) Bainbridge reflex.

**baker** [AS. *bacan*, cook by dry heat] Two or more electric lamps mounted in semi-circular containers used for applying heat to various parts of the body. They are also called *electric light bakers*.

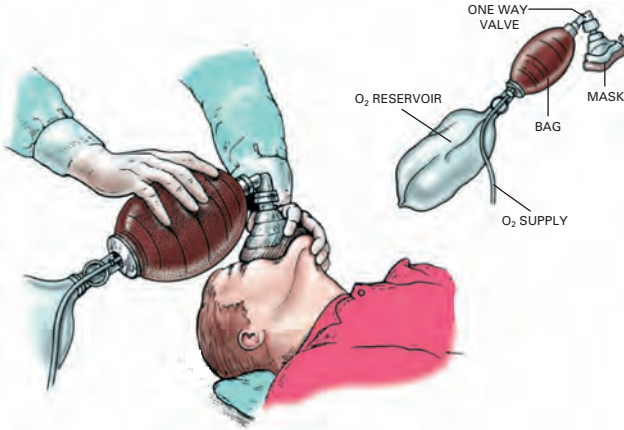
**Baker's cyst** [William M. Baker, Brit. surgeon, 1839–1896] A synovial cyst (pouch) arising from the synovial lining of the knee. It occurs in the popliteal fossa.

**BAL** *British antilewisite; bronchoalveolar lavage.*

**Balamuthia mandrillaris** (bāl'ā-mooth'ē-ā măn'drīl-ār'is) [NL.] An opportunistic amoeba that lives in soil and water. It can cause a potentially fatal infection of the brain and meninges, esp. in those with immunosuppressive illnesses.

**balan-** SEE: *balano-*.

**balance** (bāl'āns) [L. *bilanx*] 1. Scale; a device for measuring weight. 2. A state of equilibrium; condition in which the intake and output of substances such as



BAG MASK DEVICE

water and nutrients are approx. equal. SEE: *homeostasis*. **3.** Coordination and stability of the body in space. Normal balance depends on information from the vestibular system in the inner ear, from other senses such as sight and touch, from proprioception and muscle movement, and from the integration of these sensory data by the cerebellum.

**acid-base b.** The chemical equilibrium that maintains the body's pH at about 7.40; i.e., at the concentration of hydrogen ions that is most favorable to routine cellular metabolic processes. The equilibrium is maintained by the action of buffer systems of the blood and the regulatory (homeostatic) functions of the respiratory and urinary systems. Disturbances in acid-base balance result in acidosis or alkalosis. SEE: *pH*.

**analytical b.** A very sensitive scale used in chemical analysis.

**fluid b.** Regulation of the amount of liquid in the body. A negative fluid balance (a "fluid deficit") may occur when fluids are lost by vomiting, diarrhea, bleeding, or diaphoresis. Fluid overload may result from the excessive administration of intravenous fluids, or in diseases marked by impaired fluid excretion, such as congestive heart failure, cirrhosis, or renal failure. SEE: *dehydration*; *diuresis*; *fluid replacement*; and entries beginning with the words *fluid volume*.

Treatment of fluid imbalances depends on the cause; the patient's cardiac, renal, and hepatic function; measured serum electrolytes; and acid-base balance.

Useful means of gauging changes in fluid balance are 1) to measure fluid inputs and outputs; or 2) to measure day-to-day variations in body weight.

**metabolic b.** Comparison of the in-

take and excretion of a specific nutrient. The balance may be negative when an excess of the nutrient is excreted or positive when more is taken in than excreted.

**nitrogen b.** The difference between the amount of nitrogen ingested and that excreted each day. If intake is greater, a positive balance exists; if less, there is a negative balance.

**balance beam** SEE: under *beam*.

**balance board** A device usually consisting of a padded platform mounted on a curved base. It is commonly used in therapy with children having central nervous system deficits to facilitate the development of appropriate equilibrium-related postural reflexes. It is also used in patients/clients of all ages to stimulate lower extremity and trunk proprioception and kinesthetic sense.

**balance disorder** Any condition that affects a person's ability to feel steady while walking, sitting, standing, resting, working, or turning. Some common examples include disease of the labyrinth of the ear, cerebellar strokes, and seasickness.

**Balance Error Scoring System** ABBR: BESS. A modification of the Romberg test that assesses a patient's ability to maintain postural stability following traumatic brain injury. The test is performed in two stages. The first is performed on a solid surface; the second is performed on a soft surface such as thick foam. Points are deducted for "errors" (loss of balance or sway) during testing. Pretest results are compared to post-test results to determine the magnitude of impairment following injury.

**balance training** Exercises that improve a person's agility and gait stability while preventing falls. These include stepping over obstacles on a rough or



random surface, rapidly shifting direction while walking, developing core muscle strength, and improving ankle strength and lower extremity proprioception.

**balanic** (bă-lăn'ik) [Gr. *balanos*, glans] Pert. to the glans clitoridis or glans penis.

**balanitis** (băl-ă-ni'tis) [ʹ + *itis*, inflammation] Inflammation of the skin covering the glans penis.

**b. xerotica obliterans** Sclerotic and atrophic patches on the skin of the penis that can cause narrowing of the urinary meatus and phimosis. The cause is chronic balanoposthitis, and the condition is associated with penile lichen sclerosis (e.g., circumcision for phimosis).

**TREATMENT:** High-dose topical steroids or long courses of antibiotics are given.

**balanitis circinata** A clearly defined, painless red lesion on the skin of the glans penis. It often accompanies polyarthritis and conjunctivitis as part of a triad sometimes seen in Reiter's syndrome. SEE: *Reiter's syndrome*.

**balano-, balan-** (băl'ă-nō) [Gr. *balanos*, glans] Combining forms meaning *glans penis* or *glans clitoridis*.

**balanocele** (băl'ă-nō-sēl'') [ʹ + *kele*, tumor, swelling] Protrusion of the glans penis through a rupture of the prepuce.

**balanoplasty** (băl'ă-nō-plās'tē) [ʹ + *plassein*, to form] Plastic surgery of the glans penis.

**balanoposthitis** (băl'ă-nō-pōs-thi'tis) [ʹ + *posthe*, prepuce, + *itis*, inflammation] Balanitis.

**balanopreputial** (băl'ă-nō-prē-pū'shē-ăl) Pert. to the glans penis and prepuce.

**balanorrhagia** (băl'ă-nō-ră'jē-ă) [ʹ + *rhegnynai*, burst forth] Balanitis with pus formation.

**balantidial** (băl-ăn-tīd'ē-ăl) Pert. to *Balantidium*, a genus of protozoa.

**balantidiasis** (băl'ăn-tī-dī'ă-sis) Infection of the large intestine by *Balantidium coli*.

**SYMPTOMS:** Symptoms include abdominal pain, diarrhea, vomiting, weakness, and weight loss.

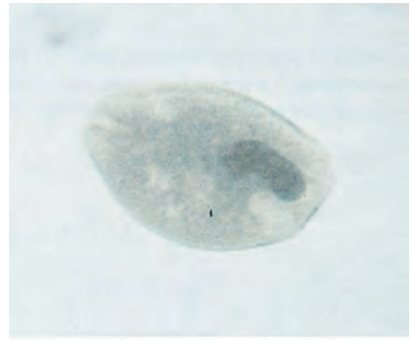
**TREATMENT:** Treatment consists of tetracyclines, metronidazole, or paromomycin. SYN: *balantidial dysentery*.

**Balantidium** (băl-ăn-tīd'ē-üm) [Gr. *balantidion*, a bag] A genus of ciliated protozoa. A number of species are found in the intestines of both vertebrates and invertebrates.

**B. coli** A normal parasite of swine and the largest protozoan parasite of humans. It causes balantidiasis. SEE: *illus.*

**balanus** (băl'ă-nūs) [Gr. *balanos*, glans] The glans penis or glans clitoridis.

**baldness** (bäld'nēs) [ME. *ballede*, with-



50 μm

**BALANTIDIUM COLI (×400)**

Edge of cell appears indistinct because of cilia (×400)

out hair] Lack of or partial loss of hair on the head. SEE: *alopecia*.

**male pattern b.** Baldness in the male due to influence of the male hormone testosterone. Genetic predisposition is also a factor, and baldness does not usually occur in males having no familial tendency to become bald. Minoxidil or finasteride has helped stimulate growth of hair in some individuals. SEE: *illus.*



**MALE PATTERN BALDNESS**

**Balint's syndrome** (băl'int's) [Rudolph Balint, Hungarian physician, 1874–1929] Inability to scan the peripheral visual field and to grasp an object under visual guidance, and visual inattention;

usually due to bilateral occipitoparietal lesions of the brain.

**Balke test** (bälk) [Bruno Balke, contemporary Ger.-born U.S. physician] A test to determine maximum oxygen utilization. The subject walks on a flat (0% grade) treadmill at a constant rate of 3.5 miles/hr for 2 min. The treadmill is inclined 1% each successive minute until the subject is exhausted and unable to continue. Oxygen utilization is measured throughout the test.



The test is not suitable for those with impaired musculoskeletal, cardiovascular, or respiratory systems.

**ball** A spherical object.

**b. of the foot** The padded portion of the anterior extremity of the sole of the foot.

**b. of the thumb** The thenar eminence of the thumb.

**Ballard tool, Ballard score** (bäl'ärd) [Jeanne Ballard, American neonatologist] A system for estimating newborn gestational age by rating physical and neuromuscular characteristics of maturity. For infants born between 20 and 28 weeks' gestation, Ballard tools are more accurate than other systems of estimating gestational age. Six neuromuscular markers are assessed: posture, square window (degree of wrist flexion), arm recoil, popliteal angle (degree of knee flexion); scarf sign (ability to extend infant's arm across the chest past the midline); and heel-to-ear extension. Seven physical characteristics are also evaluated: skin; lanugo; plantar creases; breast; eye and ear; and genitals. Each factor is scored independently, and then an overall sum is used to determine the gestational age. The tool is most accurate if performed within the first 12 to 20 hr of life or as soon as the baby's condition stabilizes.

**ball bearing feeder** Mobile arm support.

**ballistics** (bäl-lis'tiks) [Gr. *ballein*, to throw] The science of the motion and trajectory of projectiles, including bullets, bombs, rockets, and guided missiles.

**ballistocardiograph** (bäl-lis'tö-kär'de-ö-gräf) [' + *kardia*, heart, + *graphein*, to write] A mechanism for measuring and recording the impact caused by the discharge of blood from the heart at each beat and the resulting recoil. The minute movements of the body with each heartbeat are recorded as they are transmitted to the special platform that supports the subject.

**balloon** [Fr. *ballon*, great ball] **1.** To expand, dilate, or distend, as to expand a cavity by filling it with air or water in a bag. **2.** A flexible, expandable object that can be placed inside a vessel or cavity to

expand it or at the end of a catheter to prevent its removal. SEE: *catheter*; *percutaneous transluminal coronary angioplasty*.

**balloon tamponade, nasal** SEE: *nose-bleed* for *illus.*; *epistaxis*.

**ballotable** (bäl-löt'ä-bl) Capable of identification by ballotement.

**ballotement** (bäl-öt-mön') [Fr. *balloter*, to toss about] **1.** A palpatory technique used to detect or examine a floating object in the body, such as an organ. It is used in examining the abdomen esp. when ascites is present, and joint effusions. **2.** A diagnostic maneuver in pregnancy. The fetus or a fetal part rebounds when displaced by a light tap of the examining finger through the vagina.

**balm** (bälm) [Gr. *balsamon*, balsam] **1.** Balsam. **2.** A soothing or healing ointment.

**b. of Gilead** **1.** Mecca balsam from *Commiphora opobalsamum*, probably biblical myrrh. **2.** Balsam fir, source of Canadian balsam. **3.** Poplar bud resin.

**balneology** (bäl-nē-öl'ö-jē) [L. *balneum*, bath, + Gr. *logos*, word, reason] The science of baths and bathing.

**balneotherapy, balneotherapeutics** (bäl'nē-ö-thēr'ä-pē, -thēr'ä-pū'tiks) [' + Gr. *therapeia*, treatment] The use of baths in treatment of disease.

**Balo disease** A rare, rapidly progressing form of multiple sclerosis. It differs from other multiple sclerosis variants, in that it is not characterized by relapses and remissions.

**balsam** (bawl'säm) [Gr. *balsamon*, balsam] A fragrant, resinous, oily exudate from various trees and plants. It is used in topical preparations to treat irritated skin or mucous membrane.

**b. of Peru** A dark brown, viscid, resinous liquid obtained from the bark of the tree *Myroxylon perierae* or *M. balsamum*.

**BALT** *bronchus-associated lymphoid tissue*.

**Bancroft's filariasis** (bän'kröfts', bäng') [Joseph Bancroft, Brit. physician, 1836–1894] A filarial infection caused by *Wuchereria bancrofti*. SEE: *elephantiasis*.

**band** **1.** A cord or tapelike tissue that connects or holds structures together. SEE: *bundle*; *ligament*; *tract*. **2.** Any appliance that encircles and applies pressure around a body part or structure. **3.** A segment of a myofibril. **4.** A metal strip or seamless band for attaching orthodontic appliances to teeth. **5.** An immature, unsegmented neutrophil seen in some illnesses on a peripheral blood smear. An increase in bands indicates that all mature neutrophils have been released from the bone marrow, usually during severe inflammation or infec-

tion, and that the marrow is releasing immature cells.

**A b.** A dark-staining area in the center of a sarcomere in skeletal or cardiac muscle, composed of overlapping myosin and actin filaments. SYN: *anisotropic disk*.

**H b.** A narrow band in the center of the A band of a sarcomere; it contains only thick (myosin) filaments and is bisected by the M line. SYN: *Engelmann's disk*; *H zone*.

**I b.** In muscle fibers, the light band segment of a sarcomere, containing lateral ends of thin (actin) filaments. There is one to either side of the medial A band. SYN: *isotropic b*.

**iliotibial b.** A thick, wide fascial layer from the iliac crest along the lateral thigh to the fascia around the lateral aspect of the knee joint. Fibers from the tensor fascia lata and gluteus maximus muscles insert into the proximal band.

**isotropic b.** I band.

**bandage** (băn'dăj) [ME. *bande*, a band]

1. A piece of soft, usually absorbent gauze or other material applied to a limb or other part of the body as a dressing. 2. To cover by wrapping with a piece of gauze or other material.

Bandages are used to hold dressings in place, apply pressure to a part, immobilize a part, obliterate cavities, support an injured area, and check hemorrhages. Types of bandages include roller, triangular, four-tailed, many-tailed (Scultetus), quadrangular, elastic (elastic knit, rubber, synthetic, or combinations of these), adhesive, elastic adhesive, newer cohesive bandages under various proprietary names, impregnated bandages (plaster of Paris, water-glass [silica], starch), and stockinet. Use of a self-adhering, form-fitting roller bandage facilitates bandaging by eliminating the special techniques needed when ordinary gauze roller bandages are used. SEE: *illus.*; *sling*.



Skin-to-skin contact will, if continuous, cause ulceration or infection.

**abdomen b.** A single wide cravat or several narrow ones used to hold a dressing in place or to exert a moderate pressure.

**Ace b.** Trade name for a woven elastic bandage available in various widths and lengths. It provides uniform pressure, yet permits joint movement.

**adhesive b.** A bandage made of adhesive tape.

**amputation-stump b.** An elastic bandage applied to an amputation stump to control postoperative edema and to shape the stump. The elastic bandage is applied in a recurrent or figure-of-eight fashion with more pressure

applied to the distal, rather than the proximal, portion of the limb.

**ankle b.** Bandage in which one loop is brought around the sole of foot and the other around the ankle; it is secured in front or on the side.

**axilla b.** A bandage with a spica-type turn starting under the affected axilla, crossing over the shoulder of the affected side, and making the long loop under the opposite armpit.

**back b.** Open bandage to the back; applied the same as a chest bandage, the point being placed above the scapula of the injured side.

**Barton b.** A double figure-of-eight bandage for the lower jaw.

**breast b.** Suspensory bandage and compress for the breasts.

**butterfly b.** An adhesive bandage formerly used in place of sutures to hold wound edges together. The application of filmy sterile adhesive strips has replaced this entity (e.g., Steri-Strips)

**buttocks b.** T bandage.

**capeline b.** A bandage applied to the head or shoulder or to a stump like a cap or hood.

**chest b.** Figure-of-eight (spica), many-tailed (Scultetus), or triangular (open-chest) bandage for the chest.

**circular b.** A bandage applied in circular turns about a part.

**cohesive b.** A bandage made of material that sticks to itself but not to other substances; used to bandage fingers and extremities or to build up pads.

**cravat b.** A triangular bandage folded to form a band around an injured part.

**cravat b. for clenched fist** A hand bandage to arrest bleeding or to produce pressure. The wrist is placed on the center of the cravat, one end is brought around over the fist and back to the starting point, and the same procedure is then repeated with the other end. The two ends are pulled tight, twisted, and carried around the fist again so that pressure is placed on the flexed fingers.

**cravat elbow b.** A bandage in which the elbow is bent about 45° and the center of the bandage is placed over the point of the elbow. One end is brought around the forearm and the other end around the upper arm; the bandage is pulled tight and tied. SEE: *sling*.

**cravat b. for fracture of clavicle** A bandage in which one first puts a soft pad 2 × 4 in (5.1 × 10.2 cm) in the forepart of the axilla. A sling is made by placing the point of the open bandage on the affected shoulder, the hand and wrist laid on it and directed toward the opposite shoulder, the point brought over and tucked underneath the wrist and hand. The ends are then lifted and the bandage is laid flat on the chest, the covered hand is carried up on the shoul-

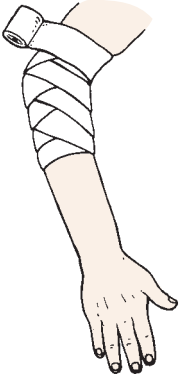
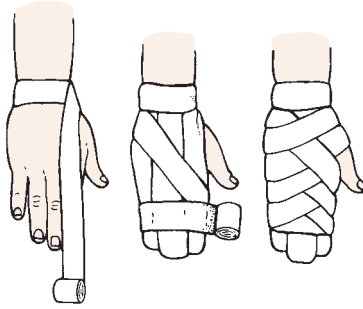


FIGURE-OF-EIGHT



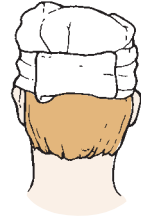
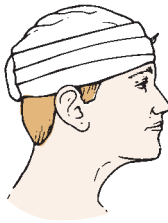
RECURRENT



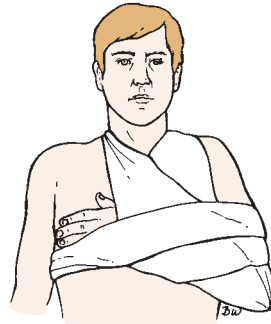
SPIRAL REVERSE



BANDAGE OF SHOULDER



RECURRENT B. OF HEAD



TRIANGULAR BANDAGE OF ELBOW AND ARM

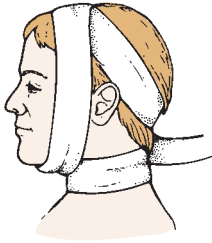
TYPES OF BANDAGES

der, the ends are brought together in the back and tied, the tightness being decided by how high the shoulder should be carried. A cravat bandage is then applied horizontally above the broad part of the elbow and tied over a pad on the opposite side of the chest. Tightening this cravat retracts the shoulders and scapulae.

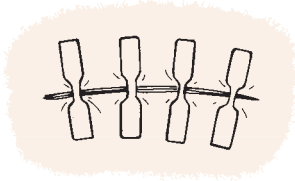
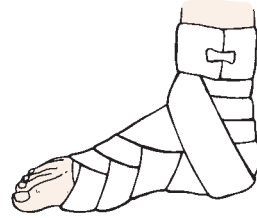
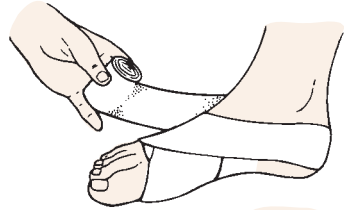
**cravat b. sling** A bandage used for support of the hand or a fractured upper arm. The wrist is laid upon the center of the cravat bandage, the forearm being held at right angle, and the two ends are carried around the neck and tied. SEE: binder.

**crucial b.** SEE: T b.

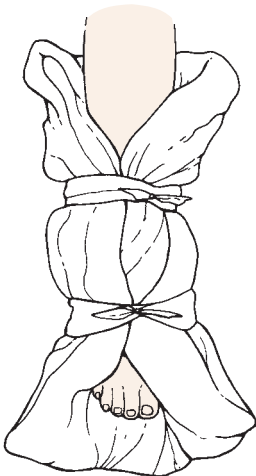
**demigauntlet b.** A bandage that



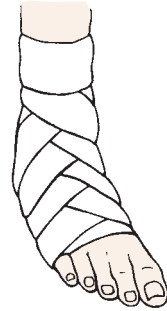
BARTON



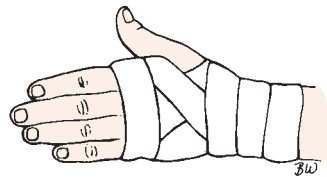
BUTTERFLY STRIPS



PILLOW SPLINT



ANKLE STRAPPING



WRIST BANDAGE

TYPES OF BANDAGES

covers the hand but leaves the fingers uncovered.

**ear b.** T bandage for the ear. A piece is sewn across the right angle of the T bandage.

**elastic b.** A bandage that can be stretched to exert continuous pressure.

It usually is made of special weaves or of material containing rubber and is used on swollen extremities or joints, on the chest in empyema, on fractured ribs, or on the legs to support varicose veins.

**Esmarch b.** 1. Triangular bandage. 2. A rubber bandage wrapped about an

extremity, after elevation, from its periphery toward the heart to force blood out of the extremity prior to surgery or to increase circulating blood. When it is removed for surgery, a proximal band (e.g., pneumatic tourniquet) is left in place to prevent blood from returning to the extremity.



If bandage is applied too tightly or for a prolonged period, tissue damage may occur because of decreased blood supply to the part.

**eye b.** A bandage for retaining dressings. The simple roller bandage for one eye or the monocle or crossed bandage. The binocular or crossed bandage for both eyes is 2 in  $\times$  6 yd (5.1 cm  $\times$  5.49 m).

**figure-of-eight b.** A bandage in which the turns cross each other like the figure eight; used to retain dressings, to exert pressure for joints (or to leave the joint uncovered), to fix splints for the foot or hand, for the great toe, and for sprains or hemorrhage.

**finger b.** A roller bandage with oblique fixation at the wrist.

**foot b.** A triangular bandage in which the foot is placed on the triangle with the base of the bandage backward and behind the ankle; the apex is carried upward over the top of the foot. The ends are brought forward, folded once or twice, crossed and carried around the foot, and tied on top.

**forearm b.** A triangular open sling bandage for support of the forearm.

**four-tailed b.** A strip of cloth with each end split into two. The tails are used to cover prominences such as elbow, chin, nose, or knee.

**Fricke's b.** SEE: *Fricke's bandage*.

**groin b.** A special bandage that is most easily applied with the patient standing or lying on a pelvic rest. A spica bandage encircles the trunk and the crossing is placed either anteriorly or laterally. To bandage both groins, the double spica is used. Such a double bandage is used principally in applying a plaster cast.

**hand b.** A demigauntlet bandage that secures a dressing on the back of the hand. For thumb and hand, the ascending spica of the thumb, with spiral of the hand, is used. A triangular bandage is used for an open bandage of the hand. A descending spica is used for the thumb and figure-of-eight bandage for an amputation stump or clenched fist.

**head b.** Any bandage applied to the head, usually by wrap-around technique, that uses bony prominences as anchors or stays, and that carefully and completely covers the site of injury or the suture line.

**heel b.** A triangular bandage used for the heel.

**hip b.** A triangular open bandage of the hip. A cravat bandage or other band is tied around the waist; the point of another bandage is slipped under and rolled or pinned directly above the position of the wound. The base is rolled up and the ends are carried around the thigh, crossed, and tied.

**immovable b.** A bandage for immobilizing a part.

**impregnated b.** A wide-meshed bandage used to make molds or immobilize parts of the body. The material is impregnated with a substance such as plaster of Paris, which is applied wet and hardens after drying.

**knee b.** The knee cravat; triangular and the figure-of-eight bandages are used.

**leg b.** A bandage applied by fixing the initial end by a circular or oblique fixation at the ankle or with a figure-of-eight of the foot and ankle.

**many-tailed b.** A bandage with split ends used for the trunk and limbs; a piece of roller to which slips are stitched in an imbricated fashion. SEE: *four-tailed b.*; *Scultetus b.*

**Martin's b.** SEE: *Martin's bandage*.

**neck b.** *Neck spica:* Bandage 2½ in  $\times$  8 yd (6.4 cm  $\times$  7.3 m). *Bandage following thyroid gland surgery:* Roller bandage 2½ in  $\times$  9 yd (6.4 cm  $\times$  8.2 m). *Adhesive plaster bandage for thyroidectomy:* Used to hold dressing on wound in place. A small dressing is applied to center of strip and then applied to back of neck. *Special bandage:* A double-loop bandage of the head and neck made by using a figure-of-eight turn.

**oblique b.** A bandage applied obliquely to a limb, without reverses.

**plaster b.** A bandage stiffened with a paste of plaster of Paris, which sets and becomes very hard. SEE: *cast* (4).

**pressure b.** A bandage for applying pressure; usually used to stop hemorrhage or prevent edema.

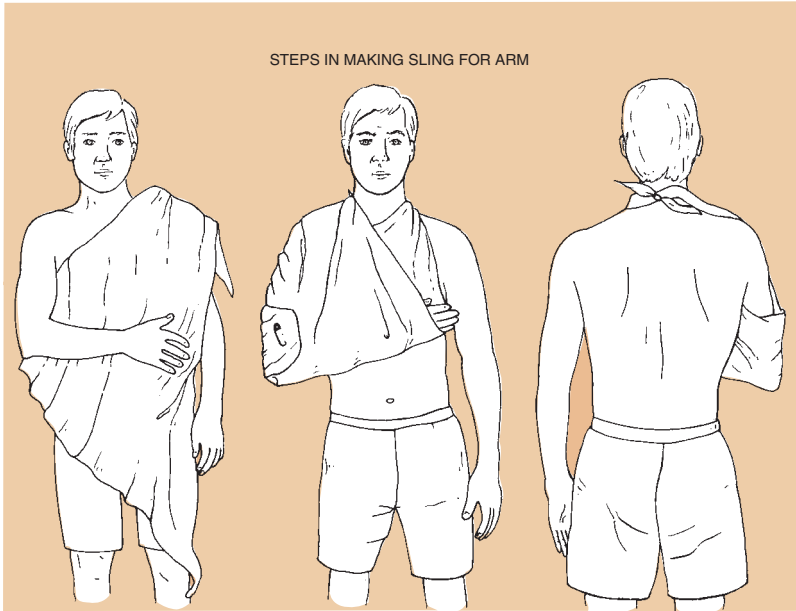
**protective b.** A bandage that covers a part or keeps dressings in place.

**quadrangular b.** A towel or large handkerchief, folded variously and applied as a bandage of head, chest, breast, or abdomen.

**recurrent b.** A bandage over the end of a stump.

**reversed b.** A bandage applied to a limb in such a way that the roller is inverted or half twisted at each turn so as to make it fit smoothly and resist slipping off the limb. SEE: *spiral reverse b.*

**roller b.** A long strip of soft material, usually from ½ to 6 in (1.3 to 15.2 cm) wide and 2 to 5 yd (1.83 to 4.57 m) long, rolled on its short axis. When rolled from both ends to meet at the center, it is called a double-headed roller.



TRIANGULAR BANDAGES

**rubber b.** A rubber roller bandage used to apply pressure to prevent swelling or hemorrhage of a limb. SEE: *Esmarch b.*

**Scultetus b.** A many-tailed bandage; a succession of interlocking, overlapping bands originally used to enclose a rigid support against a fractured extremity but now used without the splint or impregnated as a supporting bandage of the abdomen or lower extremity. SEE: *Scultetus binder* for *illus.*

**shoulder b.** An open bandage of the shoulder (*spica bandage*); a shawl bandage of both shoulders and neck.

**spica b.** A bandage in which a number of figure-of-eight turns are applied, each a little higher or lower, overlapping a portion of each preceding turn so as to give an imbricated appearance. This type of bandage is used to support, to exert pressure, or to retain dressings on the breast, shoulder, limbs, thumb, great toe, and hernia at the groin.

**spiral b.** A roller bandage to be applied spirally.

**spiral reverse b.** A technique of twisting, in its long axis, a roller bandage on itself at intervals during application to make it fit more uniformly. These reverse folds may be necessary every turn or less often, depending on the contour of the part being bandaged.

**stellate b.** A bandage that is wrapped on the back, crossways.

**suspensory b.** A bandage for sup-

porting any part but esp. the breast or scrotum.

**T b.** A bandage shaped like the letter T and used for the female perineum and, in certain cases, the head. SYN: *buttocks b.*; *T binder.*

**tailed b.** A bandage split at the end.

**triangular b.** A square bandage folded diagonally. When folded, the several thicknesses can be applied to afford support. SYN: *Esmarch b.* (1). SEE: *illus.*

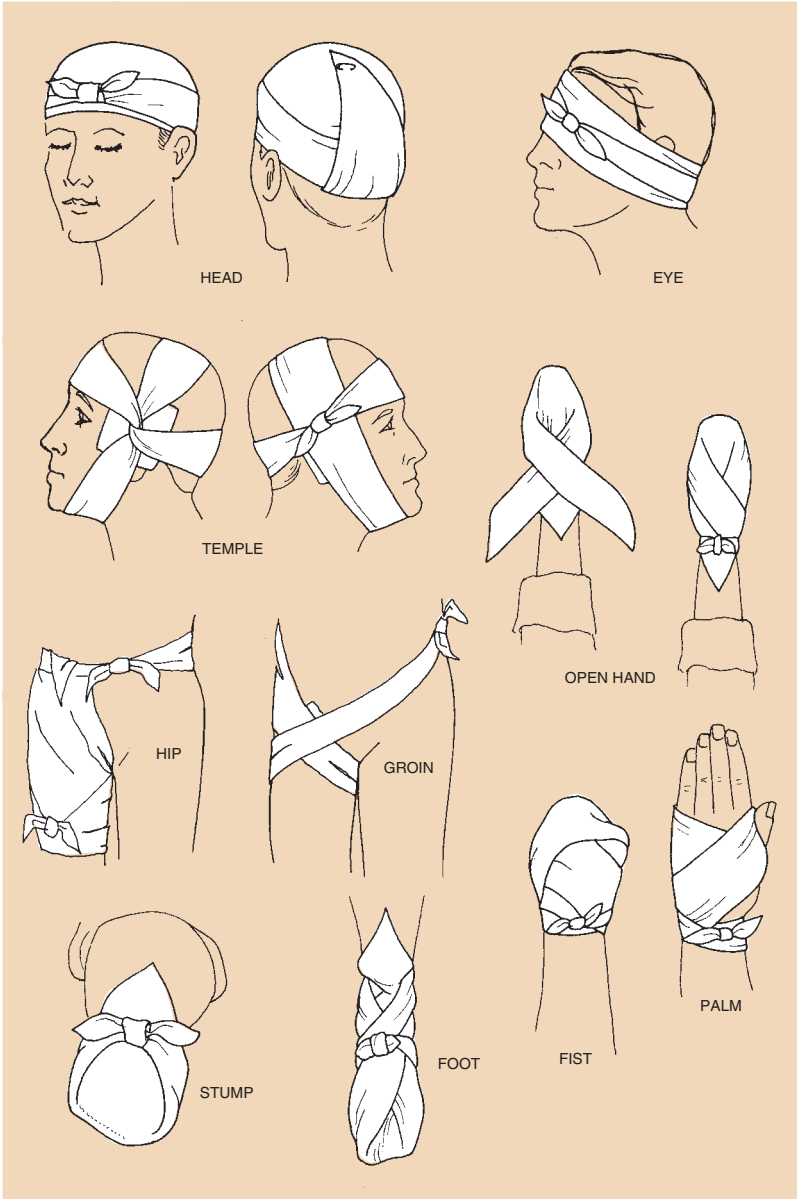
**Velpeau b.** A special immobilizing roller bandage that incorporates the shoulder, arm, and forearm.

**bandemia** (băn-dē'mē-ă) [Band shape of cell nucleus + Gr. *haima*, blood] The presence of more than 6% of immature neutrophils (band cells) in the blood. This finding indicates infection, inflammation, or some other significant physical stress.

**banding 1.** The use of chemicals to stain chromosomes so that the characteristic bands may be visualized. **2.** The use of an appliance to encircle and apply pressure around a body part or structure.

**Bandl's ring** (băn'd'lz) [Ludwig Bandl, Ger. obstetrician, 1842–1892] Ringlike thickening and indentation at the junction of the upper and lower uterine segments that obstructs delivery of the fetus. SEE: *pathologic retraction ring.*

**bandwidth 1.** In electronics the range of frequencies within which performance with respect to some characteristic falls



TRIANGULAR BANDAGES

within specified limits. 2. A measurement describing how much information can be transmitted at once through a communications medium.

**Banisteriopsis caapi** A tropical vine indigenous to South America whose bark is boiled with other plants to make hallucinogenic drinks, such as ayahuasca, or yage.

**bank** A stored supply of body fluids or tissues for use in another individual (e.g., blood bank, eye bank, kidney bank, tissue bank).

**blood b.** A place in which whole blood and certain derived components are processed, typed, and stored until needed for transfusion. Blood is mixed with adenine-supplemented citrate



phosphate dextrose and is stored at 4°C (39°F). Heparin may be used as a preservative. Banked blood should be used as soon as possible because the longer it is stored, the fewer red blood cells survive in usable form. Ninety percent of the red cells survive up to 14 days of storage, but only 70% remain after 24 days.



It is mandatory that appropriate quality assurance measures are undertaken to ensure that patients are properly identified at the bedside and at the blood bank, to prevent the transfusion of mismatched blood. Blood banking measures are designed to minimize the risk of communicable illnesses, including hepatitis viruses and the human immunodeficiency virus.

**cell b.** A facility for keeping cells frozen at extremely low temperatures. These cells are used for investigating hereditary diseases, human aging, and cancer. Collections of banked cells are kept by the National Institutes of Health (the Human Genetic Mutant Cell Repository and the Aging Cell Repository) and at the Cornell Institute for Medical Research.

**sperm b.** A repository for the storage of semen used for artificial insemination. In some banks the specimen is frozen. SEE: *Standard Precautions Appendix*.

**Bankart lesion** (băn'kärt) An avulsion injury of the anterior capsule and labrum of the glenoid rim of the glenohumeral joint. This lesion is a common reason for recurrent anterior glenohumeral dislocations or anterior glenohumeral instability.

**Banna virus** (băn'ă, bahn'nah') [Fm. Xishuang *Banna* (Yunnan province, China)] ABBR: BAV. The type species of the genus *Seadornavirus* (family *Reoviridae*), isolated in Asia. It is transmitted to humans by tick bite and is implicated in some cases of encephalitis.

**Banting, Sir Frederick Grant** (băn'ting) Canadian scientist, 1891–1941; co-discoverer of insulin, with Charles Herbert Best and John J. R. Macleod in 1922; Nobel laureate 1923.

**Banti's syndrome** (băn'tēz) [Guido Banti, It. physician, 1852–1925] A syndrome combining anemia, splenic enlargement, hemorrhage, and, ultimately, cirrhosis; secondary to portal hypertension.

**bar 1.** A metal piece attaching two or more units of a removable dental prosthesis. **2.** A rigid component of a splint or brace. **3.** A section of tissue that connects two similar structures.

**lumbrical b.** A component of a hand splint that rests on the dorsal surface of

the proximal phalanges to prevent hyperextension of the metacarpophalangeal joints.

**median b.** Contracture or constriction of the vesical neck of the bladder caused by benign hypertrophy or fibrosis of the prostate. It may obstruct the flow of urine from the bladder.

**bar-** SEE: *baro-*.

**barognosis** (băr-ăg-nō'sis) [Gr. *baros*, weight, + *a-*, not, + *gnosis*, knowledge] The inability to estimate weights; the opposite of barognosis. It is indicative of a parietal lobe lesion. SYN: *abarognosis*.

**Bárány's caloric test** [Robert Bárány, Austrian physician and physiologist, 1876–1936. Awarded Nobel Prize in medicine in 1914] Evaluation of vestibular function by irrigation of the ear canal with either warm or cold water. Normally when warm water is used, rotatory nystagmus toward the irrigated ear is observed; with cold water, the normal response is rotatory nystagmus away from the irrigated ear. If vestibular function is impaired, the response may be absent or diminished. If one ear is normal and the other is not, a comparison between the two may be made.

**-barb** (bərb) [Fm. *barb(itate)*] A combining form used in pharmacology to designate a *barbiturate*.

**barbiturate poisoning** SEE: *poisoning, barbiturate*.

**barbiturates** (băr-bit'ū-rāts, bār-bī-tū'rāts) A group of organic compounds derived from barbituric acid (e.g., amobarbital, phenobarbital, secobarbital) that are used to treat and prevent convulsions, relieve anxiety, or aid sleep. Side effects include drowsiness, depressed respirations, decreased blood pressure, and decreased body temperature. These drugs can also cause tolerance and dependence. SEE: *Poisons and Poisoning Appendix*.

**barbotage** (băr-bō-tōzh') [Fr. *barboter*, to dabble] Repeated injection and withdrawal of fluid, as in gastric lavage, or the administration of an anesthetic into the subarachnoid space by alternate injection of anesthetic and withdrawal of cerebrospinal fluid into the syringe.

**barbula hirci** (băr'bū-lă hīr'sī) [L. *barbula*, little beard, + *hircus*, goat] **1.** Hairs present on the ears. **2.** Axillary hair.

**bar code** SEE: under *code*.

**bar code-enabled point of care technology** ABBR: BPOC. A form of keyless data entry facilitating automatic identification and collection of data and allowing real-time confirmation of patient identity, medication taken, and dosage, time, and route of administration of the medication.

**baresthesia** (băr-ēs-thē'zē-ă) [Gr. *baros*,

weight, + *aisthesis*, sensation] Sense of weight or pressure; pressure sense.

**bariatrics** (bār'ē-ă'trīks) [*' + iatrike*, medical treatment] The branch of medicine that deals with prevention, control, and treatment of obesity.

**baricity** (bā-rīs'ī-tī) The relative pressure, density, or concentration of a gas or a solution. *Hyperbaric* solutions have an increased density relative to a reference substance (e.g., hyperbaric oxygen has a greater oxygen concentration than the air we normally breathe). *Hypobaric* solutions are less concentrated than a reference solution (e.g., an injected drug can be made hypobaric relative to serum or plasma by diluting it with sterile water).

**baritosis** (bār'ī-tō'sīs) Pneumoconiosis caused by inhalation of barium dust.

**barium** (bā'rē-ŭm) SYMB: Ba. A soft metallic element of the alkaline earth group; atomic mass 137.373, atomic number 56.

**b. sulfate** A radiopaque contrast medium used in radiographic studies of the gastrointestinal tract.

**barium compounds** SEE: under *compound*.

**barium meal** The ingestion of barium sulfate to outline the esophagus, stomach, and small intestines during x-ray or fluoroscopic examination. The exam may be used as an alternative to endoscopy to diagnose reflux, dysphagia, peptic disease, or other upper gastrointestinal conditions. Also called *upper G.I. series*.

**PROCEDURE:** If the exam or procedure does not follow a barium enema, the patient should receive nothing by mouth after midnight on the night before the test. No food or liquids should be taken by mouth until the last image is produced. If the test is done within a few days after a barium enema examination, it is important to be sure the colon is free of barium, which could interfere with visualization of the stomach and intestines. A cleansing enema the evening before the test may remove residual barium from the colon.

**barium swallow** Radiographic examination of the esophagus during and after introduction of a contrast medium consisting of barium sulfate. Structural abnormalities of the esophagus (such as strictures or tumors) and vessels (such as esophageal varices) may be demonstrated.

**barium test** SEE: *enema, barium, barium meal, barium swallow*.

**Barlow's disease** (bah'r'lōz dī-zēz') [Sir Thomas Barlow, Brit. physician, 1845-1945] A deficiency disease due to lack of vitamin C (ascorbic acid). It occurs in both breast-fed and bottle-fed babies (usually between 6 and 12 months of age) who fail to receive adequate sup-

plements of vitamin C. SEE: *scurvy, infantile*.

**TREATMENT:** Therapy includes vitamin C and adequate daily intake of fruit juices (orange, grapefruit, tomato).

**Barlow's test** A maneuver designed to detect subluxation or dislocation of the hip. The examiner adducts and then extends the legs. The examiner keeps his or her fingers over the heads of the femurs. A dysplastic joint will be felt to dislocate as the femur leaves the acetabulum.

**Barmah Forest virus** (bār'mă) [Barmah Forest, southeastern Australia] A virus transmitted by mosquito bite that causes rash, fever, joint pain, and stiffness. It is found mostly in Australia and neighboring islands.

**barn** (bārn) [Special use of *barn*] ABBR: bn. A unit of area, employed chiefly in chemistry and physics, approximating the size of the nucleus of a uranium atom. One barn = 10<sup>-24</sup> sq cm.

**baro-, bar-** [Gr. *baros*, weight] Combining forms meaning *weight* or *pressure*.

**barognosis** (bār-ōg-nō'sīs) [*' + gnosis*, knowledge] The ability to estimate weights; the opposite of baragnosis.

**barograph** (bār'ō-grăf'') A device used to measure and record changes in atmospheric pressure.

**baroreceptor** (bār'ō-rē-sēp'tor) A sensory nerve ending stimulated by changes in pressure. Baroreceptors are found in the walls of the cardiac atria, the vena cava, aortic arch. The baroreceptors of the lung are stretch receptors that are stimulated by inflation. SYN: *barostat; pressoreceptor*.

**baroreflex** (bār'ō-rē-flēks) [*' + L. reflexus*, bent back] Any of the reflexes mediated or activated through a group of nerves located in various blood vessels in the intrathoracic and cervical areas and in the heart and its great vessels.

**baroscope** (bār'ō-skōp) [*' + skopein*, to examine] An instrument that registers changes in the density of air.

**barostat** (bār'ō-stăt'') Baroreceptor.

**barotitis** (bār'ō-tī'tis) Aerotitis.

**barotrauma** (bār'ō-traw'mă) [*' + trauma*, wound] Any injury caused by a change in atmospheric pressure between a potentially closed space and the surrounding area. SEE: *aerotitis; barotitis; bends*.

**barratry** (bār'ă-trē) The practice of encouraging or sponsoring legal actions, esp. frivolous or unnecessary lawsuits.

**Barr body** (bār) [Murray L. Barr, Canadian anatomist, b. 1908] Sex chromatin mass seen within the nuclei of normal female somatic cells. According to the Lyon hypothesis, one of the two X chromosomes in each somatic cell of the female is genetically inactivated. The

- Barr body represents the inactivated X chromosome.
- barrel chest** SEE: under *chest*.
- barren** [O. Fr. *barhaine*, unproductive] Sterile; incapable of producing offspring.
- Barrett's esophagus** (băr'êts) [Norman R. Barrett, Brit. surgeon, 1903–1979] Replacement of the squamous epithelium of the distal esophagus with metaplastic columnar epithelium as a result of chronic exposure of the esophagus to stomach acid. The pathological changes usually occur after many years of gastroesophageal reflux disease and are occasionally followed by adenocarcinoma of the distal esophagus. SEE: *gastroesophageal reflux disease*.
- barrier** (băr'ē-ēr) [O. Fr. *barriere*] 1. An obstacle, impediment, obstruction, boundary, or separation. 2. A device (e.g., a glove, mask, or drape) used to limit potentially infectious contact between health care providers and patients.
- architectural b.** Any limitation in the design of facilities that restricts their access and use by persons with disabilities.
- blood-brain b.** ABBR: BBB. Special characteristics of the capillary walls of the brain that prevent potentially harmful substances (including many medications) from moving out of the bloodstream into the brain or cerebrospinal fluid. It consists of either the perivascular glial membrane or the vascular endothelium or both.
- chemical b.** 1. The chemical characteristics of certain areas of the body that oppose colonization by microorganisms. Examples are the acidity of gastric juice and urine, which prevent colonization by most disease-causing germs. 2. A contraceptive cream, foam, jelly, or suppository that contains chemical spermicides.
- placental b.** The selective ability of the placental membranes to limit the exchange of substances between the maternal and fetal circulations. Although water, oxygen and other gases, drugs, needed nutrients (e.g., glucose and amino acids), maternal antibodies, and viruses cross the barrier unimpaird, large molecules, red blood cells, bacteria, and protozoa cross it only through breaks in placental integrity.
- primary radiation b.** A wall or partition that shields the radiographer and others from direct exposure to x-rays. It must be capable of adequate lead equivalency to reduce the maximum possible x-ray beam strength to the level of background exposure.
- secondary radiation b.** A wall or partition that shields against scattering or leakage of x-rays.
- barrier cream** A topical compound for limiting or preventing contact with irritants such as allergens, parasites, or toxins.
- barrier-free design** An approach to planning and designing living environments that emphasizes accessibility and use by persons with functional limitations. SEE: *universal design*.
- Barthel index** (băr'thél) A widely used functional assessment of activities of daily living. It assesses a person's ability to perform feeding, transfers, personal grooming and hygiene, toileting, walking, negotiating stairs, and controlling bowel and bladder functions.
- Bartholin's abscess** (băr'tō-linz) [Caspar Bartholin, Danish anatomist, 1655–1738] An abscess that develops when Bartholin's glands become occluded in an acute inflammatory process.
- Bartholin's cyst** Cyst commonly formed in chronic inflammation of Bartholin's glands.
- Bartholin's ducts** Large ducts of the sublingual salivary gland. They parallel Wharton's duct.
- Bartholin's gland** One of two small compound mucous glands located one in each lateral wall of the vestibule of the vagina, near the vaginal opening at the base of the labia majora.
- bartholinitis** (băr'tō-lin-ī'tis) [*Bartholin* + Gr. *itis*, inflammation] Inflammation of Bartholin's gland.
- Barth's syndrome** (bărth) [P.G. Barth, b. 1944] A rare X-linked disorder in which affected boys have reduced muscle tone, cardiomyopathy, learning disabilities, a low white blood cell count, and a diminished ability to fight infections.
- Bartlett-Biedel syndrome** (bärt'lēt-bēd'īl) An inherited cause of obesity that usually manifests itself in childhood. It is caused by a mutation in a single gene.
- Barton, Clara** (băr'tön) U.S. nurse, 1821–1912. Founder of the American National Red Cross. She aided the wounded in the Civil War and was a contemporary of Florence Nightingale.
- Bartonella** (băr'tō-nēl'ă) [A. L. Barton, S. Amer. physician, 1871–1950] A genus of gram-negative bacteria of the family Rickettsia, that cause infections that are transmitted to humans from animal hosts (zoonoses).
- B. bacilliformis** A species that causes bartonellosis.
- B. elizabethae** The organism previously known as *Rochalimaea elizabethae*. It causes an infection that has been identified most often in immunocompromised patients with HIV infection. It has been implicated as a cause of bacteremia and endocarditis.
- B. henselae** A species that, together with *B. quintana*, causes acute and per-

sistent bacteremia and localized tissue infection, which may lead to bacillary angiomatosis, bacillary peliosis, and other inflammatory responses. This infection can occur in immunocompromised and immunocompetent individuals but is seen most frequently in patients with HIV infection. *B. henselae*, previously named *Rochalimaea henselae*, is the causative agent of cat scratch disease. Therapy for bacillary angiomatosis is oral antibiotics. SEE: *bacillary angiomatosis; disease, cat scratch; peliosis, bacillary.*

**B. quintana** The species previously known as *Rochalimaea quintana*; it is spread by the body louse. During World War I, it caused epidemics of trench fever in battlefield troops. Together with *B. henselae*, it may cause bacillary angiomatosis, bacillary peliosis, and other inflammatory diseases. Treatment includes oral antibiotics. SEE: *trench fever.*

**bartonellosis** (băr"tō-nēl-ō'sīs) [*Bartonella* + Gr. *osis*, condition] A disease caused by *Bartonella bacilliformis*. It is transmitted by female sandflies (*Phlebotomus*) endemic in the valleys of the Andes Mountains in Peru, Ecuador, and southwest Colombia. It occurs in two clinical forms: Oroya fever, which, if untreated, has a 10% to 90% fatality rate; and verruga peruana. SYN: *Carrion's disease.*

**TREATMENT:** The causative organism responds to several antibiotics, but erythromycin, azithromycin, or doxycycline are often used as first line therapies. Quinolones and sulfa drugs are also effective.

**Barter's syndrome** (băr'tērz) [Frederic Crosby Barter, U.S. physician, 1914–1983] Hyperplasia of the juxtaglomerular cells of the kidney, hypokalemic alkalosis, and hyperaldosteronism without a rise in blood pressure. It usually occurs in children and may be accompanied by growth retardation. Etiology is unknown. Affected patients are treated with potassium supplements and angiotensin-converting enzyme inhibitors or potassium-sparing diuretics.

**Baruch's law** (băr'ooks) [Simon Baruch, Ger.-born U.S. physician, 1840–1921] The theory that water has a sedative effect when its temperature is the same as that of the skin and a stimulating effect when it is below or above the skin temperature.

**bary-** [Gr. *barys*, heavy] Prefix indicating *heavy, dull, hard.*

**baryglossia** (băr-i-glōs'ē-ā) [Gr. *barys*, heavy, + *glossa*, tongue] Slow, thick utterance of speech.

**barylalia** (băr-i-lā'lē-ā) [r + *lalia*, speech] Indistinct, husky speech due to imperfect articulation.

**baryophobia** (băr'i-ō-fō'bē-ā) The un-

reasonable fear that one's child will become obese. The allowed diet may be insufficient to support the child's growth and development needs.

**basal** (bā'sāl) **1.** Pert. to the base. **2.** Of primary importance. **3.** Continuously active or present (e.g., in insulin secretion).

**basal body** A small granule usually present at the base of a flagellum or cilium in protozoa. SYN: *basal granule; blepharoplast.*

**basal cell nevus syndrome** A rare autosomal dominant disorder which causes basal cell carcinomas to develop at an early age, a propensity for medulloblastomas, skeletal anomalies, and other findings.

**basal ganglia** Four masses of gray matter located deep in the cerebral hemispheres: caudate, lentiform, and the claustrum. Parkinsonism and Huntington's chorea are diseases of the basal ganglia, which are key components in the formation of habits and unconscious motor programs. The caudate and lentiform nuclei and the fibers of the internal capsule that separate them constitute the corpus striatum. The function of the basal ganglia is complex. They contribute to some of the subconscious aspects of voluntary movement such as accessory movements and inhibiting tremor. They do not initiate movement but rather provide coordination of complex motor circuits. Neurotransmitters that affect the basal ganglia are acetylcholine, dopamine, gamma-aminobutyric acid (GABA), and serotonin.

**basal metabolic rate** ABBR: BMR. The metabolic rate as measured 12 hr after eating, after a restful sleep, no exercise or activity preceding testing, elimination of emotional excitement, and in a comfortable temperature. It is usually expressed in terms of kilocalories per square meter of body surface per hour. It increases, for example, in hyperthyroidism.

**basal rate** In patient-controlled analgesia (PCA), the amount of pain reliever that is infused independent of any demands made by the patient. The basal rate of drug infusion in PCA is often set at zero to ensure that all doses of pain medication are dictated by the patient's individual needs for pain control. High basal rates may occasionally result in narcotic overdose. Basal rates above zero are used under carefully controlled circumstances to facilitate rest or sleep.

**basal ridge** An eminence on the lingual surface of the incisor teeth, esp. the upper ones. It is situated near the gum. SYN: *cingulum* (2).

**base** [Gr. *basis*, base] **1.** The lower part of anything; the supporting part. **2.** The principal substance in a mixture. **3.** Any substance that combines with hydrogen

ions (protons); a hydrogen ion acceptor (Bronsted base). Strong bases (such as sodium hydroxide or lye) are corrosive to human tissues. Whether an unknown chemical compound is a base or an acid may be determined by the color produced when it is added to a solution containing an indicator. SYN: *alkali*. SEE: *acid*; *pH*. **4.** A substance that can donate a pair of electrons (Lewis base).

**cavity b.** In dentistry, the lining material placed in a cavity preparation, such as zinc phosphate cement, zinc oxide-eugenol cement, glass ionomer cement, or calcium hydroxide along with small amounts of other medicinal or adhesive materials.

**denture b.** That part of the denture made of metal or resin, or both, that supports the artificial teeth and rests on abutment teeth or the residual alveolar ridge.

**nucleic b.** In molecular biology, a ring-shaped chemical (either a purine or a pyrimidine) that specifies the coded genetic structure of DNA and RNA. DNA is made up of the bases adenosine, cytosine, thymine, and guanine; RNA contains uracil, in place of thymine.

**Basedow's disease** (báz'ē-dōz) [Karl A. von Basedow, Ger. physician, 1799–1854] Graves' disease.

**baseline** (bās'lin) A known or initial value with which subsequent determinations of what is being measured can be compared (e.g., baseline temperature or blood pressure).

**baseplate** (bās'plāt) A temporary, preformed shape made of wax, metal, or acrylic resin that represents the base of a denture; used in assessing the relations of maxillary-mandibular teeth or for placement of artificial teeth in denture preparation.

**bas-** [Gr. *basis*, base] SEE: *basio-*.

**basilarachnoiditis** (bā'sē-ā-rāk'noy-dī'tis) [Gr. *basis*, base, + *arachne*, spider, + *idos*, form, shape, + *itis*, inflammation] Inflammation of the arachnoid membrane at the base of the brain.

**basic** **1.** In chemistry, possessing the properties of a base. **2.** Fundamental.

**Basic Trauma Life Support** ABBR: BTLIS. A continuing education course sponsored by the American College of Emergency Physicians for emergency medical providers to develop the skills of rapid initial assessment, management of life-threatening injuries, and early transport of the traumatized patient to the most appropriate facility.

**Basidiobolus** (bās'id-ē-ōb'ō-lūs) [NL] A genus of filamentous fungi (of the class Zygomycetes) found in soil, decaying vegetation, and the spore of amphibians, bats, and reptiles. It can cause cutaneous, subcutaneous, gastrointestinal, and blood vessel infections in humans. Human infections are reported

mostly from Africa, South America, and tropical Asia.

**Basidiomycetes** (bā-sīd'ē-ō-mī-sē'tēz)

In one system of taxonomy, a class of the true fungi that contains mushrooms, bracket fungi, the plant parasites rusts and smuts, and the human parasite *Cryptococcus*. This class is equivalent to the phylum Basidiomycotina in another system of taxonomy. Mushroom toxins may be lethal to humans if ingested, and spores of these fungi may cause allergic asthma.

**Basidiomycotina** (bās'id-ē-ō-mī'kō-tēn'ā) [NL.]

In one system of taxonomy, a phylum of the true fungi. It is equivalent to the class Basidiomycetes in another system of taxonomy.

**basilar** (bās'ī-lār) [L. *basilaris*] Basal (1).

**basilateral** (bā'sē-lāt'ēr-āl) [ + L. *lateralis*, pert. to the side] Both lateral and basilar.

**basilic** (bā-sīl'ik) [L. *basilicus*] Prominent, important.

**b. vein** The large vein on the inner side of the biceps just above the elbow. It is usually chosen for intravenous injection or withdrawal of blood.

**basin** An open, bowl-like container for holding liquids. It may be shaped to fit around a structure.

**emesis b.** A kidney-shaped basin that can fit close to the neck so vomitus may be collected.

**basio-, basi-** [Gr. *basis*, base] Combining forms meaning *base* or *foundation*.

**basion** (bā'sē-ōn) The midpoint of the anterior border of the foramen magnum.

**basiphobia** (bā'sē-fō'bē-ā) [Gr. *basis*, a stepping, + *phobos*, fear] Fear of walking.

**basis** (bā'sis) *pl.* **bases** [L., Gr.] The base of a structure or organ.

**basket** [ME.] A netlike terminal arborization of an axon (or its collateral) of a basket cell that forms a network about the cell body of a Purkinje cell.

**basophil, basophile** (bā'sō-fil, -fil') [Gr. *basis*, base, + *philein*, to love] **1.** A cell or part of a cell that stains readily with basic dyes such as methylene blue. **2.** A type of cell found in the anterior lobe of the pituitary gland. It usually produces corticotropin (ACTH), the hormone that stimulates the adrenal cortex to secrete cortisol. **3.** One type of granulocytic white blood cell. Basophils make up less than 1% of all leukocytes but are essential to the innate immune response of inflammation because they release histamine and other chemicals that dilate blood vessels and make capillaries more permeable. SYN: *basophilic leukocyte*. SEE: *blood* for ill.

**basophilia** (bā-sō-fil'ē-ā) **1.** A pathological condition in which basophilic erythrocytes are found in the blood. **2.** A con-

dition marked by a high number of basophilic leukocytes in the blood.

**basophilic** (bā-sō-fīl'ik) Pert. to basophils or to the propensity to stain with basic dyes.

**basophilism** (bā-sōf'ī-lizm) A condition marked by an excessive number of basophils in the blood.

**pituitary b.** Cushing's syndrome.

**Bassen-Kornzweig syndrome** (bās'ēn-kōrn'zvīg) [Frank A. Bassen, U.S. physician, b. 1903; Abraham L. Kornzweig, U.S. physician, b. 1900] Abetalipoproteinemia.

**Bassini's operation** (bā-sē'nēz) [Edoardo Bassini, It. surgeon, 1844–1924] A specific surgical procedure for inguinal hernia.

**BAT** *brown adipose tissue.*

**batch analysis** An analysis in which all of the samples collected for a specific, nonemergent assay undergo the same testing process at the same time or sequentially. By contrast, samples collected for stat analyses are not saved in batches. These analyses are performed instead whenever individual specimens are received.

**Bates exercises** [William H. Bates, U.S. ophthalmologist, 1881–1931] A series of systematic vision exercises devised in the 19th century to relax, tone, and strengthen the eye muscles.

**bath** [AS. *baeth*] The medium and method of cleansing the body or any part of it, or treating it therapeutically as with air, light, vapor, or water. The temperature of the cleansing bath for a bed patient should be about 95°F (35°C) with a room temperature of 75° to 80°F (23.9° to 26.7°C).

**THERAPEUTIC EFFECT:** Warm and hot baths and applications soothe both the mind and the body. Gradually elevated hot tub and vapor baths relax all the muscles of the body. Hot baths promote vasodilation in the skin, drawing blood from the deeper tissues, and also help to relieve pain and stimulate nerves. Cold baths and applications abstract heat and stimulate reaction, esp. if followed by brisk rubbing of the skin. Cold constricts small blood vessels when applied locally. SEE: *hydrotherapy.*

**alcohol b.** Application of a diluted alcohol solution to the skin as a stimulant and defervescent.

**alkaline b.** A bath in which 8 oz (227 g) of sodium bicarbonate or washing soda is added to 30 gal (114 L) of water.

**alum b.** A bath using alum in washing solution as an astringent.

**aromatic b.** A bath to which some volatile oil, perfume, or some herb is added.

**astringent b.** Bathing in liquid containing an astringent.

**bed b.** A bath for a patient confined to bed.

**PATIENT CARE:** All necessary equipment is assembled, the room temperature is adjusted to a comfortable level, and the room is checked for drafts. While shielding the patient, the health care provider removes the top covers and replaces them with a bath blanket for the patient's physical warmth. The patient's ability to bathe independently is assessed, and the patient is encouraged to do so to the extent possible and permitted. Bathing may be accomplished using prepackaged disposable cloths impregnated with a no-rinse cleansing agent (heated in the microwave), various sized towels wet in warm water and wrung well prior to application or a basin of water which should be comfortably warm, 110° to 120°F (43.3° to 48.1°C), and changed as often as necessary to maintain the desired temperature and to permit thorough rinsing. The entire body, including the perineal area and genitalia, is washed, rinsed (if soap used), and dried thoroughly, one area at a time. Although traditional bathing has been done from the head downward toward the toes, with genitalia bathed last, use of prepared disposable cloths or towels for separate areas allows the care provider to bath the patient in any order desired. (e.g., patients with dementias may become upset by face-washing, but accept bathing that begins with upper or lower extremities). Whatever method is employed, the patient should remain covered except for the area being bathed. After the bath, lotion may be applied to the skin (if not contraindicated), a clean gown is applied, and the patient's hair is combed or brushed. Oral hygiene is performed in conjunction with bathing. The bed is usually remade with clean linens at this time or following removal of the patient from bed to chair. The health care provider assists as needed with any part of this care. When bathing obese patients, drying of skin folds may be facilitated by using a hand-held hair dryer on warm, taking care not to injure the skin in any way. Research has shown that bathing patients in ICU settings with disposable clothes saturated with 2% chlorhexidine gluconate reduces contamination rates from vancomycin-resistant enterococci (VRE), a common nosocomial infection, for both patients' skin and the ICU environment (object surfaces, health-care providers' hands, et al), leading to less frequent infection. Additional hair care (shampoo, wet and dry shampoo products, styling) is provided as necessary, following protocols.

**bland b.** Bath containing substances such as starch, bran, or oatmeal for the

relief of skin irritation; an emollient bath.

**brine b.** Saline b.

**bubble b.** A bath in which the water contains many small bubbles produced mechanically as by an air pump or chemically by bubble bath preparations.



Perfumes used in bubble baths are frequently the cause of vaginitis and skin irritation, esp. in children.

**carbon dioxide b.** An effervescent saline bath consisting of water, salts, and carbon dioxide (CO<sub>2</sub>). The natural CO<sub>2</sub> baths are known as Nauheim baths.

**cold b.** A bath in water at a temperature below 65°F (18.3°C).

**colloid b.** Emollient bath.

**complete bed b.** A bath in which the entire patient is bathed. SYN: *full bath*.

**continuous b.** A bath administered for an extended period but seldom for longer than several hours. It is used in treating hypothermia or hyperthermia and certain skin diseases.

**contrast b.** Alternate immersion of hands or feet in hot water (1 min) then cold water (30 sec) for a prescribed length of time to promote circulation. The initial water temperature should be maintained throughout the bath, and the bath should end with immersion in cold water.

**emollient b.** A bath used for irritation and inflammation of skin and after erysipelas. SYN: *colloid bath*. SEE: *glycerin b.*; *oatmeal b.*; *powdered borax b.*; *starch b.*

**foam b.** A tub bath to which an extract of a saponin-containing vegetable fiber has been added. Oxygen or carbon dioxide is driven through this mixture to create foam.

**foot b.** Immersion of the feet and legs to a depth of 4 in (10 cm) above the ankles in water at 98°F (36.7°C).

**full b.** Complete bed bath.

**glycerin b.** A bath consisting of 10 oz (300 ml) of glycerin added to 30 gal (114 L) water.

**herb b.** A full bath to which is added a mixture of 1 to 2 lb (454 to 907 g) of herbs such as chamomile, wild thyme, or spearmint tied in a bag and boiled with 1 gal (3.8 L) of water.

**hip b.** Sitz bath.

**hot b.** A tub bath with the water covering the body to slightly above the nipple level. The temperature is gradually raised from 98°F (36.7°C) to the desired degree, usually to 108°F (42.2°C).

**hot air b.** Exposure of the entire body except the head to hot air in a bath cabinet.

**hyperthermal b.** A bath in which the whole body except the head is immersed

in water from 105° to 120°F (40.6° to 48.9°C) for 1 to 2 min.

**kinetherapeutic b.** A bath given for underwater exercises of weak or partially paralyzed muscles.

**lukewarm b.** A bath in which the patient's body except the head is immersed in water from 94° to 96°F (34.4° to 35.6°C) for 15 to 60 min.

**medicated b.** A bath to which substances such as bran, oatmeal, starch, sodium bicarbonate, Epsom salts, pine products, tar, sulfur, potassium permanganate, and salt are added.

**milk b.** A bath taken in milk for emollient purposes.

**mud b.** The use of mud in order to apply moist heat.

**mustard b.** A stimulative hot foot bath consisting of a mixture of 1 tablespoon (15 ml) of dry mustard in a quart (946 ml) of hot water added to a pail or large basin filled with water of 100° to 104°F (37.8° to 40°C).

**Nauheim b.** A bath in which the body is immersed in warm water through which carbon dioxide is bubbled.

**needle b.** Whirlpool bath.

**neutral b.** A bath in which no circulation or thermic reaction occurs, temperature 92° to 97°F (33.3° to 36.1°C).

**neutral sitz b.** Same as sitz bath, except temperature is 92° to 97°F (33.3° to 36.1°C) or for foot bath 104° to 110°F (37.8° to 40°C), duration 15 to 60 min.

**oatmeal b.** A bath consisting of 2 to 3 lb (907 g to 1.4 kg) oatmeal added to 30 gal (114 L) water.

**oxygen b.** A bath given by introducing oxygen into the water through a special device that is connected to an oxygen tank.

**paraffin b.** A bath used to apply topical heat to traumatized or inflamed limbs. The limb is repeatedly immersed in warm paraffin, 118° to 126°F (47.8° to 52.2°C), and quickly withdrawn until it is encased in layers of the material. Paraffin may be applied with a paintbrush for larger joints.

**powdered borax b.** Bath consisting of ½ lb (227 g) added to 30 gal (114 L) water; 5 oz (150 ml) glycerin may be added.

**saline b.** Bath given in artificial seawater made by dissolving 8 lb (3.6 kg) of sea salt or a mixture of 7 lb (3.2 kg) of sodium chloride and ½ lb (227 g) of magnesium sulfate in 30 gal (114 L) of water. SYN: *brine bath*; *salt bath*; *seawater bath*.

**salt b.** Saline bath.

**sauna b.** A hot, humid atmosphere created in a small enclosed area by pouring water on heated rocks.

**seawater b.** Saline b.

**sedative b.** A prolonged warm bath. A continuous flow of water as well as an air cushion or back rest may be used.

**sheet b.** A bath given by wrapping the patient in a sheet previously dipped in water 80° to 90°F (26.7° to 32.2°C), and by rubbing the whole body with vigorous strokes on the sheet.

**shower b.** Water sprayed down upon the body from an overhead source.

**sitz b.** The immersion of thighs, buttocks, and abdomen below the umbilicus in water. In a hot sitz bath the water is first 92°F (33.3°C) and then elevated to 106°F (41.1°C). SYN: *hip bath*.

**sponge b.** A bath in which the patient is not immersed in a tub but washed with a washcloth, sponge, or antibacterial wipes.

**starch b.** A bath consisting of 1 lb (454 g) of starch mixed into cold water, with boiling water added to make a solution of glue-like consistency, then added to 30 gal (114 L) of water.

**stimulating b.** A bath that increases cutaneous blood flow. SEE: *cold b.*; *mustard b.*; *saline b.*

**sun b.** Exposure of all or part of the nude body to sunlight.



Direct exposure of the skin to sunlight or other sources of ultraviolet energy increases the risk of skin cancer.

**sweat b.** A bath given to induce perspiration.

**towel b.** A bath given by applying towels dipped in water 60° to 70°F (15.6° to 21.1°C) to the arms, legs, and anterior and posterior surfaces of trunk, and then removing the towels and drying the parts.

**whirlpool b.** A therapeutic stainless steel, fiberglass, or plastic tank that uses turbines to agitate and aerate water into which the body, or part of it, is immersed. Tanks come in various sizes to accommodate treatment of different body parts (Hubbard and “low boy” tanks for full-body treatments or extremity tanks for arm or leg treatments). Water temperature selection varies depending on the condition of the patient and the desired therapeutic outcome. Cold whirlpools (ranging from 50°–79°F) are useful in treating acute inflammation. Tepid whirlpools (79°–92°F) are used to facilitate early therapeutic exercise. Neutral temperatures (92°–96°F) are generally indicated for treatment of wounds or for patients who have circulatory, cardiac, or sensory disorders or neurological changes in muscle tone. Hot whirlpools (99°–110°F) are beneficial in relieving pain, increasing soft tissue extensibility, and treating chronic conditions such as arthritis. In general, whirlpool temperatures should not exceed 110° to 115°F because of risk of burns. SYN: *needle bath*.

**bathophobia** (bāth'ō-fō'bē-ā) [Gr. *ba-*

*thos*, deep, + *phobos*, fear] Abnormal fear of depths; commonly refers to fear of height or of looking down from a high place.

**bathyanesthesia** (bāth-ē-ān'ēs-thē-zē-ā) [ʼ + *an-*, not, + *aisthesis*, sensation] Loss of deep sensibility.

**bathyesthesia** (bāth'ē-ēs-thē'zē-ā) [ʼ + *aisthesis*, sensation] A consciousness or sensibility of parts of the body beneath the skin.

**bathyperesthesia** (bāth-ē-hī'pēr-ēs-thē'zē-ā) [ʼ + *hyper*, above, + *aisthesis*, sensation] Excessive sensitivity of muscles and other deep body structures.

**bathypesthesia** (bāth'ē-hīp'ēs-thē'zē-ā) [ʼ + *hypo*, under, + *aisthesis*, sensation] Impairment of sensitivity in muscles and other deep body structures.

**Batten disease** (Bāt'ēn) [Frederick E. Batten, English ophthalmologist, 1865–1918] The most common of the neuronal ceroid lipofuscinoses (NCLs). This eponym is sometimes used as a synonym for the entire class of NCLs. The disease is an autosomal recessive, neurodegenerative disorder that results from the excessive accumulation of lipid-protein complexes in the brain and eye. Early symptoms include the sudden onset of visual impairment and seizures in childhood. Regression of developmental milestones and dementia precede premature death.

**battered child syndrome** Physical abuse of a child by an adult or older sibling. SEE: *abuse, child*; *shaken baby syndrome*; *Nursing Diagnoses Appendix*.

**battered woman** A woman who has been physically or sexually assaulted by her husband, partner, or former partner. Typically verbal abuse precedes physical violence. An escalating pattern of intimidation and injury often results, sometimes ending in death. Frequently women are reluctant to report this type of abuse because they feel trapped or isolated. Women from any socioeconomic level may be affected. Shelters and support for battered women are available in many locations.

**battery** [Fr. *battre*, to beat] **1.** A device for generating electric current by chemical action. **2.** A series of tests, procedures, or diagnostic examinations given to or done on a patient. **3.** The unlawful touching of another without consent, justification, or excuse. In legal medicine, battery occurs if a medical or surgical procedure is performed without proper consent. SEE: *assault*; *sexual harassment*.

**Battle sign** (bāt'ēl) [William Henry Battle, Brit. surgeon, 1855–1936] Ecchymosis behind the ear; a physical finding in patients with basilar skull fracture.

**bay** (bā) An anatomical recess or depression filled with liquid.



**Bayes' theorem** (bāz) [Thomas Bayes, Brit. mathematician, 1702–1761] A statistical theorem concerned with analyzing the probability that a patient may have a specific condition after diagnostic testing. The theorem states that if a disease is very rare (the pretest probability is low), the patient is unlikely to have that condition even with a positive diagnostic test. Conversely, when the pretest probability of a specific condition is very high, a negative test result does not rule out the condition.

**Bayley Scales of Infant Development** (Bā'lē) A standardized battery of tests used to provide information about the developmental status of children aged 2 to 42 months. The battery is designed to indicate motor, mental, and behavioral levels based on performance and parental reports.

**Baylisascaris procyonis** (bā'līs-ās'kă-rīs prō'sē-ōn'īs, sē'ōn) [NL. *procyon*, raccoon, fm. Gr.] The raccoon roundworm. Accidental consumption of roundworm eggs (e.g., by children who put contaminated soil in their mouths) can result in encephalitis.

**Bazin's disease** (bă-zānz') [Antoine P. E. Bazin, Fr. dermatologist, 1807–1878] A chronic skin disease occurring in young adult females; characterized by hard cutaneous nodules that break down to form necrotic ulcers that leave atrophic scars. The disease is almost invariably preceded by tuberculosis, but the etiological relationship to that disease is debated. SYN: *erythema induratum*.

**BBT** *basal body temperature*.

**BCAA** *branched-chain amino acids*.

**B-cell-mediated immunity** SEE: *immunity, humoral*.

**BCG** *bacille Calmette-Guérin*.

**bcl-2** Member of a family of oncogenes that is involved in tumor suppression. *Bcl-2* is an oncogene that is responsible for some of the ability of certain tumors to elude the host organism's defenses. *Bcl-2* suppresses apoptosis, permitting the metastasis of tumors. When referring to the protein product of the gene, the term "Bcl-2" is used. SEE: *apoptosis; oncogene*.

**b.d.** *L. bis die*, twice a day.

**Bdellovibrio** (dēl'ō-vīb'-rē-ō') [Gr. *bdello*, leech, + *vibrio*] A genus of gram-negative bacteria that parasitize other bacteria by living and reproducing inside them.

**B.E.** *below elbow*, referring to the site of amputation of an arm; *barium enema*.

**Be** Symbol for the element beryllium.

**bead** (bēd) [ME. *bede*, prayer, prayer bead (on a rosary), bead] A small spherical object, typically made of glass, plastic, or metal. Beads have numerous uses in health care. They are employed in

sterilization equipment and in some diagnostic and therapeutic injections.

**beaded** (bēd'ēd) Referring to disjointed colonies along the inoculation line in a streak or stab culture.

**beading** (bēd'ing) Alternating stretches of dilation and stenosis within an artery, usually only seen during angiography.

**beads, rachitic** (bēdz) Visible swelling where the ribs join the costal cartilages, seen in rickets. SYN: *rachitic rosary*.

**beaker** (bē'kēr) A widemouthed glass vessel for mixing or holding liquids.

**beam** 1. In nuclear medicine and radiology, photons or atomic particles directed from a point-source toward an object in order to image or treat the object. 2. The part of an analytical balance to which the weighing pans are attached. 3. A long, slender piece of wood, metal, or plastic resin that acts as a support, e.g. in a dental appliance or other applications.

**balance b.** In occupational and physical therapy, a 4-in-wide plank used to assess and improve balance and motor coordination; it is usually elevated several inches from the floor.

**beam nonuniformity ratio** ABBR: BNR. A measure of the homogeneity of a therapeutic ultrasound wave, expressed as a ratio between the ultrasound unit's average intensity (the metered output) and the peak intensity within the output wave. A completely homogeneous wave is represented by a 1:1 BNR.



FDA regulations require that the BNR be clearly labeled on therapeutic ultrasound units. A BNR of greater than 8:1 is considered to be potentially harmful.

**beard** The hair on the face and throat.

**bearing down** The expulsive effort of a parturient woman in the second stage of labor. Valsalva's maneuver is used, causing increased pressure against the uterus by increasing intra-abdominal pressure.

**beat** [AS. *beatan*, to strike] A pulsation or throb (e.g., as in contraction of the heart).

**apex b.** The impulse of the heart felt by the hand when held over the fifth or sixth intercostal space in the left mid-clavicular line.

**artificially paced b.** A heartbeat stimulated by an artificial pacemaker.

**captured b.** A ventricular contraction directly stimulated by an electrical impulse either from the sinus node or from the pulse generator of a pacemaker.

**dropped b.** A single interruption in the regular pacing of the electrical and mechanical activity of the heart.

**ectopic b.** An electrical impulse that begins at any place in the heart other than the sinoatrial node.

**escape b.** A depolarization of the heart that occurs after a prolonged pause or after failure of the sinus node to generate an electric impulse. Most escape beats are generated in the ventricles.

**forced b.** Extrasystole brought on by artificial heart stimulation.

**premature b.** An electrical impulse that arises from a site other than the sinus node in the heart, occurring before the expected sinus beat.

**Beau's lines** (bōz) [Joseph Honoré Simon Beau, Fr. physician, 1806–1865] White lines across the fingernails, usually a sign of systemic disease. They may be due to trauma, coronary occlusion, hypercalcemia, or skin disease. The lines are visible until the affected area of the nail has grown out and been trimmed away.

**Bechterew's reflex, Bekhterev's reflex** (bĕk'tĕr-ĕvs) [Vladimir Mikhailovich von Bechterew, Russ. neurologist, 1857–1927] **1.** Contraction of the facial muscles due to irritation of the nasal mucosa. **2.** Dilatation of the pupil on exposure to light. **3.** Contraction of the lower abdominal muscles when the skin on the inner thigh is stroked.

**Beck airway airflow monitor** (bĕk) ABBR: BAAM. A device that is attached to the nasotracheal tube to help the intubator locate the sound of the air movement through the vocal cords.

**Becker muscular dystrophy** (bĕk'ĕr) [Peter E. Becker, German geneticist, 1908–2000] ABBR: BMD. An X-linked recessive form of muscular dystrophy, typically first becoming evident in adolescence as difficulty with gait or with pelvic girdle muscle strength. It is characterized pathologically by inadequate production of dystrophin and thus is similar to, but usually milder than, Duchenne muscular dystrophy.

**Beck's triad** (bĕks) The physical findings in cardiac tamponade: hypotension, distended neck veins, and muffling of the heart sounds.

**Beckwith-Wiedeman syndrome** (bĕk'wĭth-vĕd'ĕ-măn) An autosomal dominant syndrome whose hallmarks are enlargement of the tongue and visceral organs, gigantism, and umbilical hernia, often with neonatal hypoglycemia.

**beclomethasone dipropionate** (bĕk'lō-mĕth'ă-sōn") A corticosteroid drug. Trade names are Vancenase and Beclonvent.

**becquerel** (bĕk'rĕl) [Antoine Henri Becquerel, Fr. physicist, 1852–1908] SYMB: Bq. An SI-derived unit of activity of a radionuclide equal to the quantity of the material having one sponta-

neous nuclear transition, i.e., disintegrations, per second. One curie has  $3.7 \times 10^{10}$  transitions per second. Thus, one curie is equivalent to  $3.7 \times 10^{10}$  becquerels. SEE: curie; SI Units Appendix.

**bed** [AS. *bedd*] **1.** A supporting structure or tissue. **2.** A couch or support for the body during sleep.

**air b.** **1.** Large inflated cushion used as a mattress. **2.** Air-fluidized bed.

**air-fluidized b.** A bed consisting of a mattress filled with tiny glass or ceramic spheres that are suspended by a continuous flow of warm air. The patient "floats" on the mattress with only minimal penetration. Because of the even distribution of weight, the bed is particularly useful in treating or preventing pressure sores.

**capillary b.** A network of capillaries.

**circular b.** A bed that allows a patient to be turned end-over-end while held between two frames. This permits turning the patients without disturbing them by turning the two frames inside a circular apparatus that holds the ends of the frames. It is useful in treating paralyzed or immobilized patients.

**Gatch b.** SEE: *Gatch bed*.

**hydrostatic b.** Water b.

**kinetic b.** A bed that constantly turns patients side to side through 270°. It is used to prevent the hazards of immobility in patients requiring prolonged bedrest, as in multiple trauma and some neuromuscular diseases.

**low air-loss b.** A mattress composed of inflatable air cushions that is used to relieve pressure on body parts, esp. in patients who are being hospitalized for a long time or who have skin breakdown.

**metabolic b.** A bed arranged to facilitate collection of feces and urine of a patient so that metabolic studies can be done.

**nail b.** The skin that lies beneath a nail at the tip of a digit.

**open b.** A bed available for assignment to a patient.

**rocking b.** A device used to create abdominal displacement ventilation in patients with respiratory failure.

**surgical b.** A bed equipped with mechanisms that can elevate or lower the entire bed platform, flex or extend individual components of the platform, or raise or lower the head or the feet of the patient independently.

**tilt b.** SEE: *table, tilt*.

**tonsillar bed** The mucosal layer between the palatoglossal and palatopharyngeal arches that is filled with the palatine tonsils.

**water b.** A rubber mattress partially filled with warm water (100°F or 37.8°C). It is used to prevent and treat pressure sores. SYN: *hydrostatic bed*.

**bedbug** A flat, reddish-brown insect, *Cimex lectularius* of the family *Cimicidae*. Its bite causes an itchy, red, hive-like rash and, occasionally, other allergic reactions. The adult bugs are about 5 to 7 mm long and survive for up to a year without feeding. Bedbugs may transmit bloodborne infections (such as hepatitis B or Chaga's disease) to humans. Treatment for bites consists of application of antipruritic lotions. In heavy infestations, an appropriate insecticide should be used to spray furniture, mattresses, floors, baseboards, and walls.

**bedewing** Clouding of vision resulting from edema of the cornea.

**bedfast** Unable or unwilling to leave the bed; bedridden.

**bed hold** A reservation that allows one to stay in a care facility. The reservation is usually made just before relocation to the facility or during furloughs away from it (e.g., in hospital or on family visits).

**bedlam** [From Hospital of St. Mary of Bethlehem, pronounced "bedlem" in Middle English.] **1.** An asylum for the insane. **2.** Any place or situation characterized by a noisy uproar.

**bed mobility, impaired** Limitation of independent movement from one bed position to another. SEE: *Nursing Diagnostics Appendix*.

**Bednar's aphthae** (bĕd'nārz) [Alois Bednar, physician in Vienna, 1816–1888] Infected, traumatic ulcers appearing on the hard palate of infants; usually caused by sucking contaminated objects.

**bedpan** [AS. *bedd*, bed, + *panna*, flat vessel] A pan-shaped device placed under a bedridden patient for collecting fecal and urinary excreta.

NOTE: In general, because bedpan use is uncomfortable and awkward, it requires more exertion on the patient's part than using a bedside toilet. Patients, esp. those recovering from myocardial infarction, should not be forced to use a bedpan if it is possible for them to use a bedside toilet.

**bedrest** **1.** A device for propping up patients in bed. **2.** The confining of a patient to bed for rest.

**bedridden** Unable or unwilling to leave the bed; bedfast.

**Bedsonia** (bĕd-sō'nĕ-ă) [Sir Samuel Phillips Bedson, Brit. bacteriologist, 1886–1969] A term formerly used for the genus *Chlamydia*.

**bedsore** [AS. *bedd*, bed, + *sare*, open wound] Pressure sore.

**bedtime fading** A behavioral treatment for childhood insomnia, in which the sleep-resistant child is allowed to go to sleep late for a few nights and then gradually guided to sleep at earlier and earlier hours until the desired time of sleep is reached. The treatment limits

conflicts with the child over bedtime and creates a more rapid onset of sleep because the late hour at which the child is initially put to rest means he or she will go to bed tired.

**bedtime resistance** Misbehavior, stalling tactics, or temper tantrums used by children to avoid adhering to a structured sleep schedule. Bedtime resistance (also known as "bedtime refusal") may be caused by a variety of conditions, including fear of the dark, loneliness, or the desire for more attention, among many other conditions.

**bedwetting** Enuresis.

**BEE** *basal energy expenditure*.

**bee** [AS. *beo*, bee] An insect of the order Hymenoptera and superfamily Apoidea. Included is the common honeybee, *Apis mellifera*, which produces honey and beeswax. SEE: *sting, bee*.

**Beer's law** (bĕrz, bārz) [August Beer, Ger. physicist, 1825–1863] The basic law that is the foundation for all absorption photometry. It predicts the linear relationship between the monochromatic light absorbance (A) of a solution and its concentration (c). The law is given as  $A = \epsilon c l$ , where A = absorbance,  $\epsilon$  = molar absorptivity, l = path distance, and c = concentration. It is also known as the Beer-Lambert or Bougher-Beer law.

**Beer's operation** [Georg Joseph Beer, Ger. ophthalmologist, 1763–1821] A flap operation for cataract or artificial pupil.

**bee sting therapy** Apitherapy.

**beeswax** (bĕz'wāks) Yellow wax obtained from the honeycomb of bees. A purified form is used in ointments.

**beeturia** (bĕt-ū'rĕ-ă) Deep red or pink coloration of urine caused by betanin, the pigment in beets. This condition is common in iron-deficient adults and children and can occur after ingestion of even one beet.

**Bevor's sign** (bĕ'vĕrz) [C. E. Bevor, Brit. neurologist, 1854–1908] Upward (cephalad) movement of the umbilicus when the neck of a patient with paralysis of the lower rectus abdominis muscles is flexed. It is one marker of fascioscapular muscular dystrophy and is found in other conditions (e.g., in some patients who have suffered trauma to the trunk, abdomen, or spinal cord).

**behavior** (bĭ-hāv'yĕr) [ME. *behaven*, to hold oneself in a certain way] **1.** The manner in which one acts; the actions or reactions of individuals under specific circumstances. **2.** Any response elicited from an organism.

**caring b.** The actions or responses of providing patient services.

**PATIENT CARE:** The following are the 10 highest-ranked caring behaviors, derived from nursing literature, then selected by nurses as evident in caring

situations with patients: attentive listening, comforting, honesty, patience, responsibility, providing information so the patient can make an informed decision, touch, sensitivity, respect, addressing the patient by name.

**illness b.** The ways in which an individual acts or reacts to his or her own illness or the illness of a family member. Common reactions include frustration, anxiety, denial, anger, and withdrawal.

**self-consoling b.** The self-quieting actions of infants, such as sucking on their fists and watching mobiles and other moving objects.

**self-injurious b.** ABBR: SIB. Maladaptive behaviors of various types, including self-scratching, illicit drug use, head banging, and tobacco use. The cause is unknown, but one theory is that the behaviors are self-stimulatory.

**type A b.** A behavior pattern marked by the characteristics of competitiveness, aggressiveness, easily aroused hostility, and an overdeveloped sense of urgency. Although some studies have suggested that this behavior pattern is important in coronary artery disease and hypertension, the evidence supporting this claim is controversial. The risk of accidents, suicide, and murder is higher in type A individuals.

**type B b.** A behavior pattern marked by the lack of competitiveness, hostility, and time pressure.

**behavioral genetics** The study of the inherited basis for animal behavior and the impact that environment has on behavioral phenotypes. The field inquires into the influence of genes on addiction, aggression, intelligence, personality, sexuality, and sociability, among other realms of animal and human experience.

**behavioral science** The science concerned with all aspects of behavior.

**behavioral system model** A conceptual model of nursing developed by Dorothy Johnson. The person is regarded as a behavioral system with seven subsystems—attachment, dependency, ingestion, elimination, sexuality, aggression, achievement. The goal of nursing is to restore, maintain, or attain behavioral system balance and stability. SEE: *Nursing Theory Appendix*.

**behaviorism** (bē-hāv'yōr-izm) A theory of conduct that regards normal and abnormal behavior as the result of conditioning rather than choice or will.

**behavior therapy** Techniques used to change maladaptive behaviors, based on principles of learning theory. Cigarette smoking, eating disorders, and alcohol abuse are commonly treated through behavior therapy, which may include the use of positive reinforcement, aversive conditioning, discrimination, and modeling.

**Behçet's syndrome** (bā'sēts) [Hulusi Behçet, Turkish dermatologist, 1889–1948] A rare, multisystem, chronic, recurrent disease of unknown cause, marked by ulceration of the mouth and genitalia and by uveitis. The central nervous system, blood vessels, joints, and intestinal tract may be involved. It is genetically associated with HLA-B51. The disease occurs worldwide but is most common in the eastern Mediterranean area and eastern Asia. In these areas it occurs mostly in young men and is a leading cause of blindness. In the Western world, where the disease is less severe, it affects men twice as frequently as it does women but is not a leading cause of blindness. The period between attacks is irregular but may be as short as days or as long as years. The syndrome is also known as Behçet's disease, or cutaneomucocucal syndrome.

**TREATMENT:** Therapy depends on the severity of the clinical findings. Mild disease of skin and joints may be treated with topical steroids or nonsteroidal anti-inflammatory drugs. Involvement of the central nervous system or gastrointestinal tract may require high dose steroids or cytotoxic drugs, such as chlorambucil, cyclophosphamide, or methotrexate.

**bejel** (běj'ěl) A nonvenereal form of syphilis endemic in Central and Western Africa and Eastern Mediterranean countries; children are especially susceptible.

**bel** (bél) SYMB: B. A unit of measurement of the intensity of sound. It is expressed as a logarithm of the ratio of two sounds of acoustic intensity, one of which is fixed or standard; the ratio is expressed in decibels.

**belay** (bē-lāy') To protect with a rope. A rescuer can belay a stokes basket as it is being lowered to a safe position.

**Bell, Sir Charles** (bél) Scottish physiologist and surgeon, 1774–1842.

**B.'s palsy** Unilateral facial paralysis of sudden onset. The paralysis involves both the upper and lower halves of the face, distinguishing it from the facial paralysis associated with some strokes, which affect the muscles of the mouth more than those of the eye or forehead. Bell's palsy is usually caused by a reactivation of herpes simplex virus, although other infections (e.g., syphilis or Lyme disease) are sometimes implicated. Complications may include corneal drying and ulceration and mild dysarthria. Either side of the face may be affected. Attacks recur in about 10% of cases.

**SYMPTOMS:** The paralysis distorts smiling, eye closure, salivation, and tear formation on the affected side.

**TREATMENT:** Tapering doses of prednisone without antiviral drugs pro-

vide the most effective results. In addition, the affected eye should be protected from drying with artificial tears or unmedicated ointments. Some practitioners advise wearing sunglasses during the palsy or patching the eye to protect it from foreign bodies or drying.

**PROGNOSIS:** Partial facial paralysis is usually resolved within several months. The likelihood of complete recovery after total paralysis varies from 20% to 90%.

**B.'s phenomenon** Rolling of the eyeball upward and outward when an attempt is made to close the eye on the side of the face affected in peripheral facial paralysis.

**belladonna** (běl'ä-dön'ä) [It., beautiful lady] An anticholinergic derived from *Atropa belladonna*, a poisonous plant with reddish flowers and shiny black berries. Belladonna is the source of various alkaloids (stramonium, hyoscyamus, scopolamine, and atropine) and is used mainly for its sedative and spasmolytic effects on the gastrointestinal tract. All alkaloids derived from belladonna are toxic. SEE: *atropine in Poisons and Poisoning Appendix*.

**Bellini's tubule** (bě-lē'nēz) [Lorenzo Bellini, It. anatomist, 1643–1704] A papillary duct of the kidney; the union of several collecting tubules.

**Belloco's cannula** (běl'öks') [Jean Jacques Bellocoq, Fr. surgeon, 1732–1807] An instrument for drawing in a plug through the nostril and mouth to control epistaxis.

**belly** [AS. *baelg*, bag] **1.** The abdomen or abdominal cavity. **2.** The fleshy, central portion of a muscle.

**belly button** An informal term for the navel or umbilicus.

**Belmont report** A national commission that promulgated the basic ethical guidelines and principles for human research in the U.S.

**belonoskiascopy** (běl'ō-nō-skī-ās'kō-pē) [Gr. *belone*, needle, + *skia*, shadow, + *skopein*, to examine] Subjective retinoscopy by means of shadows and movements to determine refraction.

**benazepril** An ACE inhibitor used to treat hypertension and congestive heart failure.

**Bence Jones protein** (Bēns Jōnz) [Henry Bence Jones, Brit. physician, 1814–1873] The light chain portion of immunoglobulin molecules that may be deposited in the renal tubules and excreted in the urine of patients with multiple myeloma. The protein is involved in renal amyloidosis and renal failure.

**benchmark** (běnč'märk) A criterion of quality or service in health care, usually expressed as a measurable standard.

**Bender's Visual Motor Gestalt test** (běn'dērz) [Lauretta Bender, U.S. psychiatrist, 1897–1987] A test in which

the subject copies a series of patterns. The results vary with the type of psychiatric disorder present.

**bends, the** (běnz) A lay term for decompression illness. SEE: *decompression illness; hyperbaric chamber*.

**Benedict's solution** (běn'ē-dīkts) [Stanley R. Benedict, U.S. chemist, 1844–1936] A solution used to test for the presence of sugar. To 173 g sodium or potassium citrate and 100 g anhydrous sodium carbonate (dissolved in 700 ml water) is added 17.3 g crystalline copper sulfate that has been dissolved in 100 ml of water. Sufficient water is added to the mixture to make 1000 ml. SEE: *Benedict's test*.

**Benedikt's syndrome** (běn'ä-dīkts sīn'drōm") [Moritz Benedikt, Austrian physician, 1835–1920] Hemiplegia with oculomotor paralysis and clonic spasm or tremor on the opposite side. Benedikt's syndrome is caused by lesions that damage the third nerve and involve the red nucleus and corticospinal tract.

**beneficence** (běn-ēf'ä-sēns) **1.** An ethical principle that emphasizes doing what is best for the patient. **2.** Choosing to do good; acting kindly or charitably.

**benefit** **1.** Something that promotes health. **2.** A term for service stipulations of an insurance policy, esp. a medical policy.

**benefit trigger, trigger** A set of conditions or self-care deficits used by a health insurer as criteria for the initiation of insurance payouts. In the care of elderly patients, benefits for certain residential services may be linked to the documentation of new deficits in self-care, e.g., the inability to perform two or more activities of daily living.

**benevolence** (bě-nēv'ō-lēns) [L. *benevolentia*, good will] The desire to act in a good, kindly manner toward others.

**benign** (bě-nīn') [L. *benignus*, mild] Not recurrent or progressive; nonmalignant.

**benign forgetfulness** A memory defect marked by the inability to immediately recall a name or date. The item, whether recent or remote, is eventually recalled. Also known as benign senescent forgetfulness.

**Bennett double-ring splint** (Bēn'ēt) A metal splint that slips on the finger and limits hyperextension of the proximal interphalangeal joint.

**Bennett's fracture** An intra-articular fracture at the base of the first metacarpal with subluxation of the carpometacarpal joint due to traction of the abductor pollicis longus muscle on the first metacarpal. This fracture usually requires percutaneous pinning to maintain reduction.

**bentonite** (běn'tōn-īt) [Fort Benton, U.S.] A hydrated aluminosilicate that forms a thick, slippery substance when

water is added. It is used as a suspending and clarifying agent. It may be heat-sterilized.

**benzaldehyde** (běn-zāl'dě-hīd) A pharmaceutical flavoring agent derived from oil of bitter almond.

**benzene, benzin, benzine** (běn'zēn, běn-zēn', běn'zīn) [*benz*(oin) + Gr. *ene*, suffix used in chemistry to denote unsaturated compound]  $C_6H_6$ ; a highly flammable, volatile liquid that is the simplest member of the aromatic series of hydrocarbons. It is immiscible with water, and it dissolves fats. It is used as a solvent and in the synthesis of dyes and drugs. The phenyl radical,  $C_6H_5$ , will be recognized in the formulae for phenol, dimethylaminoazobenzene (SEE: under *azo compounds*), and benzoic acid. It is a carcinogen. SYN: *benzol*. SEE: *Poisons and Poisoning Appendix*.

**benzoate** (běn'zō-āt) A salt of benzoic acid.

**benzocaine** (běn'zō-kān) Ethyl aminobenzoate, a local anesthetic used topically.

**benzodiazepine** (běn'zō-dī-āz'ē-pēn) Any of a group of chemically similar psychotropic drugs with potent hypnotic and sedative action; used predominantly as antianxiety and sleep-inducing drugs. Side effects of these drugs may include impairment of psychomotor performance; amnesia; euphoria; dependence; and rebound (i.e., the return of symptoms) transiently worse than before treatment, upon discontinuation of the drug.

**benzoic acid** (běn-zō'īk)  $C_7H_6O_2$ ; a white crystalline material having a slight odor. It is used in keratolytic ointments and in food preservation. Saccharin is a derivative of this acid.

**benzoin** (běn'zōyn, -zō-in) [Fr. *benjoin*] A balsamic resin. It is used as a solution applied to the skin to prepare it for application of adhesives, esp. adhesive tapes.

**benzol** (běn'zōl") Benzene.

**benzonatate** (běn-zō'nā-tāt) A substance chemically related to procaine and used to suppress cough.

**benzoyllecgonine** (běn-zōyl-ēk'gō-nīn) The principal metabolite of cocaine. Screening tests for cocaine determine its presence or absence.

**benzoyl peroxide** (běn'zōwl") A topical agent used for the treatment of acne vulgaris. It is usually considered as a first-line treatment for mild to moderate acne. Common side effects include drying of the skin and skin discomfort.

**benztropine mesylate** (běnz'trō-pēn) An antiparasymphathomimetic agent usually used with other drugs in treating parkinsonism.

**benzyl** (běn'zēl")  $C_6H_5COOCH_2C_6H_5$ ; the hydrocarbon radical of benzyl alcohol and various other compounds.

**b. benzoate** An aromatic, clear, colorless oily liquid with a sharp, burning taste. It is used as a topical scabicide.

**benzylpenicillin procaine** (běn'zīl-pēn-ī-sīl'in) Penicillin G procaine.

**Bérard's aneurysm** (bā-rār'z') [Auguste Bérard, Fr. surgeon, 1802–1846] An arteriovenous aneurysm in the tissues surrounding an injured vein.

**bereavement** (bē-rēv'mēnt) The expected reactions of grief and sadness upon learning of the loss of a loved one. The period of bereavement is associated with increased mortality. It is useful for those who care for the bereaved to emphasize human resilience and the power of life rather than the stress that accompanies bereavement.

**Berg balance test** (bērg) A physical performance evaluation of fourteen activities including; sit-to-stand, reaching, turning, and single leg stance. The activities are rated on a 0 to 4 scale. This test has been shown to be highly predictive of patient falls. Significance: Scores: less than 36 = 100% fall risk; less than or equal to 46 = 78% fall risk.

**Bergeron's chorea** (bēr'jā-rōnz" kō-rē'ā) Electric chorea.

**Bergmeister's papilla** (bērg'mīs-tēr'z) A veil in front of the retina of the eye. It is made of a conical mass of glial remnants that are the developmental tissue of the eye that has not been reabsorbed.

**beriberi** (bēr'ē-bēr'ē) [Sinhalese *beri*, weakness] A disease marked by peripheral neurologic, cerebral, and cardiovascular abnormalities and caused by a lack of thiamine. Early deficiency produces fatigue, irritability, poor memory, sleep disturbances, chest pain, anorexia, abdominal discomfort, and constipation. Beriberi is endemic in Asia, the Philippines, and other islands of the Pacific. SYN: *kakke*.

**ETIOLOGY:** Deficiency is caused by subsistence on highly polished rice, which has lost all thiamine content through the milling process. Secondary deficiency can arise from decreased absorption, impaired absorption, or impaired utilization of thiamine.

**TREATMENT:** Treatment consists of oral or parenteral administration of thiamine and eating a balanced diet.

**berkelium** (bērk'lē-ūm) [U. of California at Berkeley, where first produced] SYMB: Bk. A transuranium element; atomic weight 247, atomic number 97.

**Berlin edema** [R. Berlin, German eye physician, 1833–1897] Commotio retinae.

**berloque dermatitis** SEE: *dermatitis, berlock*.

**Bernard's glandular layer** (bēr-nār'z', -nārdz') The layer of cells lining the acini of the pancreas.

**Bernard-Soulier syndrome** (bēr-nār'sool-yā') [Jean A. Bernard, Fr. hematolo-

- gist, 1907–2006; Jean-Pierre Soulier, Fr. hematologist, 1915–2003] An autosomal recessive bleeding disorder marked by an inherited deficiency of a platelet glycoprotein. The platelets are large. Bleeding results from defective adhesion of platelets to subendothelial collagen and is disproportionate to the reduction in platelets.
- Bernhardt-Roth syndrome** Meralgia paresthetica.
- Bernstein test** (Běrn'stĭn) [Lionel Bernstein, U.S. physician, b. 1923] Test to reproduce the pain of heartburn. This is done by swallowing a dilute solution (0.1 N) hydrochloric acid. This is compared with a placebo infusion of normal saline into the esophagus. The latter does not cause heartburn.
- berylliosis** (bĕr"ĭl-lĕ-ō'sĭs) [*beryllium* + Gr. *osis*, condition] Beryllium poisoning, usually of the lungs. The beryllium particles cause fibrosis and granulomata at any site, whether inhaled or accidentally introduced into or under the skin.
- beryllium** (bĕ-rĭl'ĕ-ŭm) [Gr. *beryllos*, beryl] A metallic element, symbol Be, atomic weight 9.0122, atomic number 4, specific gravity 1.848. It is used as a window in some x-ray tubes to produce a soft (low kilovoltage) beam appropriate for imaging soft tissue (mammography or specimen radiography) or for forensic and industrial radiography of extremely thin objects (e.g., a postage stamp or fingerprint).
- Best's disease** (bĕst) [Franz Best, Ger. pathologist, 1878–1902] An autosomal-dominant form of macular dystrophy in which central, noncorrectable, and progressive visual loss begins in childhood or adolescence and worsens in adulthood. The disease is characterized by degeneration of the pigment epithelium of the macula. SYN: *vitelliform degeneration*. SEE: *macular dystrophy*.
- bestiality** (bĕs-tĕ-ăl'ĭ-tĕ) [L. *bestia*, beast] The use of animals (e.g., snakes, poultry, and nonhuman mammals) for sexual enjoyment.
- best interest standard** The ethical requirement that people who care for others will do so in good faith, placing their assessment of that person's best interests above their own. The standard particularly applies to the care of incompetent or dependent people, e.g., infants or patients who are so ill that they cannot make decisions on their own.
- beta** (bă'tă) **1.** Second letter of Gr. alphabet, written β. **2.** In chemistry, a prefix to denote isomeric variety or position in compounds of substituted groups.
- beta-adrenergic agent** A synthetic or natural drug that stimulates beta (sympathetic) receptors, e.g., epinephrine and norepinephrine.
- beta-adrenergic blocking agent** SEE: under *agent*.
- beta-adrenergic receptor** SEE: under *receptor*.
- beta blocker** Beta-adrenergic blocking agent.
- beta-carboline alkaloids** (kăr'bō-lĕn") A group of neurologically active compounds similar in chemical structure to the amino acid L-tryptophan, the neurotransmitter serotonin, and the hallucinogen dimethyltryptamine. They increase levels of serotonin in the central and peripheral nervous system and inhibit the action of monoamine oxidase.
- beta carotene** A yellow-orange pigment found in fruits and vegetables; it is the most common precursor of vitamin A. The daily human requirement for vitamin A can be met by dietary intake of beta carotene.
- TOXICITY:** Ingestion of large doses of vitamin A either acutely or chronically causes skin and liver damage, among other injuries. Beta carotene supplements increase the risk of death among smokers and have no known beneficial effects on nonsmokers.
- BENEFITS:** A diet rich in beta carotene has been associated with a decreased risk of certain cancers.
- DOSING:** Vitamin A activity in foods is expressed as retinol equivalents (RE). Six mg of beta carotene equals 1 μg of retinol or 1 RE. SEE: *vitamin A*; *retinol*.
- beta cells** **1.** Basophilic cells in the anterior lobe of pituitary that give a positive periodic acid stain reaction. **2.** Insulin-secreting cells of the islets of Langerhans of the pancreas.
- betacism** (bă'tă-sĭzm) [Gr. *beta*, the letter b, + *-ismos*, condition] Speech in which other letters of the alphabet are inappropriately pronounced like the letter b.
- beta cryptoxanthin** Cryptoxanthin.
- beta-lactam** (bă'tă lăk'tām) Beta-lactam antibiotic.
- beta lactamase** (bă-tă lăk'tă-măz) An enzyme that destroys the beta lactam ring of penicillin-like antibiotics and makes them ineffective.
- extended-spectrum b. I.** ABBR: ESBL. Any enzyme that makes bacteria (esp. gram-negative bacteria such as the Enterobacteriaceae) resistant to the effects of broad-spectrum beta-lactam antibiotics.
- beta-lactamase resistance** (lăk'tă-măs") The ability of microorganisms that produce the enzyme beta-lactamase (penicillinase) to resist the action of certain types of antibiotics, including some but not all forms of penicillin.
- extended-spectrum b.I.R.** ABBR: ESBL. An enzymatically mediated type of antibiotic resistance found in gram-negative bacilli (e.g., *Klebsiella pneumoniae*, *Enterobacter cloacae*, and

*Pseudomonas aeruginosa*), that make these bacteria resistant to cephalosporins and penicillin antibiotics.

**beta-lactamase-resistant antibiotics** Antibiotics that are resistant to the action of beta lactamase. This property makes them effective against microbial organisms that produce beta lactamase. SEE: *beta-lactamase resistant penicillin*.

**betamethasone** (bā'tă-měth'ă-sōn) A powerful, synthetic glucocorticoid used to treat many conditions including dermatitis, arthritis, inflammatory bowel disease, reactive airways disease, and respiratory distress syndrome in pre-term infants, among others.

**beta<sub>2</sub> microglobulin** (mī'krō-glōb'ū-līn) ABBR: β<sub>2</sub>-m. A polypeptide that is one of the class I major histocompatibility markers on cell surfaces; it is grouped into chains of low molecular weight called light chains. The β<sub>2</sub>-m chain may be affected by the *nef* gene in HIV, preventing CD8+ T lymphocytes from recognizing the virus. SEE: *acquired immunodeficiency syndrome; major histocompatibility complex*.

**beta subunit** Glycoprotein hormones containing two different polypeptide subunits designated α and β chains. Analysis of the units of these hormones (e.g., follicle-stimulating, luteinizing, chorionic gonadotropin, and thyrotropin) enables early diagnosis of such conditions as pregnancy and ectopic pregnancy.

**betatron** (bā'tă-trōn) A circular electron accelerator that produces either high-energy electrons or x-ray photons.

**betel nut** (bēt'īl) [Portuguese *betele*] The nut of the tropical Asian palm *Areca catechu*, chewed for its stimulant and euphoric effects. SYN: *areca nut*.



Chewing betel nut causes cholinergic effects, which some people may not tolerate well. Chewing betel nut has also been associated with oral and esophageal cancers, esp. in those who also smoke cigarettes or drink alcohol.

**Bethesda System, The** (bě-thěz'ďă sis'tēm) ABBR: TBS. A system for reporting cervical or vaginal cytologic diagnoses. Use of TBS replaces the numerical designations (Class 1 through 5) of the Papanicolaou smear with descriptive diagnoses of cellular changes. Cellular changes are identified as benign; reactive, such as those due to inflammation, atrophy, radiation, or use of an intrauterine device; or malignant. Hormonal evaluation of vaginal smears is provided. Low-grade squamous intraepithelial lesions include what was previously called grade I cervical intraepithelial neoplasia (CIN 1) and cellular changes due to human papilloma virus,

that is, koilocytosis. High-grade squamous intraepithelial neoplasia includes what was once identified as CIN 2 and CIN 3. SEE: *cervix, cancer of; cervical intraepithelial neoplasia*.

**Bethlem myopathy** A rare, autosomal dominant form of limb-girdle muscular dystrophy that becomes clinically obvious in early childhood. It is usually slowly progressive, gradually resulting in weakness that may limit the ability to walk independently. Muscle contractions, e.g., of the hands, ankles, and elbows, are characteristic.

**Betula verrucosa** (běch'oo-lă, bē'tū-lă vē-roo-kō'să) [L. "rough birch"] The scientific name for the European white birch tree. European white birch pollen, abbreviated *Bet* by the World Health Organization, contains allergens that cause allergies in the spring in the northern hemisphere.

**Betz cells** (Běts) [Vladimir A. Betz, Russ. anatomist, 1834–1894] A type of giant pyramidal cell in the cortical motor area of the brain. The axons of these cells are included in the pyramidal tract.

**bevel** (bēv'əl) **1.** A surface slanting from the horizontal or vertical. **2.** In dentistry, to produce a slanting surface in the enamel margins of a cavity preparation, named according to the surface resulting.

**bezoar** (bē'zor) [Arabic *bazahr*, protecting against poison] A hard mass of entangled material sometimes found in the stomachs and intestines of animals and humans, such as a hairball (trichobezoar), a hair and vegetable fiberball (trichophytobezoar), or a vegetable foodball (phytobezoar).

**BFP** *biologically false positive*.

**Bi** Symbol for the element bismuth.

**bi-** (bī) [L. *bis*, twice] Prefix meaning *two, double, twice*.

**biarticular** (bī'ăr-tīk'ū-lăr) [" + *articulus*, joint] Pert. to two joints; diarthric (e.g., temporomandibular joints).

**bias** (bī'ūs) In experimental medicine, statistics, and epidemiology, any effect or interference at any stage of an investigation tending to produce results that depart systematically from the true value.

**bibasic** (bī-bă'sīk) [" + Gr. *basis*, foundation] Pert. to an acid with two hydrogen atoms replaceable by bases to form salts.

**bibasilar** (bī-băs'ī-lăr) Pertaining to both lung bases.

**bibliocounseling** (bīb'lē-ō-kown'sēl-īng) [Gr. *biblion*, book + " ] bibliotherapy.

**bibliographic manager** (bīb'lē-ō-grăf'īk măn'ă-jēr) Software products to manage textbook and journal references, create databases, and format information for search and retrieval.

**bibulous** (bīb'ū-lūs) [L. *bibulus*, from *bi-*



*bere*, to drink] Absorbent. SYN: *hydrophilous*; *hygroscopic*.

**bicameral** (bī-kām'ēr-āl) [L. *bis*, twice, + *camera*, a chamber] Having two cavities or chambers.

**bicarbonate** (bī-kār'bō-nāt) Any salt containing the  $\text{HCO}_3^-$  (bicarbonate) anion. SEE: *carbonic acid*.

**blood b.** Measured  $\text{HCO}_3^-$  in the blood. The amount present is an indicator of the alkali reserve and is best understood when comparison is made of the blood bicarbonate, pH,  $\text{PCO}_2$ , and base excess, using the Henderson-Hasselbalch equation.

**b. of soda** Sodium bicarbonate.

**bicellular** (bī-sēl'ū-lār) ["] + *cellularis*, little cell] 1. Composed of two cells. 2. Having two chambers or compartments.

**biceps** (bī'sēps) ["] + *caput*, head] A muscle with two heads.

**b. brachii** The muscle of the upper arm that flexes the elbow and supinates the forearm.

**b. femoris** One of the hamstring muscles lying on the posterior lateral side of the thigh. It flexes the leg and rotates it outward.

**bichloride of mercury** (bī-klō'rīd)  $\text{HgCl}_2$ ; corrosive mercuric chloride; a crystalline salt. SEE: *mercuric chloride*; *mercuric chloride poisoning*; *mercuric chloride in Poisons and Poisoning Appendix*.

**bicipital** (bī-sīp'ī-tāl) [L. *biceps*, two heads] 1. Pert. to a biceps muscle. 2. Having two heads.

**bicistronic** (bī'sis-trōn'ik) ["] + *cistron*] Capable of making two proteins from a single messenger RNA molecule.

**biconcave** (bī-kōn'kāv) [L. *bis*, twice, + *concavus*, concave] Concave on each side, esp. as a type of lens. SEE: *illus.*

**biconvex** (bī-kōn'vėks) ["] + *convexus*, rounded raised surface] Convex on two sides, esp. as a type of lens. SEE: *biconcave* for *illus.*

**bicornate, bicornis** (bī-kor'nāt, -nīs) ["] + *cornutus*, horned] Having two processes or hornlike projections.

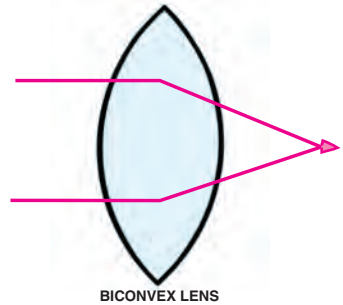
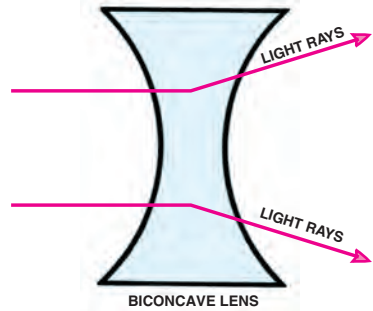
**bicoronal** (bī'kōr'ā-nāl) ["] + L. *corona*, garland, crown fr. Gr. *korone*, curved object, crown] 1. Pert. to both areas of the corona radiata. 2. Pert. to the articulations on either side of the skull that join to form a crown-shaped structure during normal fetal development.

**bicorporate** (bī-kor'pō-rāt) ["] + *corpus*, body] Having two bodies.

**bicuspid** (bī-kūs'pid) ["] + *cuspis*, point] Having two cusps or projections or having two cusps or leaflets.

**b. tooth** A premolar tooth; a permanent tooth with two cusps on the grinding surface and a flattened root. There are four premolars in each jaw, two on each side between the canines and the molars. SEE: *tooth*.

**b.i.d.** L. *bis in die*, twice daily.



BICONCAVE LENS/BICONVEX LENS

**bidet** (bē-dā') [Fr., a small horse] A basin used for cleaning the perineum.

**bidi** (bē'dē) A hand-rolled and often flavored cigarette imported from India or Southeast Asia. It is popular with young smokers, but has a higher nicotine and tar content than most commercially available cigarettes in the U.S. Like other brands of tobacco in the U.S., it causes cancers, an increased risk of fetal death during pregnancy, heart disease, peripheral vascular disease, chronic obstructive lung disease, and genetic mutations.

**Bietti's crystalline dystrophy** (bē-ēt'ēz) [G. B. Bietti, 20th-cent. Italian ophthalmologist] A rare, autosomal-recessive eye disease that causes gradually worsening night blindness and peripheral vision loss. It results from the deposition of crystals in the cornea and retina, with gradual atrophy of the choroid and retina. This condition is more common in Asians than in other ethnic groups. SYN: *corneoretinal dystrophy*.

**bifacial** (bī-fā'shāl) ["] + *facies*, face] Having similar opposite surfaces.

**bifid** (bī'fid) ["] + *findere*, to cleave] Cleft or split into two parts.

**Bifidobacteria** (bī'fid-ō-bāk-tēr'ē-ā) ["] + "] A genus of gram-positive, lactic acid producing bacteria that normally live in the gut of healthy mammals and constitute part of the normal flora of the lower gastrointestinal tract. *Bifidobacteria* and *Lactobacillus* species are consid-

ered probiotic bacteria, i.e., bacteria that contribute to human health. They are also used to produce fermented milks and yogurt. The use of antibiotics to treat infectious diseases may decrease the concentration of *Bifidobacteria* in the gastrointestinal tract, allowing disease-causing bacteria to multiply.

**bifocal** (bī-fō'kāl) [*n* + *focus*, hearth] Having two foci, as in bifocal eyeglasses.

**bifocal eyeglasses** A corrective lens containing upper and lower segments, each with a different power. The main lens is for distant vision; the secondary lens is for near vision.

**bifurcate, bifurcated** (bī-fūr-kāt, bī-fūr-kāt'd) [*n* + *furca*, fork] Having two branches or divisions; forked.

**bifurcation** (bī-fūr-kā'shūn) **1.** A separation into two branches; the point of forking. **2.** Furcation.

**bigemina** (bī-jēm'ī-nā) [L.] Pl. of bigeminum.

**bigeminal** (bī-jēm'ī-nāl) [L. *bigeminum*, twin] Double; paired.

**bigeminum** (bī-jēm'ī-nūm) *pl.* **bigemina** [L.] A bigeminal body.

**bigeminy** (bī-jēm'ī-nē) Occurring in pairs or couplets. **bigeminal, adj.**

**junctional b.** Cardiac arrhythmia in which every other beat is a junctional ectopic or premature junctional contraction. SYN: *nodal bigeminy*.

**nodal b.** Junctional b.

**ventricular b.** Cardiac arrhythmia in which every other beat is a ventricular ectopic or premature ventricular contraction.

**biguanide** (bī-gwōn'īd") A member of the class of oral antihyperglycemic agents that works by limiting glucose production and glucose absorption, and by increasing the body's sensitivity to insulin. Glucophage is one member of this drug class.

**bi-ischial** (bī-is'kē-āl) Concerning both ischial tuberosities of the pelvis.

**bilab** (bī'lāb) [L. *bis*, twice, + *labium*, lip] A long, thin device equipped with a hinged lower jaw. It is inserted into the bladder via the urethra to remove small calculi from the bladder.

**bilateral** (bī-lāt'ēr-āl) [*n* + *latus*, side] Pert. to, affecting, or relating to two sides.

**b. carotid body resection** ABBR: BCB. A rarely used method of treating carotid sinus syncope that relies on the bilateral surgical removal of the carotid bodies. SEE: *carotid body*; *carotid sinus syncope*.

**bilateralism** (bī-lāt'ēr-āl-izm) [*n* + " + Gr. *-ismos*, condition] Bilateral symmetry.

**bilayer** (bī'lā'ēr) A two-component layer. **lipid b.** The outer membrane of most cells includes two layers of phospholipid molecules. These layers are arranged so

their two hydrophilic (water-soluble) sides face the interior and the exterior of the cell, and their hydrophobic (non-polar) core is in between. The membrane is relatively impermeable to molecules such as glucose and amino acids but very permeable to lipid-soluble molecules such as oxygen, carbon dioxide, and alcohol. SEE: *cell* for *illus*.

**bilberry** (bīl'bēr'ē) The European huckleberry (*Vaccinium myrtillus*). It is promoted as a treatment for ocular and circulatory disorders and as a treatment for diarrhea. Its mechanisms of action are: antioxidant, astringent, collagen stabilizer, and vasoprotector.

**bile** (bil) [L. *bilis*, bile] A thick, viscid, bitter-tasting fluid secreted by the liver. It passes from the hepatic duct of the liver either to the cystic duct of the gallbladder or to the common bile duct to the duodenum. The bile from the liver is straw-colored; that from the gallbladder varies from yellow to brown to green.

Bile is stored in the gallbladder, where it is concentrated, and discharged into the duodenum when fatty chyme enters from the stomach. Contraction of the gallbladder is brought about by cholecystokinin-pancreozymin (a hormone produced by the duodenum); its secretion is stimulated by the entrance of fatty foods into the duodenum. Added to water, bile decreases surface tension, providing a foamy solution favoring the emulsification of fats and oils. This action is due to the bile salts, mainly sodium glycocholate and taurocholate.

**COMPOSITION:** Bile pigments (principally bilirubin and biliverdin) are responsible for the variety of colors observed. In addition, bile contains cholesterol, lecithin, mucin, and other organic and inorganic substances.

**FUNCTION:** The function of bile in digestion is to emulsify fats, facilitating their digestion in the small intestine by pancreatic lipase. Bile also stimulates peristalsis. Normally the ejection of bile occurs only during duodenal digestion. About 800 to 1000 ml/24 hr are secreted in the normal adult. SEE: *gallbladder*.

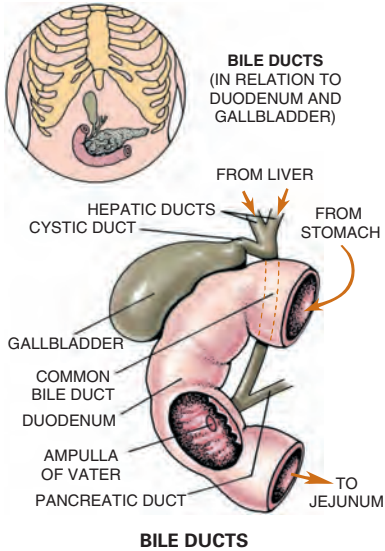
**PATHOLOGY:** Interference with the flow of bile causes jaundice and the presence of unabsorbed fats in the feces. SEE: *jaundice*.

**b. acid** SEE: under *Acid*.

**cystic b.** Bile stored in the gallbladder. It is concentrated, as opposed to hepatic bile.

**b. ducts** Any of the intercellular passages that convey bile from the liver to the hepatic duct, which joins the duct from the gallbladder (cystic duct) to form the common bile duct (ductus choledochus), and which enters the duode-

num about 3 in (7.6 cm) below the pylorus. **SEE: illus.**



**hepatic b.** Bile secreted by the liver cells. It is relatively dilute, is collected in the bile ducts, and flows to the gallbladder.

**lithogenic b.** Bile that favors gallstone production. This may be associated with several conditions: the most important is increased secretion of cholesterol in the bile (e.g., in obesity, high-caloric diets, or drugs such as clofibrate).

**b. pigment** Any of the complex, highly colored substances (e.g., bilirubin and biliverdin) found in bile derived from hemoglobin. They give a brown color to intestinal contents and feces. Van den Bergh's test is used to detect the type of bilirubin in the blood serum.

**b. salt** Any of the alkali salts of bile sodium glycocholate and sodium taurocholate.

**Bilharzia** (bĭl'hār'zē-ă) [Theodor Maximilian Bilharz, Ger. helminthologist, 1825–1862] Former name for *Schistosoma*, the human blood fluke. **SEE: Schistosoma.**

**bilharzial, bilharzic** (bĭl'hār'zē-ăl, -zĭk) Pert. to *Bilharzia* (*Schistosoma*).

**bilharziasis** (bĭl'hār-zī'ă-sĭs) Schistosomiasis. **SEE: Bilharzia.**

**bili-** [L. *bilis*] Combining form meaning *bile*.

**biliary** (bĭl'ē-ăr-ē) Pert. to bile.

**biliary apparatus** Structures concerned with secretion and excretion of bile; includes liver, gallbladder, and hepatic, cystic, and common bile ducts.

**bilicyanin** (bĭl'ĭ-sī'ă-nĭn) [L. *bilis*, bile, + *cyaneus*, blue] A blue or purple pigment, an oxidation product of biliverdin.

**biliflavin** (bĭl'ĭ-flā'vĭn) [l' + *flavus*, yellow] A yellow pigment derived from biliverdin.

**bilifuscin** (bĭl'ĭ-fūs'ĭn) [l' + *fuscus*, brown] A dark brown pigment from bile and gallstones.

**biligenesis** (bĭl'ĭ-jĕn'ĕ-sĭs) [l' + Gr. *genesis*, generation, birth] The formation of bile.

**bilingual** (bĭ'ling'gwĭl) Being able to speak and write in a semantically correct and fluent style in two languages.

**bilopancreatic diversion** (bĭl'ē-ō-pān'krē-ăt'ĭk) [l' + " ] ABBR: BPD. A bariatric surgical treatment for obesity in which most of the stomach is removed. The small pouch that remains is connected to a small segment of the duodenum, which is linked directly to the cecum, bypassing the rest of the small intestine. The procedure restricts the intake of nutrients and causes malabsorption, both of which lead to weight loss. Successful procedures result in sustained weight loss of about 25% of body weight, a result as good as any other surgical treatment for overweight. Common complications of the procedure include iron-deficiency anemia, deficiencies in the absorption of vitamins A, D, E, and K and the minerals calcium and magnesium, gradual bone loss, foul-smelling stools, and failure of surgical anastomoses. The operation takes more time to perform than other bariatric surgeries and tends to have more immediate postoperative complications.

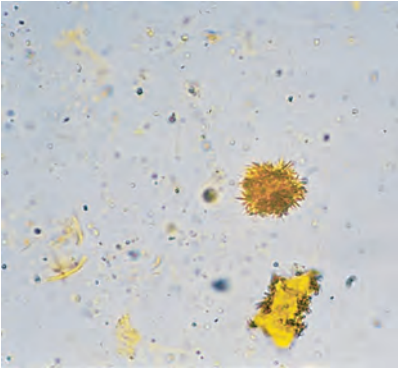
**bilious** (bĭl'yūs) [L. *bilosus*] **1.** Pert. to bile. **2.** Afflicted with biliousness.

**biliousness** (bĭl'yūs-nĕs) **1.** An obsolete term for symptoms ascribed to liver disorders. **2.** An excess of bile.

**bilirubin** (bĭl'ĭ-roo'bĭn) [l' + *ruber*, red]  $C_{33}H_{36}O_6N_4$ ; the orange-colored or yellowish pigment in bile. It is derived from hemoglobin of red blood cells that have completed their life span and are destroyed and ingested by the macrophage system of the liver, spleen, and red bone marrow. When produced elsewhere, it is carried to the liver by the blood. It is changed chemically in the liver and excreted in the bile via the duodenum. As it passes through the intestines, it is converted into urobilinogen by bacterial enzymes, most of it being excreted through the feces. If urobilinogen passes into the circulation, it is excreted through the urine or re-excreted in the bile. The pathological accumulation of bilirubin leads to jaundice in many cases, such as physiological jaundice of the newborn. **SEE: illus.**

**direct b.** Bilirubin conjugated by the liver cells to form bilirubin diglucuronide, which is water-soluble and excreted in urine.

**indirect b.** Unconjugated bilirubin



BILIRUBIN CRYSTALS (×400)

that is present in the blood. It is fat-soluble.

**bilirubinate** (bīl'ī-roo'bīn-āt) A salt of bilirubin.

**bilirubinemia** (bīl'ī-roo-bīn-ē'mē-ā) [l' + *ruber*, red, + Gr. *haima*, blood] Bilirubin in the blood, usually in excessive amounts. Bilirubin normally is present in the blood in small amounts. It increases, however, in diseases in which there is excessive destruction of red blood cells or interference with bile excretion; the amount is also increased when the liver is diseased or damaged. Also called *hyperbilirubinemia*. SEE: *jaundice*.

**bilirubinometry** (bīl'ī-roo-bīn-ōm'ī-trē) The laboratory technique of measuring bilirubin levels in blood, skin, cerebrospinal fluid, or urine. These measurements are used esp. in the treatment of hyperbilirubinemia in neonates. SEE: *hyperbilirubinemia*; *kernicterus*.

**bilirubinuria** (bīl'ī-roo-bīn-ū'rē-ā) [l' + " + Gr. *ouron*, urine] Presence of bilirubin in urine. SYN: *biliuria*.

**biliuria** (bīl'ī-ū'rē-ā) Bilirubinuria.

**biliverdin** (bīl'ī-vēr'dīn) [l' + *viridis*, green]  $C_{33}H_{34}O_6N_4$ ; a greenish pigment in bile formed by the oxidation of bilirubin.

**Billings method** (bīl'īngz) [John Billings, Australian neurologist, 1918–2007] A method of family planning in which observations about the thickness and slipperiness of cervicovaginal mucus are used to determine when a woman is more (or less) likely to conceive a child.

**billion** [Fr. *bi*, two, + *million*, million] **1.** In the U.S., billion is a number equal to 1 followed by 9 zeros (1,000,000,000) or ( $10^9$ ). **2.** In Europe, billion is a number equal to 1 followed by 12 zeros ( $10^{12}$ ), that is, bi-million, or twice the number of zeros in a million ( $10^6$ ).

**Billroth, Christian A.T.** (Bīl'-rōth) Austrian surgeon, 1829–1894.

**B. I operation** Gastroduodenostomy.

**B. II operation** Gastrojejunostomy.

**bilobate** (bī-lō'bāt) [L. *bis*, twice, + *lobus*, lobe] Having two lobes.

**bilocular** (bī-lōk'ū-lār) [l' + *oculus*, cell] **1.** Having two cells. **2.** Divided into compartments.

**biloma** An abnormal collection of bile outside the gallbladder, usually resulting from injury to the right upper quadrant during trauma or surgery.

**bimanual** (bī-mān'ū-āl) [l' + *manus*, hand] With both hands, as in bimanual palpation.

**bimaxillary** (bī-māk'sī-lēr'ē) [l' + *maxilla*, jawbone] Pert. to or afflicting both jaws.

**bimodal** (bī-mō'dāl) [l' + *modus*, mode] Pert. to a graphic presentation that contains two peaks.

**binary** (bī'nār-ē) [L. *binarius*, of two] **1.** Composed of two elements. **2.** Separating into two branches.

**b. acid** An acid containing hydrogen and one other element.

**b. code** SEE: *b. system*.

**b. system** A numbering system particularly well suited to use by computers. All of the information placed into a computer is in binary form, i.e., numbers made up of zeros and ones (0's and 1's). In this system each place in a binary number represents a power of 2 (i.e., the number of times 2 is to be multiplied by itself).

**binaural** (bī'nawr'āl) [L. *bis*, twice, + *auris*, ear] Pert. to both ears.

**binauricular** (bīn'aw-rīk'ū-lār) [l' + *auricula*, little ear] Binaural; pert. to both auricles of the ear.

**bind** **1.** To fasten, wrap, or encircle with a bandage. **2.** In chemistry and immunology, the uniting or adherence (i.e., bonding) of one molecule or chemical entity to another (e.g., the joining of a toxin to an antitoxin or of a hormone to its receptor on a cell surface).

**binder** (bīnd'ēr) [AS. *bindan*, to tie up] **1.** A broad bandage most commonly used as an encircling support of the abdomen or chest. SEE: *bandage*. **2.** In dental materials, a substance that holds a mixture of solid particles together.

**abdominal b.** A wide band fastened snugly about the abdomen for support.

**chest b.** A broad band that encircles the chest and is used for applying heat, dressings, or pressure and for supporting the breasts. Shoulder straps may be used to keep the binder from slipping.

**double-T b.** A horizontal band about the waist to which two vertical bands are attached in back, brought around the leg, and again fastened to the horizontal band.

**obstetrical b.** A binder that extends from the ribs to the pelvis, providing support for a markedly pendulous abdomen. Such support may be rarely re-

quired for severe diastasis recti or for marked separation and mobility of the pubic symphysis during pregnancy.

**phosphate b.** Any of various medications used to prevent hyperphosphatemia in patients with end-stage renal disease. Calcium carbonate taken with meals is the most commonly employed agent. In the past aluminum-containing antacids were used for this purpose, but this practice is now avoided because of the toxic accumulation of aluminum in patients with renal failure.

**Scultetus b.** SEE: *Scultetus binder*.

**T b.** T bandage.

**towel b.** A towel that encircles the abdomen or chest and whose ends are pinned together.

**Binder's syndrome** A syndrome related to facial growth, with hypoplasia of the maxillae and nasal bones resulting in a flattened face, elongated nose, and smaller maxillary arch with crowding of the teeth and malocclusions.

**binge drinking** (bĭnj) The consumption of more than four or five alcoholic drinks in a row (the lower number applies to women; the higher number applies to men). The behavioral consequences of this practice include impaired driving, sexual assaults, and other forms of violence. SEE: *alcoholism*.

**binge eating** An eating disorder marked by rapid consumption of large amounts of food in a short period of time. SEE: *bulimia*.

**bingo card** A method of packaging medications in which a blister pack is enclosed in a folded-over card, usually printed with proprietary advertising for the medication inside.

**binocular** (bĭn-ŏk'ŭ-lār) [L. *bis*, twice, + *oculus*, eye] Pert. to both eyes.

**binocularity** (bĭn-ŏk'ŭ-lār'ĭ-tē) [" ] The coordinated use of both eyes. It is also known as eye teaming.

**binomial** (bĭ-nŏ'mē-āl) [" + *nomen*, name] In mathematics and statistics, an equation containing two variables.

**binotic** (bĭn-ŏt'ĭk) [" + Gr. *ous*, ear] Pert. to or having two ears.

**binovular** (bĭn-ŏv'ŭ-lār) Biovular.

**binuclear, binucleate** (bĭ-nŭ'klē-ār, -āt) [" + *nucleus*, kernel] Having two nuclei.

**bio-** (bĭ'ŏ) [Gr. *bios*, life] Combining form indicating *relationship to life*.

**bioabsorbable** (bĭ'ŏ-āb-sŏrb'ĭ-bĭl) [" + "] Capable of being assimilated by the body, first, because it is relatively easy to implant and second, because it degrades within the body and gradually transfers physical loads to living tissue.

**bioaccumulation** (bĭ'ŏ-āk-kŭ'mŭ-lā'shŭn) The gradual incorporation of chemicals, drugs, pollutants, or other agents into living cells.

**bioactive** (bĭ'ŏ-āk'tĭv) Affecting living tissues.

**bioactive food component** A compound occurring in food that brings about a physiological effect.

**bioartificial** (bĭ'ŏ-ār'tĭ-fĭsh'āl) [" + "] Composed of both living and manufactured components, typically a collection of cells held within a scaffolding or membrane. Bioartificial organs can be used to assist patients with organ failure (e.g., end-stage heart, kidney, liver, or pancreatic disease).

**bioassay** (bĭ'ŏ-ās'ā) [" + O. Fr. *asaier*, to try] In pharmacology, the determination of the strength of a drug or substance by comparing its effect on a live animal or an isolated organ preparation with that of a standard preparation.

**bioastronautics** (bĭ'ŏ-ās'trŏ-naw'tĭks) The study of the effects of space travel on living plants and animals.

**bioavailability** (bĭ'ŏ-ā-vāl'ā-bĭl'ĭ-tē) The rate and extent to which an active drug or metabolite enters the general circulation, permitting access to the site of action. Bioavailability is determined either by measurement of the concentration of the drug in body fluids or by the magnitude of the pharmacologic response. **bioavailable** (-ā-vāl'ā-bĭl), *adj.*

**biobank** (bĭ'ŏ-bāngk') [" + "] An institution that stores human tissues, e.g., autopsy specimens, blood, or organ biopsies, for research.

**bioburden** (bĭ'ŏ-bŭr'dĕn) The number of contaminating microorganisms present on an object (e.g., on the surface of a surgical glove, endoscope, or body part). Reduction of the bioburden is the goal of infection control programs and protocols.

**biocatalyst** (bĭ-ŏ-kāt'ā-lĭst) [" + *katalyein*, to dissolve] An enzyme; a biochemical catalyzer.

**biochemical** (bĭ-ŏ-kĕm'ĭ-kāl) Of or rel. to biochemistry.

**b. marker** Any biochemical compound such as an antigen, antibody, abnormal enzyme, or hormone that is sufficiently altered in a disease to serve as an aid in diagnosing or in predicting susceptibility to the disease.

**biochemistry** [" + *chemeia*, chemistry] The chemistry of living things; the science of the chemical changes accompanying the vital functions of plants and animals.

**biochemorphy** (bĭ'ŏ-kĕ-mŏr-fŏl'ŏ-jē) [" + " + *morphe*, shape, + *logos*, word, reason] The science of the relationship between chemical structure and biological action. SEE: *stereochemistry*.

**biocide** (bĭ'ŏ-sĭd) [" + L. *caedere*, to kill] A substance, esp. a pesticide or an antibiotic, that destroys living organisms.

**bioclimatology** (bĭ'ŏ-klĭ-mā-tŏl'ŏ-jē) [" + *klima*, climate, + *logos*, word, rea-

son] Study of the relationship of climate to life.

**biocolloid** (bī'ō-kōl'oyd) [*l'* + *kollodes*, glutinous] A colloid from animal, vegetable, or microbial tissue.

**biocompatibility** (bī'ō-kōm-păt'ā-bīl'ī-tē) The condition of being harmonious with living systems.

**biocontainment** (bī'ō-kōn-tān'mēnt) In infectious disease laboratories, the process and procedures used to confine harmful microorganisms to the areas in which they are being investigated. The precise regulations vary with the pathogenicity of the organisms. SEE: *biosafety level*.

**biodefense** (bī'ō-dē-fēns') [*l'* + *l'*] National or international efforts to prevent the spread of biologically destructive agents, esp. when they are used in terrorism or warfare.

**biodegradable** (bī'ō-dē-grād'ā-bēl) Susceptible to degradation by biological processes, such as bacterial or enzymatic action.

**biodegradation** (bī'ō-dēg'rē-dā'shūn) The breakdown of organic materials into simple chemicals by biochemical processes. Also called *biological degradation*.

**biodynamics** (bī'ō-dī-nām'īks) [Gr. *bios*, life, + *dynamis*, force] Pertaining to the kinetics of chemical or mechanical processes in biological systems.

**bioelectrical** (bī'ō-ē-lēk'trī-kīl) Pert. to the electrical activities of living organisms.

**bioelectrical impedance analysis** (bī'ō-ē-lēk'trī-kīl) ABBR: BIA. A method of body composition analysis useful in measuring the total body water and other components. BIA relies on the changes in electrical current as it travels through body fluids and tissues. The results obtained may vary with ambient temperature and humidity, the subject's hydration, and other variables.

**bioelectronics** (bī'ō-ē'lēk-trōn'īks) The study of the transfer of electrons between molecules in biological systems.

**bioenergetics** (bī'ō-ēn'ēr-jēt'īks) The study of energy transfer and relationships among living systems.

**bioengineering** (bī'ō-ēn'jī-nēr'īng) The application of engineering concepts, equipment, skills, and techniques to solving medical problems. SEE: *biomedical engineering*.

**bioequivalent** (bī'ō-ē-kwīv'ā-lēnt)  
**1.** Biologically equivalent to another agent, esp. *another drug or therapeutic agent*. **2.** A drug whose effects on the body are indistinguishable from the effects of another.

**bioesthesiometer** (bī'ō-ēs-thēz'ē-ōm'ā-tēr) An instrument used to measure vibration perception.

**bioethics** (bī'ō-éth'īks) [*l'* + *l'*] Moral

inquiry into issues raised by life sciences.

**bioethics committee** Any local, regional, national, or international group that reviews the moral implications of biomedical research, e.g., research into cloning, human enhancement, biotechnology, or life extension.

**biofeedback** (bī'ō-fēd'bāk') A training program designed to develop one's ability to control the autonomic (involuntary) nervous system. After learning the technique, the patient may be able to control heart rate, blood pressure, and skin temperature or to relax certain muscles. The patient learns by using monitoring devices that sound a tone when changes in pulse, blood pressure, brain waves, and muscle contractions occur. Then the patient attempts to reproduce the conditions that caused the desired changes.

**biofilm** (bī'ō-film') A thin coating of bacteria embedded in a moist, adhesive matrix that may cover mucous membranes and devices placed inside the body, including catheters and stents. Bacteria thriving in a biofilm are resistant both to phagocytosis by white blood cells and to destruction by antibiotics.

**biogenesis** (bī'ō-jēn'ē-sīs) [*l'* + *genesis*, generation, birth] The theory that life can originate only from pre-existing life and never from nonliving material.

**biogenetic** (-jē-nēt'īk), *adj.*

**biogenic** (bī-ō-jēn'īk) Produced by living organisms.

**b. amines** A group of chemical compounds, most of which are important in neurotransmission. Included are norepinephrine, histamine, serotonin, and dopamine.

**biogerontology** (bī'ō-jē-rōn-tōl'ō-jē) [*l'* + *l'*] The study of the fundamental biological processes that result from aging.

**biohazard** (bī'ō-haz'ērd) Anything that is harmful or potentially harmful to humans, other species, or the environment. SEE: *biosafety level*.

**bioidentical** (bī'ō-ī-dēn'tī-kīl) [*l'* + *l'*] Having the same chemical structure and function as a molecule found in nature.

**bioinequivalent** (bī'ō-īn-ē-kwīv'ā-lēnt) Differing in physiological or pharmacological action from another agent.

**bioinstrument** (bī'ō-īn'stroo-mēnt) A device placed in the body to record or transmit data.

**biokinetics** (bī'ō-kī-nēt'īks) [*l'* + *kinetikos*, moving] The study of growth changes and movements in developing organisms.

**biologic** (bī'ō-lōj'īk) [*l'* + *logos*, word, reason] **1.** Pert. to biology. **2.** An agent derived from or made of living tissues or cells and used in health care.

**b. half-life** The time required to reduce the concentration of a drug in the

blood, plasma, or serum by 50%. This is a measure of the rate of drug distribution and elimination. SEE: *half-life*; *pharmacokinetics*.

**biological** (bī'ō-lōj'īk-āl) **1.** Pert. to biology. **2.** A medicinal compound (such as a serum, vaccine, antigen, or antitoxin) prepared from living organisms and their products.

**b. armature** SEE: *armature* (1).

**b. degradation** The breakdown of organic materials into simple chemicals by biochemical processes.

**b. fitness** SEE: *fitness, biological*.

**b. warfare** ABBR: BW. Warfare in which disease-producing microorganisms, toxins, or organic biocides (e.g., anthrax, brucellosis, plague) are deliberately used to destroy, injure, or immobilize livestock, vegetation, or human life. SYN: *biowar*. SEE: *chemical warfare*.

**biological intelligence** Those components of intelligence that can be directly attributed to the anatomy and physiology of the central nervous system. Biological intelligence is sometimes distinguished from artificial intelligence, i.e., intelligence demonstrated by computer behavior, and from psychometric intelligence or intelligence as documented by the performance of subjects on IQ tests.

**biological therapy** Therapy with immunologically active agents.

**biologist** (bī-ōl'ō-jīst) A specialist in biology.

**biology** (bī-ōl'ō-jē) [Gr. *bios*, life, + *logos*, word, reason] The science of life and living things.

**molecular b.** The study of DNA, proteins, and other molecular constituents of cells.

**radiation b.** The study of the effects of radiation on living organisms.

**bioluminescence** (bī'ō-loo'mī-nēs'ēns) [" + L. *lumen*, light] Emission of visible light from living organisms, (e.g., cold light produced by fireflies).

**biolysis** (bī-ōl'ī-sīs) [" + *lysis*, dissolution] The chemical decomposition of living tissue by the action of living organisms. **biolytic** (bī-ō-līt'īk), *adj.*

**biomarker** (bī'ō-mahrk'ēr) **1.** A signal that serves as an indicator of the state of a living organism. **2.** A biochemical, genetic, or molecular indicator that can be used to screen diseases, such as cancer.

**biomarker of susceptibility** A biomarker used to indicate that a cell, organism, or tissue can be influenced by a specific agent or toxin.

**biomass** (bī'ō-mās) [" + L. *massa*, mass] All of the living organisms in a specified area.

**biomaterial** (bī'ō-mā-tēr'ē-īl) [" + "] An inert substance used to replace a body part or to be made compatible with living tissue.

**biome** (bī'ōm) [" + *oma*, mass] A major type of environment, such as tundra, forest, or swamp, marked by its climate, flora, fauna, and pathogens.

**biomechanics** (bī'ō-mē-kān'īks) The application of engineering and physical science to the movement of living organisms. SEE: *kinesiology*.

**biomedical** (bī'ō-méd'ī-kīl) Biological and medical; pert. to application of natural sciences to the study of medicine.

**b. engineer** A certified design engineer, usually with a Bachelor of Science degree, who designs and/or maintains medical equipment. Also referred to as a *clinical engineer*.

**b. engineering** Application of the principles and practices of engineering to biomedical research and health care, as seen in the development of devices such as cardiac pacemakers, hearing aids, and artificial limbs and joints.

**b. engineering technologist** A certified technical specialist who repairs and maintains medical equipment.

**biometeorology** (bī'ō-mē'tē-or-ōl'ō-jē) [" + *meteoros*, raised from off the ground, + *logos*, word, reason] The study of the effects of weather on living organisms.

**biometric identifier** (bī'ō-mē'trīk ī-dēn'tī-fī'ēr) Biologically unique data (e.g., fingerprint data, genetic data, and voiceprints) that identify a person. Under provisions of the Health Insurance Portability and Accountability Act, biometric identifiers are protected health information that must be held in strict confidence by health care agencies and professionals.

**biometrics** (bī'ō-mēt'rīks) Biometry (1).

**biometry** (bī-ōm'ē-trē) [" + *metron*, measure] **1.** The application of statistics to biological science. SYN: *biometrics*; *biostatistics*. **2.** The computation of life expectancy. **3.** Identification of living things by precise anatomical or physiological measurements.

**ophthalmic b.** Measurement of any part of the eye, from the cornea to the retina, with an ophthalmic ultrasound.

**biomicroscope** (bī'ō-mī'krō-skōp) A microscope used with a slit lamp for viewing segments of the eye.

**biomicroscopy** (bī'ō-mī-krōs'kō-pē) [" + "] The examination of tissues with an illuminated low-powered microscope, e.g., in slit lamp examinations of the eyes or in cervical colposcopy.

**bion** (bī'ōn) [Gr. *bios*, life] Any living organism.

**bionics** (bī-ōn'īks) The study of biological functions and mechanisms and the application of these findings to the design of machines, esp. computers.

**biopharming** (bī'ō-fārm'īng) [" + Gk. *pharmakon*, poison + pun on *farming*] The genetic alteration of a plant or animal so that its cells can be used to manufacture medications.

**biophysics** (bī'ō-fiz'iks) [ " + *physikos*, natural] Application of physical laws to biological processes and functions. **biophysical** (-ī-kāl), *adj.*

**biopolymer** (bī'ō-pōl'ī-mīr) [ " + " ] A polymer made of biologically compatible or biodegradable components.

**biopsy** (bī'ōp-sē) [ " + *opsis*, vision] A tissue sample removed from the body for microscopic examination, usually to establish a diagnosis. The tissue can be obtained surgically or by aspiration. The procedure can be guided by computed tomography, ultrasonography, magnetic resonance imaging, or radiography, or it can be performed without imaging (i.e., "blindly").

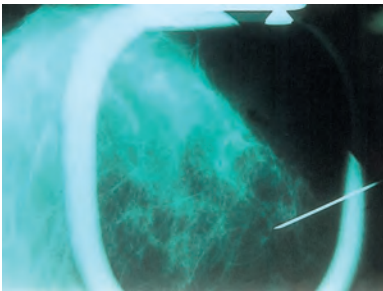
**aspiration b.** The removal of tissue with a needle and syringe, for example, from a cyst or the bone marrow.

**brush b.** The removal of cells from an organ by rubbing them loose.

**cone b.** Removal of a cone shaped piece of tissue from the uterine cervix to diagnose or treat cervical diseases. The procedure may be performed with a surgical knife (scalpel), carbon dioxide (CO<sub>2</sub>) laser, or Loop Electrosurgical Excision Procedure (LEEP).

**endometrial b.** The removal of a sample of uterine endometrium for microscopic study. The procedure is commonly used in fertility assessment to confirm ovulation and to determine the cause of dysfunctional or postmenopausal bleeding.

**fine needle aspiration b.** ABBR: FNA biopsy. The removal of tissue through a long needle with or without radiological guidance. **SEE: illus.**



FINE NEEDLE BREAST BIOPSY

**liver b.** The removal of tissue from the liver with a large-bore needle that captures a core of tissue.

**muscle b.** The removal of muscle tissue for microscopic examination and chemical analysis.

**needle b.** The removal of cells or tissue with a needle by aspiration.

**percutaneous breast b.** Use of a directional, high-speed, rotating cutter attached to a vacuum source to gather multiple contiguous core samples of

breast tissue through a single point of insertion. This minimally invasive procedure is usually performed under local anesthesia, using stereotactic imaging or real-time ultrasonography.

**percutaneous renal b.** Obtaining renal tissue for analysis with a needle inserted through the skin, usually done after the kidney has been localized by ultrasound, computed tomography, or angiography. This technique is used to establish a diagnosis of renal dysfunction, determine prognosis in patients with renal disease, evaluate the extent of renal injury, and determine appropriate therapy. The most common complication is urinary bleeding, which tends to clear gradually over several days.

**percutaneous transthoracic needle aspiration b.** Use of a radiographically guided aspiration needle to obtain a sample of tissue in cases of suspected pulmonary malignancies or other unknown lesions. Because of the risk of pneumothorax, the procedure is usually contraindicated in patients receiving mechanical ventilation.

**punch b.** The removal of a small piece of tissue (usually of the skin) with a hollow, round cutting tool. **SEE: illus.**



(A) SCREWING PUNCH INTO SKIN



(B) REMOVING THE BIOPSY SPECIMEN

#### PUNCH BIOPSY

**sentinel node b.** A technique for identifying the initial site of cancer metastasis. After injection of a radioactive tracer directly into the tumor mass, the tissue is massaged to encourage uptake of tracer by lymphatic vessels. A nega-



- tive biopsy of the first node infiltrated by the tracer suggests that the malignancy has not yet spread to neighboring regional lymph nodes.
- suction b.** A technique for obtaining tissue by aspiration; e.g., to obtain tissue from the mucosa of the stomach and intestines.
- biopsychosocial** (bī'ō-sī'kō-sō'shāl) Biological, psychological, and social; pert. to the application of knowledge from the biological and behavioral sciences to study or solve human problems.
- biopterin** (bī-ōp'tēr-in) 2-amino-4-hydroxy-6-(1,2-hydroxypropyl) pteridine, important in metabolizing phenylalanine. A deficiency of biopterin is a rare cause of phenylketonuria.
- bioptome** (bī-ōp'tōm) A tool used to obtain biopsies of the endomyocardium. It consists of a forceps (with small tissue-cutting jaws) that is advanced into the ventricle along a catheter or guidewire.
- bioremediation** (bī'ō-rē-mē'dē-ā'shūn) The conversion of hazardous wastes and pollutants into harmless materials by microorganisms.
- biorythm** (bī'ō-rīth'ūm) [" + *rhythm*, *rhythm*] A cyclic phenomenon (e.g., circadian rhythm, sleep cycle, and menstrual cycle) that occurs with established regularity in living organisms. SEE: *clock*, *biological*.
- bios** (bī'ōs) [Gr., *life*] **1.** Organic life. **2.** A group of substances (including inositol, biotin, and thiamine) necessary for the most favorable growth of some yeasts.
- biosafety level** (bī'ō-sāf'tē lēv'īl) ABBR: BSL. A classification system to indicate the safety precautions required for those investigating microorganisms (esp. viruses known to be dangerous or lethal to those exposed to them). There are four BSLs, with BSL-4 requiring the highest level of security.
- bioscience** (bī'ō-sī'ēns) [Gr. *bios*, *life*, + *L. scientia*, *knowledge*] Life science.
- biosensor** (bī'ō-sēn'sor) [Gr. *bios*, *life*, + *sensor*] A device that senses and analyzes biological information, including temperature, heart rate, blood pressure, or the chemical composition of body fluids.
- biospectrometry** (bī'ō-spēk-trōm'ē-trē) [" + *L. spectrum*, *image*, + *Gr. metron*, *measure*] Use of a spectroscope to determine the amounts and kinds of substances in tissues.
- biospectroscopy** (bī'ō-spēk-trōs'kō-pē) [" + " + *Gr. skopein*, *to examine*] Examination of tissue by use of a spectroscope.
- biosphere** (bī'ō-sfēr") [" + *sphaira*, *ball*] The parts of earth's land, water, and atmosphere in which living organisms can exist.
- biostatistics** (bī'ō-stā-tīs'tīks) Biometry (1).
- biosynthesis** (bī'ō-sīn'thē-sīs) [" + *synthesis*, *a putting together*] The formation of chemical compounds by a living organism.
- biota** (bī-ō'tā) [Gr. *bios*, *life*] The combined animal and plant life in an area.
- biotaxis** (bī'ō-tāk'sīs) [" + *taxis*, *arrangement*] Movement of an organism in response to an external stimulus.
- Biot's breathing** (bē-ōz') [Camille Biot, Fr. physician, b. 1878] Breathing marked by several short breaths followed by long, irregular periods of apnea. It is seen in patients with increased intracranial pressure. SEE: *Cheyne-Stokes respiration*.
- biotechnology** (bī'ō-tēk-nōl'ō-jē) The use of living organisms or biological processes in technical industrial applications.
- biotelemetry** (bī'ō-tēl-ēm'ē-trē) [Gr. *bios*, *life*, + *tele*, *distant*, + *metron*, *measure*] Recording physiological parameters such as temperature, heart rate, ECG, and EEG in subjects remote from the investigator. This is done by transmitting and receiving by telephone or other electronic methods.
- bioterrorism** (bī'ō-tēr'ō-rī'zīm) [" + *terrorism*] The use of biological warfare agents against civilian rather than military targets.
- biotherapy** (bī'ō-thēr'ā-pē) In complementary medicine and in oncology, the use of biological response modifiers (e.g., interleukins, phytochemicals, or phytonutrients) to enhance the immune response, alter hormone levels, or assist in the treatment of cancer.
- biotics** (bī-ōt'īks) [Gr. *biotikos*, *living*] The science that deals with the functions of life.
- biotin** (bī'ō-tīn) A vitamin that is a coenzyme involved in gluconeogenesis and fat synthesis. It is commonly found in egg yolks, peanut butter, liver, kidney, cauliflower, and yeast. Deficiencies occur when people consume large amounts of raw egg white, which contains avidin. Deficiency is also common among alcoholics. Children with biotin deficiency have delayed mental and physical development, alopecia, impaired immunity, and anemia. SYN: *vitamin H*.
- biotoxin** (bī-ō-tōk'sīn) [Gr. *bios*, *life*, + *toxikon*, *poison*] A toxin produced by or found in a living organism.
- biotransformation** (bī'ō-trāns'fōr-mā'shūn) The chemical alteration that a substance undergoes in the body.
- biotrauma** (bī'ō-traw'mā) [" + " ] Injury to the lungs during mechanical ventilation resulting from excessive inflammation (i.e., from the systemic release of damaging cytokines). Biotrauma is one type of ventilatory-induced lung injury. SEE: *inflammation* for *ill*us.

**biotype** (bī'ō-tīp) [ " + *typos*, mark]

1. Individuals possessing the same genotype. 2. In microbiology, the former name for biovar. SEE: *biovar*.

**biovar** (bī'ō-vār) [*biological variation*]

In microbiology, a term for variants within a species. These are usually distinguished by certain biochemical or physiological characteristics. SEE: *morphovar*; *serovar*.

**biovular** (bī-ōv'ū-lār) [L. *bis*, twice, + *ovum*, egg] Derived from or pert. to two ova. SYN: *binovular*.

**biovar** (bī-ō-vār') Biological warfare.

**BiPAP** A form of noninvasive ventilation supplied by facial or nasal mask in which both inspiratory and expiratory pressures are set above atmospheric levels. This type of ventilatory support assists patients with sleep apnea, congestive heart failure, hypoventilation, and other forms of respiratory insufficiency.

**bipara** (bīp'ā-rā) [ " + *parere*, to bring forth, to bear] A woman who has given birth for the second time to an infant or infants, alive or dead, weighing 500 g or more. SYN: *secundipara*.

**biparental** (bī'pā-rēn'tāl) [ " + *parere*, to bring forth, to bear] Derived from two parents, male and female.

**biparietal** (bī'pā-rī'ē-tāl) Concerning the parietal bones or their eminences.

**biparous** (bīp'ā-rūs) Producing two ova or offspring at one time.

**biped** (bī'pēd) [ " + *pes*, foot] An animal with two feet.

**bipenniform** (bī-pēn'ī-form) [ " + *penna*, feather, + *forma*, shape] Muscle fibers that come from each side of a tendon in the manner in which barbs come from the central shaft of a feather.

**biphasic** (bī-fāz'īk) Consisting of two phases. SYN: *diphasic*.

**bipolar** (bī-pōl'ār) [ " + *polus*, a pole]

1. Having two poles or processes. 2. Pert. to the use of two poles in electrotherapeutic treatments. The term *bi-terminal* should be used when referring to an alternating current. 3. A two-poled nerve cell. 4. A term used as a synonym for the more formal psychiatric term, mood disorder, bipolar.

**bipolar disorder** A psychological disorder marked by manic and depressive episodes. Bipolar disorders are divided into four main categories: bipolar I, bipolar II, cyclothymia, and nonspecified disorders. Mania is the essential feature of bipolar I, whereas recurrent moods of both mania and depression mark bipolar II. SYN: *manic-depressive psychosis*. SEE: *mood disorder*; *Nursing Diagnoses Appendix*.

**TREATMENT:** Often the first-line choice of medication is lithium carbonate. If there are concerns about the side effects of lithium or it is found to be ineffective, valproate, carbamazepine, or

other anticonvulsant agents may be tried.



Bipolar disorder should not be managed with agents that solely treat unipolar depression. Such treatment may trigger manic or hypomanic episodes.

**Bipolaris** (bī'pō-lār'īs [ " + L. *polaris*, polar]) A genus of filamentous pigment-producing fungi that can cause disease in immunosuppressed and immunocompetent patients. *Bipolaris* species are found in soils and vegetation, have been identified in brain, lung, and sinus infections, and resist treatment with current antifungal medications.

**BIRADS** (bī'rādz") [Acronym fm. *Breast Imaging Reporting and Data System*] A classification system developed by the American College of Radiology to characterize findings obtained during breast imaging. Breast imaging may be done by mammography, magnetic resonance imaging, and/or ultrasonography. Category 1 findings are considered normal. Categories 2 and 3 are considered to have minor abnormalities, and those in category 3 require follow-up testing within a half year. Categories 4 and 5 are "suspicious" and "worrisome" for cancer, respectively.

**biramous** (bī-rā'mūs) [ " + *ramus*, a branch] Possessing two branches.

**birefractive** (bī'rē-frāk'tiv) [ " + *refrangere*, to break up] Pert. to or having birefringence.

**birefringence** (bī'rē-frīn'jēns) The splitting of a ray of light in two. **birefringent** (-jēnt), *adj.*

**birth** [Old Norse *burdhr*] The act of being born; passage of a child from the uterus.

**cesarean b.** Cesarean section.

**complete b.** The instant of complete separation of the body of the infant from that of the mother, regardless of whether the cord or placenta is detached.

**cross b.** Crossbirth.

**dry b.** A colloquial and imprecise term for a birth that follows premature rupture of membranes.

**live b.** An infant showing one of the three evidences of life (breathing, heart action, movements of a voluntary muscle) after complete birth. In some countries a live birth is considered not to have occurred if the infant dies during the 24 hr following delivery. Which of these two definitions is used has considerable effect on various vital statistics concerned with the viability of the fetus at time of delivery.

**multiple b.** The birth of two or more offspring produced in the same gestation period.

**premature b.** Preterm birth.

**preterm b.** Delivery occurring between 20 and 38 weeks' gestation. Neonatal morbidity and mortality are high because of physiological immaturity. Preterm neonates are at high risk for developing respiratory distress syndrome; intraventricular hemorrhage; sepsis; patent ductus arteriosus; retinopathy of prematurity; and necrotizing enterocolitis. SYN: *premature birth*. SEE: *prematurity*; *preterm labor*.

**TREATMENT:** When there is a risk of birth occurring between 24 and 34 weeks' gestation, corticosteroid therapy to stimulate fetal lung maturation and production of pulmonary surfactant should be considered; however, birth must occur in no less than 24 hr after administration. Therapy should be repeated weekly until 34 weeks' gestation. There is no evidence that this treatment is harmful to fetuses of either gender.

**CONTRAINDICATIONS:** Corticosteroid therapy should not be administered if the mother has chorioamnionitis or if there is evidence that the drug will have an adverse effect on the mother. Caution is recommended in women who have diabetes mellitus and/or hypertension.

**birth canal** SEE: under *canal*.

**birth center** An alternative nonhospital facility that provides family-oriented maternity care for women judged to be at low risk of experiencing obstetrical complications.

**birth certificate** A legal written record of the birth of a child, as required by U.S. law.

**birth control** Prevention of conception or implantation of the fertilized ovum, or termination of pregnancy. Methods of birth control may be temporary and reversible or permanent. Temporary methods to avoid conception include physical barriers (e.g., male and female condoms, diaphragms, cervical caps, and vaginal sponges) that are most effective when used in conjunction with chemical barriers (such as spermicidal vaginal suppositories, creams, jellies, or foams). Hormonal methods include oral contraceptive pills and progestin implants to suppress ovulation. Fertility awareness methods, such as rhythm, involve identification of and abstinence during ovulation, graphing basal body temperature and changes in cervical mucus consistency and estimation of the day of ovulation. Intrauterine devices (IUD) prevent zygote implantation. Sterilization techniques include male vasectomy and female tubal ligation. Sterilization usually is permanent but may be reversible.

**birth control pill** SEE: under *pill*.

**birth defect** A congenital anomaly. Birth defects are a leading cause of infant

mortality in the U.S. and most developed countries. Each year in the U.S. about 150,000 babies are born with serious birth defects. Known causes include human teratogens, chromosomal defects, and single-gene defects. The cause is unknown in about two thirds of the cases. SEE: *table*.

**birthing chair** (birth'ing) A chair designed for use during childbirth. The mother is in a sitting or semireclining position, which facilitates the labor process and is more comfortable than the supine position.

**birthmark** (birth'mark") Nevus (1).

**birth mother** SEE: under *mother*.

**birth parent(s)** SEE: under *parent*.

**birth spacing** The time between the birth of one child and the birth of the next one. Parents often manage the interval between births for a variety of personal, psychological, or economic reasons. Intervals of less than 17 months or more than 5 years increase the risk of certain maternal and child health problems, such as pre-eclampsia, eclampsia, low birth weight, preterm birth, and maternal mortality.interpregnancy interval.

**birth weight** SEE: *weight, birth*.

**extremely low b.w.** ABBR: ELBW. A birth weight of less than 1000 g (2.2 lb).

**very low b.** ABBR: VLBW. Having a body weight at delivery of less than 1500 g (but more than 500 g). Newborns that are this small make up about 1% of all births in the U.S. but account for about 60% of deaths in the first month of life.

**bisacodyl** (bis-äk'ö-dil; bis"ä-kö'dil) A cathartic drug that acts by its direct effect on the colon. It may be administered orally or by rectal suppository. Trade names are Dulcolax and Theralax.

**bisection** (bi-sëk'shün) [" + *sectio*, a cutting] Division into two parts by cutting.

**bisexual** (bi-sëks'ü-äl) [" + *sexus*, sex] 1. Hermaphroditic; having imperfect genitalia of both sexes in one person. 2. An individual who is sexually active with others of either sex. SEE: *heterosexual*; *homosexual*; *lesbian*.

**bisferious** (bis-fër'ë-üs) [" + *ferire*, to beat] Having two beats; dicrotic.

**Bishop's score** (bish'öps) A system for evaluating the potential for successful elective induction of labor. Factors assessed include fetal station, cervical position, effacement, dilation, and consistency. Each factor receives a score of 0, 1, 2, or 3, for the maximum predictive total score of 15. The lower the score, the greater the possibility that labor induction will fail.

**bisiliac** (bis-il'ë-äk) [" + *ilium*, ilium] Pert. to the two iliac crests or any corresponding iliac structures.

## Common Birth Defects


| Type of Defect | Examples  | Approximate Prevalence per 10,000 Births | Comments  |
|----------------|---|--|---|
| Chromosomal    | Down syndrome (trisomy 21)                                  | 13                                       | Increases with maternal age over 35 years   |
|                | Trisomy 18  | 2.3                                      |   |
| Infectious     | Varicella-zoster infection (chickenpox)                     | 7  |   |
| Metabolic      | Phenylketonuria (PKU)                                       | 3.5                                      |   |
| Structural     | Cleft lip and/or palate                                     | 10                                       | Folate supplementation during pregnancy prevents neural tube defects.               |
|                | Neural tube defects, including anencephaly and spina bifida | 3  |   |
|                | Transposition of the great vessels                          | 5  |   |
| Toxic          | Fetal alcohol spectrum disorders                            | 2 - 15                                   | Varies with prevalence of alcohol use in the community; preventable with abstinence |
|                | Isotretinoin (acne medication)                              |  | Avoid all pregnancies during therapy with isotretinoin.                             |

**bis in die** (bīs ĩn dī'ē, dē'ā) [L.] ABBR: b.d.; b.i.d. Twice in a day.

**bismuth** (bīz' mūth) [Ger. *Wismuth*, white mass] SYMB: Bi. A silvery metallic element; atomic weight 208.980, atomic number 83. Its compounds are used as a protective for inflamed surfaces. Its salts are used as an astringent and as a treatment for diarrhea.

**bisphenol A** (bis-fēn'ōl) [L. *bis*, twice + "] ABBR: BPA. A chemical used in many consumer products to increase their durability and toughness. Its chemical formula is 2,2-bis (4,4'-hydroxyphenyl) propane. It is used principally in manufacturing polycarbonates and epoxy resins. It has estrogen-like effects in animal tissue. Some studies have suggested that BPA has negative hormonal effects on adults and the developing fetus.

**bisphosphonate** (bis-fōs'fō-nāt) Any of a class of medications that inhibit the resorption of bones by osteoclasts. Medications in this class are used to treat osteoporosis, hypercalcemia, and metastatic bone cancers. Examples include pamidronate, etidronate, clodronate, and alendronate.

 Drugs from this class occasionally cause osteonecrosis of the jaw, esp. in cancer patients.

**bisulfate** (bī-sūl'fāt) An acid sulfate in which a monovalent metal and a hydrogen ion are combined with the sulfate radical. SEE: *disulfate*.

**bite** (bīt) [AS. *bitan*, to bite] **1.** To cut with the teeth. **2.** An injury in which the body surface is torn by an insect or animal, resulting in abrasions, punctures, or lacerated wounds. There may be evidence of a wound, usually surrounded by a zone of redness and swelling, often accompanied by pain, itching, or throbbing. This type of wound often becomes infected and may contain specific noxious materials such as bacteria, toxins, viruses, or venom. SEE: *sting*. **3.** In dentistry, the angle and manner in which the maxillary and mandibular teeth occlude. SEE: *occlusion*.

**balanced b.** Balanced occlusion of the teeth.

**cat b.** A wound inflicted by the teeth of a cat; typically a puncture wound on the hand or the arm. A cat bite is usually infected with multiple aerobic and anaerobic organisms, including *Pasteurella multocida*. Broad-spectrum antibiotics are required. About 20% of the time, the wound does not respond to antibiotic therapy and needs incision and drainage or débridement.

**closed b.** Overbite.

**cross b.** A form of dental malocclusion in which the cusps of one tooth, e.g.,

arising from the maxilla, close within the cusps of the tooth arising in the mandible (or vice versa).

**dog b.** A lacerated or punctured wound made by the teeth of a dog. The dog should be observed for 10 days to determine the presence of rabies. SEE: *Capnocytophaga canimorsus*; *rabies*.

**TREATMENT:** The wound must be cleansed thoroughly. It should be washed vigorously with soap and water for at least 10 min to remove saliva. Flushing with a viricidal agent should be followed with a clear rinse. Unless massive, bleeding should not be stopped because blood flow helps to cleanse the wound. Routine tetanus prophylaxis should be provided and information obtained about the animal, its location, and its owner. These data should be included in a report to public health authorities. Appropriate antirabies therapy must be initiated if the animal is known to have rabies.

**end-to-end b.** A bite in which the incisors of both jaws meet along the cutting edge when the jaw is closed.

**fire ant b.** Injury caused by fire ant venom, resulting in local redness and tenderness, and occasional episodes of life-threatening anaphylaxis.

**TREATMENT:** The area, which may contain multiple bites, should be washed with soap and water. Epinephrine, 0.3 to 0.5 ml of a 1:1000 aqueous solution, should be given subcutaneously every 20 to 30 min in cases complicated by anaphylaxis. Use of a tourniquet slows absorption of the venom. Application of ice packs to the area relieves pain. Oxygen, endotracheal intubation, and vasopressors, as well as corticosteroids and antibiotics, may be required.

**flea b.** A hemorrhagic punctum surrounded by erythematous and urticarial patches and caused by the injection of flea saliva.

**TREATMENT:** Ice applied to the site decreases the pain. Application of a corticosteroid cream may decrease the inflammatory response.

**PREVENTION:** Flea bites serve as vectors for *Yersinia pestis*, the bacterium that causes plague. The skin should be treated with an insect repellent available as a powder, spray, or oil for topical use.

**human b.** A laceration or puncture wound caused by the teeth of a human. The aerobic and anaerobic organisms transmitted from the mouth may cause cellulitis, and, occasionally, infections of other soft tissues and bones.

**TREATMENT:** The wound should be irrigated thoroughly and may require surgical débridement. A moist dressing should be applied and tetanus prophylaxis administered. A penicillin with a

beta-lactamase inhibitor usually provides adequate antibiotic coverage.

**insect b.** An injury in which the body surface is torn by an insect, resulting in abrasions, punctures, or lacerated wounds. Insect bites cause more deaths than do snake bites. For more information, see entries for individual insects.

**SYMPTOMS:** The reaction of a previously sensitized person is a potentially life-threatening medical emergency that requires prompt, effective therapy. Symptoms may include hives, itching and swelling in areas other than the site of the bite, tightness in the chest and difficulty in breathing, hoarse voice, swelling of the tongue, dizziness or hypotension, unconsciousness, and cardiac arrest.

**FIRST AID:** If the wound is suspected of containing venom, a bandage sufficiently tight to prevent venous return is applied if the bite is on an extremity. The wound is washed with saline solution thoroughly and a dry sterile dressing is applied. Appropriate antitetanus therapy is applied. Treatment for shock may be needed.

Some insect bites contain an acid substance resembling formic acid and consequently are relieved by topically applied alkalis, such as ammonia water or baking soda paste. For intense local pain, injection of local anesthetic may be required. Systemic medication may be needed for generalized pain.

Individuals who have had an allergic reaction to an insect bite may benefit from venom immunotherapy. This treatment involves administration of very small amounts of the insect venom over several weeks until immunity develops. Immunity is then maintained by periodic venom boosters.

Persons who have a history of an anaphylactic reaction to insect bites should avoid exposure to insects by wearing protective clothing, gloves, and shoes. Cosmetics, perfumes, and hair sprays should be avoided because they attract some insects, as do brightly colored and white clothing. Because foods and odor attract insects, care should be taken when cooking and eating outdoors.

**open b.** A bite in which a space exists between the upper and lower incisors when the mouth is closed.

**snake b.** A puncture wound made by the fangs of a snake. All snakes should be considered poisonous, although only a few secrete enough venom to inoculate poison deeply into the tissues.

**PATIENT CARE:** When snake bite, especially from a venomous snake, is confirmed or strongly suggested, the patient's airway, breathing, and circulation should be assessed, and he or she should be transported immediately to a



medical facility equipped and staffed to handle snake bites. In the hospital, the patient is attached to a cardiac monitor, an automatic noninvasive blood pressure monitoring machine, and a pulse oximeter. If necessary, oxygen administered at 4 L/min via nasal cannula, and an intravenous infusion of Ringer's lactate or normal saline should be started. Pulses below the wound and capillary refill time in the wounded limb are assessed and compared to the unaffected limb. The circumference of the affected limb should be measured at the bite and at equal distances above and below it, to monitor the spread of edema and inflammation. Lung sounds are auscultated for clarity, and the patient is asked about medical history, allergies, and history of previous snakebite. Snakebite symptoms can range from mild swelling, pain, and erythema to hypotension, shock, and a disseminated intravascular coagulation-like syndrome. In all cases the affected limb should be placed in a neutral, resting position.

If the patient has actually received venom from the snake bite (only about 50% of patients have), the appropriate antivenin should be administered intravenously, appropriately diluted. If the required antivenin is prepared from horse serum, the patient should be tested for sensitivity before administering the antivenin. The antivenin should be infused slowly, over about an hour in most cases, and the patient monitored for adverse reactions for at least another hour. Resuscitation equipment for treating anaphylaxis should be readily available throughout the infusion. Children require a higher dosage of antivenin than do adults. A blood sample should be drawn from the patient for complete blood count, coagulation profile, BUN, creatinine, creatine kinase, and blood type and cross-match. A urine specimen should be obtained to test for myoglobinuria.

The wound should be cleaned with cool soap and water. Analgesics and other prescribed treatments (antibiotics, methylprednisolone, antihistamines) should be administered, as well as tetanus prophylaxis if indicated.

Snake antivenin information is available from the nearest Poison Control Center. The patient should be observed for potential complications such as compartment syndrome, coagulopathy, rhabdomyolysis, renal failure, and wound infection. Prior to discharge, the signs and symptoms of delayed adverse reactions to antivenin should be explained to the patient, and he or she should be advised to immediately report fever, malaise, joint pain, rash, or unusual body bruising.

**FIRST AID:** The patient should be transported immediately to a medical facility equipped and staffed to handle snake bites. In the hospital, an intravenous infusion of Ringer's lactate or normal saline should be started.

A polyvalent antivenin serum for bites by pit vipers is prepared by Wyeth Lab. Inc. Antivenin for coral snake bite is also available from Wyeth. The use of antibodies to treat pit viper bites is being used experimentally.



Alcoholic stimulants must not be taken, and nothing should be done to increase circulation. One should not cauterize with strong acids or depend on home remedies. Tetanus prophylaxis is essential.

**spider b.** Punctures of the skin and/or envenomation by the fangs of a spider. SEE: *black widow spider; brown recluse spider.*

**stork b.** Colloquial term for telangiectasia.

**tick b.** A wound produced by a blood-sucking tick. Adult ticks (and immature nymphs) may be vectors for infectious diseases, including Rocky Mountain spotted fever, Q fever, tularemia, borreliosis, babesiosis, ehrlichiosis, anaplasmosis, and Lyme disease. They can also produce tick paralysis, a disease that may mimic Guillain-Barré syndrome.

The bite itself may produce a localized reddened area of skin, which is typically of little importance. This area may be raised or slightly itchy.

**FIRST AID:** Ticks should be removed from the skin by taking a pair of small tweezers or forceps, grasping the tick firmly by the mouth parts, and pulling the insect directly out of the skin, leaving no body parts embedded.



Ticks should not be removed by burning them with matches, soaking them in petroleum jelly, or injecting the subcutaneous tissue beneath their mouth parts with lidocaine. None of these methods is effective, and some may be hazardous.

**bitelock** (bit'łök) A device used in dentistry for retaining bite rims outside the mouth in the same position as they were inside the mouth.

**bitemporal** (bi-tēm'pō-räl) [L. *bis*, twice, + *temporalis*, pert. to a temple] Pert. to both temples or temporal bones.

**biteplate** (bit'plät) A dental device used to correct or diagnose malocclusion. It is worn in the palate, usually on a temporary basis.

**Bitot's spots** (bē'tōz) [Pierre A. Bitot,

Fr. physician, 1822–1888] Triangular shiny gray spots on the conjunctiva seen in vitamin A deficiency.

**bitrochanteric** (bī'trō-kān-tēr'ik) Pert. to both greater trochanters of the two femurs.

**bitter** (bit'ēr) [AS. *biter*, strong] Having a disagreeable taste.

**bitter melon** A bitter-tasting tropical vegetable (*Momordica charantia*) popular in Asian countries, also known as balsam apple, balsam pear, bitter gourd, cerasee, karela, ku gua, and squirting cucumber. It is promoted in complementary and alternative medicine for its effects on diabetes mellitus, HIV infection, and obesity. SYN: *karela*.

**biuret** (bī'ū-rēt) [L. *bis*, twice, + *urea*]  
**1.**  $\text{NH}_2\text{CONHCONH}_2$ ; a crystalline decomposition derivative of urea. **2.** A technique used to determine the protein content or the presence of protein in a solution, e.g., of a body fluid such as the cerebrospinal fluid.

**biuret reaction** Biuret test.

**biuret test** (bī'yā-rēt') A method for measuring protein in the serum. The presence of biuret can be detected by the addition of sodium hydroxide and copper sulfate solutions to the sample. A rose to violet color indicates the presence of protein, and a pink and finally blue color indicates the presence of urea.

**bivalent** (bī-vā'lēnt) [ " + *valens*, powerful] **1.** In chemistry, having a valence of two. **2.** In cytology, a structure consisting of two paired homologous chromosomes, each split into two sister chromatids during meiosis.

**bivariate** (bī-vār'ē-it, āt') [ " + "] Pertaining to two variables.

**bixel** (bīks'ēl) [Fr. *b(eam)* + (*pixel*)] A beam element or ray in radiation oncology.

**bizygomatic** (bī'zī-gō-māt'ik) Pert. to the most prominent point on each of the two zygomatic arches.

**Bjerrum's screen** (byēr'oomz) [Jannik P. Bjerrum, Danish ophthalmologist, 1827–1892] A 1-m square planar surface viewed from a distance of 1 m and consisting of a large square of black cloth with a central mark for fixation. It is used to plot the physiological blind spot, the central and paracentral scotomata, and other visual field defects. SYN: *tangent screen*.

**Bjerrum's sign** A sickle- or comet-shaped blind spot usually found in the central zone of the visual field; seen in glaucoma.

**BK** *below knee*, a term used to refer to the site of amputation of a lower extremity.

**Bk** Symbol for the element berkelium.

**black** (blāk) [AS. *blaec*] **1.** Devoid of color or reflecting no light. **2.** Marked by dark pigmentation.

**black blood magnetic resonance imaging**

ABBR: BB-MR. Imaging of arterial walls with magnetic resonance for evidence of atherosclerosis. Blood flow, which normally gives off a bright signal during magnetic resonance imaging, can be made to appear dark to distinguish it from the walls of blood vessels that surround it. This enhancement in magnetic resonance imaging can be used noninvasively to show where arteries are obstructed and to determine the components of the plaque in those arteries.

**black box warning** A written advisory supplied by a pharmaceutical company to health care professionals whenever a medication causes any serious side effect(s). Under U.S. federal regulations, this advisory is mandatory and must be highlighted by "a prominently displayed box."

**black cohosh** *Cimicifuga racemosa* (also *Actaea racemosa*), a perennial herb whose rootstock preparations are promoted as a treatment for menstrual and menopausal discomforts. Black cohosh is also known as *black snakeroot* and *bugbane*.

**blackhead** An open comedo. SEE: *comedo*.

**black heel** Subcutaneous bleeding into the skin behind the calcaneus typically caused by repetitive trauma, for example, in runners or other athletes.

**black membrane** An artificially constructed membrane made of lipids arranged in a bilayer.

**blackout** (blāk'owt') Sudden loss of consciousness. SYN: *syncope*. SEE: *red-out*.

**alcoholic b.** An episode of forgetting all or part of what occurred during or following a period of alcohol intake.

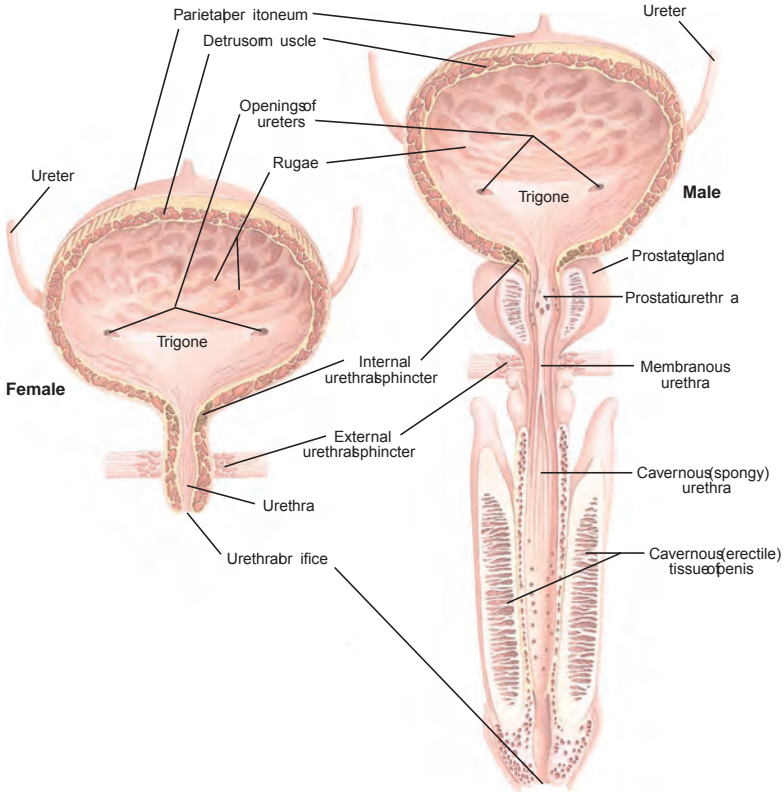
**blackwater fever** Bloody urine (hemoglobinuria) that occurs as a complication of falciparum malaria infection. It is the result of red blood cell destruction and the release of hemoglobin. It occurs most commonly in patients who have been treated with drugs derived from quinine. SEE: *falciparum malaria*.

**SYMPTOMS:** The illness is marked by high fevers, dark urine, epigastric pain, vomiting, jaundice, and shock. Physical findings include enlargement of the liver and spleen. Laboratory hallmarks include severe anemia and, occasionally, renal failure.

**bladder** (blād'dēr) [AS. *blaedre*] A membranous sac or receptacle for a secretion, as the gallbladder; commonly used to designate the urinary bladder. SEE: *bladder, urinary; genitourinary system*.

**atony of b.** Inability to urinate due to lack of muscle tone. It is frequently seen after traumatic deliveries or after the use of epidural anesthesia.

**autonomous b.** A bladder in which there is interruption in both the afferent



### URINARY BLADDER

and efferent limbs of the reflex arcs. Bladder sensation is absent; dribbling is constant; residual urine amount is large.

**cord b.** Distention of the bladder without discomfort. Symptoms include a tendency to void frequently and dribbling after urination. The condition is caused by a lesion affecting the posterior roots of the spinal column at the level of bladder innervation above the sacrum.

**exstrophy of b.** Congenital eversion of the urinary bladder. The abdominal wall fails to close and the inside of the bladder may protrude through the abdominal wall.

**hypertonic b.** 1. A bladder with excessive muscle tone. 2. Increased muscular activity of the bladder.

**irritable b.** Bladder condition marked by increased frequency of contraction with an associated desire to urinate.

**motor paralytic b.** A neurogenic bladder caused by defective nerve supply to the bladder. In the acute form urination is not possible. In the chronic

form there is difficulty in urinating, which may lead to recurrent urinary tract infections.

**nervous b.** A condition marked by the repeated desire to urinate, but doing so fails to empty the bladder.

**neurogenic b.** Any dysfunction of the urinary bladder caused by lesions of the central nervous system or nerves supplying the bladder.

**spastic b.** Neurogenic bladder due to complete transection of the spinal cord above the sacral segments.

**urinary b.** A muscular, membranous, distensible reservoir that holds urine situated in the pelvic cavity. It receives urine from the kidneys through the ureters and discharges it from the body through the urethra. **SEE: illus.; urinary system.**

**ANATOMY:** The bladder is situated in the anterior inferior portion of the pelvic cavity. In the female it lies in front of the anterior wall of the vagina and the uterus; in the male it lies in front of the rectum. The lower portion of the bladder, continuous with the urethra, is called the neck; its upper tip, connected



with the umbilicus by the median umbilical ligament, is called the apex. The region between the openings of the two ureters and the urethra is the trigone. The wall of the bladder has three major layers. The mucous membrane lining is transitional epithelium. The middle layer is three sheets (longitudinal, circular, longitudinal) of smooth muscle, called the detrusor muscle. The outer layer on the superior surface is the visceral peritoneum; on the lateral and inferior surfaces it is areolar connective tissue. The bladder is supported by numerous ligaments; it is supplied with blood by the superior, middle, and inferior vesical arteries, and drained by numerous veins and lymphatics; and it is innervated by branches of the third and fourth sacral nerves by way of the hypogastric plexus.

The bladder has a normal storage capacity of 500 ml (about 16 oz) or more. In disease states it may be greatly distended. A frequent cause of distention of the bladder in older men is interference with urination due to hypertrophy of the prostate gland, which surrounds the urethra and neck of the bladder.

**PHYSIOLOGY:** An average of 40 to 50 oz (about 1.2 to 1.5 L) of urine is excreted in a 24-hr period, but this varies with the amount of fluid ingested and the amount lost through exhalation, sweat, and the bowels. Inability to empty the bladder is known as retention and may require catheterization. Sphincter muscles are part of the mechanism that controls retention within the bladder.

For patients who need help in managing bladder elimination problems there are a variety of options: indwelling urethral catheters, Kegel exercises, intermittent catheterization, suprapubic indwelling catheters, external collecting devices (urinals and specially designed bedpans), medications for promoting bladder emptying (such as bethanechol, phenoxybenzamine, diazepam, dantrolene, or baclofen), and medicines to promote bladder storage (such as imipramine, oxybutynin, propanthelene, pseudoephedrine, or phenylpropanolamine). For men, a condom designed to collect and contain urine is available. SEE: *bladder training*.

The force of urination is much greater in a child than in an adult because in the child the bladder is more an abdominal organ than a pelvic one. The child's abdominal muscles help to expel the urine.

**EXAMINATION:** *Palpation:* The bladder cannot be palpated when empty. When full it appears as a tumor in the suprapubic region that is smooth and oval on palpation.

*Percussion:* When it is distended with

urine, the rounded superior margin is easily made out by observing the tympanic sound of the intestines on one hand and dull sound of the bladder on the other.

**bladder drill** Bladder training.

**bladder infection** An infection of the lower urinary tract, typically caused by gram-negative bacteria such as *Escherichia coli*, *Klebsiella* species, or *Pseudomonas* and occasionally caused by gram-positive bacteria such as the enterococci.

**bladder training** A technique used to treat stress urinary incontinence in women in which the patient charts the number of urinations, the intervals between urination, and the volume of urine passed. She also notes the degree and frequency of incontinence. The intervals between urinations are gradually increased. SYN: *bladder drill*.

**bladder tumor antigen** ABBR: BTA. A protein released into the urine by malignant cells in the bladder, studied as a possible marker of cancer of the urinary bladder. Because of the low prevalence of bladder cancer in the population at large, and the low positive predictive value of the test, the U.S. Preventive Services Task Force (2006) discouraged health care professionals and patients from using this screening test.

**bladder worm** *Cysticercus*.

**bladderwrack, bladder wrack** (blăd'ēr-răk') A yellow-brown seaweed, *Fucus vesiculosus*, which contains significant quantities of iodine. It is used as an alternative medicine for a variety of proposed cures, e.g., of hypothyroidism, but its effectiveness has not been documented in controlled trials. SYN: *Fucus vesiculosus*.

**Blalock-Hanlon procedure** (blă'lök'-hăn'lôn) [Alfred Blalock, U.S. surgeon, 1899–1965; C. Rollins Hanlon, U.S. surgeon, b. 1915] The surgical creation of an atrial septal defect or enlargement of the foramen ovale in an infant with transposition of the great arteries. This procedure helps to improve oxygenation until total repair is undertaken.

**Blalock-Taussig shunt** (blă'lök'-tăw'sig') [Alfred Blalock, U.S. surgeon; 1899–1965; Helen B. Taussig, U.S. pediatrician; 1898–1986] ABBR: B-T shunt. An anastomosis of a subclavian artery to the pulmonary artery on the same side. This procedure increases blood flow to the lungs in children with cardiac defects. The modified Blalock-Taussig shunt involves the use of synthetic graft material to create the anastomosis.

**blanch** (blănch) 1. To lose color, esp. of the face, usually suddenly and in the context of being frightened or saddened. 2. To briefly scald a vegetable or nut-

fruit in order to facilitate removal of the skin, peel, or covering. **3.** To bleach.

**blanch test, blanching test** A test of the integrity of the circulation performed by applying and then quickly releasing pressure to a fingernail or toenail. After losing color, the blanched nail normally regains a pink appearance within 2 seconds or less. Failure to do so suggests impaired blood flow to the extremity. SYN: *capillary nail refill test*.

**blank** (blánk) A surrogate analytical sample that either has no analyte present or is subject to only part of the analytical process. The purpose of the blank is to assess the contribution of nonspecific effects on the final reaction, and thus be able to eliminate those effects from the final analytical results. The term "blank" may be modified by a word indicating the type of effect being evaluated, with the resultant complete term being, for example, "reagent blank," a blank containing only reagents.

**blast** A cell that produces something (e.g., osteoblast, fibroblast).

**blast** [AS. *bloest*, a puff of wind] A sudden, violent movement of air such as accompanies the explosion of a shell or bomb; a violent sound, as the blast of a horn. It often causes damage to blast-sensitive organs such as the tympanic membrane, lung, or colon. It may also forcibly move people and objects, resulting in unpredictable injuries to unprotected body parts. SYN: *blast wind*.

**-blast** (blást) [Gr. *blastos*, germ] Combining form used as a suffix indicating an embryonic state of development.

**blastema** (blás-tē-má) [Gr. *blastema*, sprout] The undifferentiated cells from which the specialized tissues of organs are formed.

**blastid** (blás'tíd) [Gr. *blastos*, germ] The site of the nucleus of a fertilized ovum.

**blast lung** A colloquial term for pulmonary barotrauma.

**blastocele, blastocele** (blás'tō-sēl) [" + *koilos*, hollow] The cavity in the blastula of the developing embryo.

**blastochyle** (blás'tō-kīl) [" + *chylos*, juice] Fluid contained in the blastocele.

**blastocyst** (blás'tō-síst) [" + *kystis*, bag] In mammalian embryo development, the stage that follows the morula. It consists of an outer layer, or trophoblast, and an inner cell mass, from which the embryo will develop. The enclosed cavity is the blastocele. At this stage, implantation in the endometrium (lining of the uterus) occurs. SEE: *fertilization for illius*.

**Blastocystis hominis** (blás'tō-sís'tís hōm'in-ís) A protozoan once thought to be a harmless commensal in the human gastrointestinal tract but now believed to be an intestinal parasite that pro-

duces diarrhea, abdominal pain, bloating, and weight loss in some people.

**blastocystosis** (blás'tō-sís-tō'sís) Intestinal infection with *Blastocystis hominis*.

**blastocyte** (blás'tō-sīt) [" + *kytos*, cell] An undifferentiated embryonic cell.

**blastocytoma** (blás-tō-sī-tō'má) [" + " + *oma*, tumor] Blastoma.

**blastoderm** (blás'tō-děrm) [" + *derma*, skin] A disk of cells (germinal disk or blastodisk) that develops on the surface of the yolk in an avian or reptilian egg from which the embryo develops; also, in mammalian embryos a disk of cells lying between the yolk sac and the amniotic cavity from which the embryo develops. From the blastoderm, the three germ layers (ectoderm, mesoderm, and endoderm) arise.

**blastokinin** (blás'tō-kī'nin) A globulin found in the uterine lumen of some mammals near the time of blastocyst implantation.

**blastolysis** (blás-tōl'ī-sís) [" + *lysis*, dissolution] Lysis or destruction of a germ cell or a blastoderm.

**blastoma** (blás-tō'má) *pl.* **blastomata** [" + *oma*, tumor] A neoplasm composed of immature, undifferentiated cells derived from the blastema of an organ or tissue. SYN: *blastocytoma*. SEE: *blastema*.

**blastomere** (blás'tō-mēr) [" + *meros*, a part] One of the cells resulting from the cleavage of a fertilized ovum.

**blastomerotomy** (blás'tō-mēr-ōt'ō-mē) [" + " + *tome*, incision] Destruction of blastomeres.

**Blastomyces** (blást-ō-mī'sēz) [Gr. *blastos*, germ, + *mykes*, fungus] A genus of yeastlike budding fungi pathogenic to humans. At room temperature these fungi grow in a moldlike mycelial form, and at body temperature in a yeastlike form.

**B. brasiliensis** Paracoccidioides brasiliensis.

**B. dermatitidis** The species that causes North American blastomycosis, a rare fungal infection in humans. SEE: *illius*.

**blastomycete** (blás'tō-mī'sēt) Any organism of the genus *Blastomyces*.

**blastomycosis** (blás'tō-mī-kō'sís) [" + *mykes*, fungus, + *osis*, condition] A rare fungal infection caused by inhalation of the conidia of *Blastomyces dermatitidis*. This infection may produce inflammatory lesions of the skin (cutaneous form) or lungs or a generalized invasion of the skin, lungs, bones, central nervous system, kidneys, liver, and spleen. SYN: *North American b.*; *Gilchrist's disease*.

**TREATMENT:** Treatment consists of amphotericin B or the less toxic itraconazole.

**North American b.** Blastomycosis.



**BLASTOMYCES DERMATITIDIS IN CULTURE**

Fungal form at room temperature

**South American b.** Paracoccidioidomycosis.

**blastopore** (bläs'tō-por) [*"* + *poros*, passageway] In the embryo of mammals, the small opening into the archenteron made by invagination of the blastula.

**blastospore** (bläs'tō-spor) [*"* + *sporos*, seed] A spore formed by budding from a hypha, as in yeast.

**blastula** (bläs'tū-lä) *pl.* **blastulae** [L.] An early stage in the development of a zygote into an embryo; it consists of a hollow sphere of cells enclosing a cavity, the blastocoel. In large-yolked eggs, the blastocoel is reduced to a narrow slit. In mammalian development, the blastocyst corresponds to the blastula of lower forms.

**blast wind** blast

**Blatta, Blatella** (blät'ä) [L.] A genus of insects (that includes the cockroaches) of the order Orthoptera.

**B. germanica** The German cockroach or croton bug.

**B. orientalis** The Oriental cockroach, also known as the black beetle, a common European house pest.

**Blau's syndrome** (blow) A rare autosomal dominant disease characterized by camptodactyly and granulomatous involvement of joints, skin, and uvea.

**bleb** (blēb) An irregularly shaped elevation of the epidermis; a blister or a bulla. Blebs may vary in size from less than 1 cm to as much as 5 to 10 cm; they may contain serous, seropurulent, or bloody fluid. Blebs are a primary skin lesion that may occur in many disorders, including dermatitis herpetiformis, pemphigus, and syphilis. SEE: *bulla*.

**bleeder** (blēd'ēr) [AS. *bledan*, to bleed] **1.** A colloquial term for one whose ability to coagulate blood is either deficient or absent, so that small cuts and injuries lead to prolonged bleeding. SEE: *he-*

*mophilia*. **2.** A colloquial term for a small artery that has been cut or torn.

**bleeding** (blēd'ing) [AS. *bledan*, to bleed] **1.** Emitting blood, as from an injured vessel. **2.** The process of emitting blood, as a hemorrhage or the operation of letting blood.

Normally, when blood is exposed to air, it changes to allow fibrin to form. This entangles the cells and forms a blood clot. SEE: *coagulation, blood; coagulation factor; hemorrhage*.

**arterial b.** Bleeding in spurts of bright red blood, from an artery.

**EMERGENCY CARE:** Arterial bleeding may be controlled by applying pressure with the fingers at the nearest pressure point between it and the heart. The artery is located and digital pressure is applied above it until bleeding stops or until the artery is ligated or repaired. An arterial tourniquet rarely should be used. SEE: *table*.

**breakthrough b.** Intermenstrual spotting or bleeding experienced by some women who are taking oral contraceptives.

**dysfunctional uterine b.** ABBR: DUB. A diagnosis of exclusion in which there is abnormal bleeding from the uterus not caused by tumor, inflammation, or pregnancy. These causes of bleeding must be ruled out before DUB may be diagnosed. The condition may occur with ovulatory cycles, but most often occurs with anovulation. It is common in women with polycystic ovary syndrome. Endometrial hyperplasia followed by sloughing of the endometrium may occur in women with repeated anovulatory cycles.

**ETIOLOGY:** The absence of the luteal progesterone phase interferes with normal endometrial preparation for implantation or menstruation. Prolonged constant levels of estrogen stimulate uneven endometrial hypertrophy so that some areas slough and bleed before others, causing intermittent bleeding.

**functional b.** **1.** Loss of blood from the uterus caused by an organic lesion, such as a cyst, fibroid, or malignant tumor. **2.** Menorrhagia.

**gastrointestinal b.** Gastrointestinal hemorrhage.

**herald b.** Spontaneous hemorrhage from the gastrointestinal tract in a patient with an aortic bypass graft. The hemorrhage typically stops suddenly, only to recur massively days or weeks later. It is sometimes a clinical hallmark of bleeding from an aortoenteric fistula.

**internal b.** Hemorrhage from an internal organ or site, esp. the gastrointestinal tract.

**menstrual b.** SEE: *menstruation*.

**nasal b.** Epistaxis.

**occult b.** Inapparent bleeding, esp.

## Control of Arterial Bleeding

| Artery                                   | Course   | Bone Involved                             | Spot to Apply Pressure   |
|--|--|---|--|
| <b>For Wounds of the Face</b>            |  |   |  |
| Temporal                                 | Upward ½ in (13 mm) in front of ear  | Temporal bone                             | Against bony prominence immediately in front of ear or on temple   |
| Facial                                   | Upward across jaw diagonally   | Lower part of lower maxilla               | 1 in (2.5 cm) in front of angle of lower jaw   |
| <b>For Wounds of the Upper Extremity</b> |  |   |  |
| Axillary                                 | Downward across outer side of armpit to inside of humerus  | Head of humerus                           | High up in armpit against upper part of humerus  |
| Brachial                                 | Along inner side of humerus under edge of biceps muscle  | Shaft of humerus                          | Against shaft of humerus by pulling aside and gripping biceps, pressing tips of fingers deep down against bone |
| <b>For Wounds of the Lower Extremity</b> |  |   |  |
| Femoral                                  | Down thigh from pelvis to knee from a point midway between iliac spine and symphysis pubis to inner side of end of femur at knee joint | Brim of pelvis                            | Against brim of pelvis, midway between iliac spine and symphysis pubis   |
| Posterior tibial                         | Downward to foot in hollow just behind prominence of inner ankle   | Inner side of tibia, low down above ankle | For wounds in sole of foot, against tibia in center of hollow behind inner ankle                               |

that which occurs into the intestines and can be detected only by chemical tests of the feces.

**uterine b.** Bleeding from the uterus. Physiological bleeding via the vagina occurs in normal menstruation. Abnormal forms include excessive menstrual flow (hypermenorrhoea, menorrhagia) or too frequent menstruation (polymenorrhoea). Nonmenstrual bleeding is called metrorrhagia. Pseudomenstrual or withdrawal bleeding may occur following estrogen therapy. Breakthrough bleeding is the term used for intermenstrual bleeding that sometimes occurs in women who take progestational agents such as birth control pills or receive estrogen-progesterone replacement therapy. SEE: *amenorrhoea*; *dysfunctional uterine bleeding*; *menstruation*; *Nursing Diagnoses Appendix*.

**venous b.** A continuous flow of dark red blood.

**FIRST AID:** Venous bleeding may be controlled by firm, continuous pressure applied directly to the bleeding site. If bleeding is from an area over soft tissues, a large, compress bandage should be held firmly against the site.



A tourniquet should not be used. If the bleeding is over a bony area, as in the case of a ruptured varicose vein of the leg, pressure held firmly against the

vein will provide immediate control of the blood loss. The patient should be taken to a health care provider as soon as possible if bleeding does not stop.

**blenn-** SEE: *blenno-*.

**blennadenitis** (blĕn"äd-ĕ-nī'tis) [ʹ + *aden*, gland, + *itis*, inflammation] Inflammation of the mucous glands.

**blenno-, blenn-** [Gr. *blennos*, mucus] Combining forms meaning *mucus*.

**blenoid** (blĕn'oid) [ʹ + *eidōs*, form, shape] Mucoid (2).

**blennorrhagia** (blĕn"ō-rā'jĕ-ă) [ʹ + *rhegnynai*, to break forth] Any excessive discharge from mucous membranes.

**blennorrhoea** (blĕn"ō-rĕ'ă) [Gr. *blennos*, mucus, + *rhoia*, flow] Any discharge from mucous membranes. SYN: *blennorrhagia*.

**inclusion b.** Chlamydial conjunctivitis.

**blennothorax** (blĕn"ō-thō'răks) [ʹ + *thorax*, chest] The accumulation of mucus in the bronchial tubes or alveoli.

**blephar-** SEE: *blepharo-*.

**blepharadenitis** (blĕf"ăr-äd-ĕ-nī'tis) [Gr. *blepharon*, eyelid, + *aden*, gland, + *itis*, inflammation] Inflammation of the meibomian glands.

**blepharal** (blĕf"ăr-ăl) Pert. to an eyelid.

**blepharectomy** (blĕf"ărĕk'tō-mĕ) [ʹ +

*ektome*, excision] Surgical excision of all or part of an eyelid.

**blepharidema** (bléf'ár-ě-dě'mă) [" + *oidema*, swelling] Edema of the eyelids, causing swelling and a baggy appearance.

**blepharism** (bléf'ár-ĩ-zĩm) [" + *-ismos*, condition] Twitching or blinking of the eyelids. SEE: *blepharospasm*.

**blepharitis** (bléf'ár-ĩ'tis) [" + *itis*, inflammation] Ulcerative or nonulcerative inflammation of the hair follicles and glands along the edges of the eyelids.

**SYMPTOMS:** The eyelids become red, tender, and sore with sticky exudate and dry or waxy scales on the edges; there may be itching or burning, watering of the eyes and loss of eyelashes. Styes and meibomian cysts are associated with the condition.

**ETIOLOGY:** The ulcerative type is usually caused by infection with staphylococci. The cause of the nonulcerative type is often unknown; it may be due to allergy or exposure to dust, smoke, or irritating chemicals, or in association with seborrhea of the scalp, eyebrows and ears.

**PATIENT CARE:** Patients are taught how to keep their scalp, eyebrows, and eyelids clean and to avoid rubbing their eyes with their hands. Warm compresses four times a day, lid hygiene, and antibiotic ointment at bedtime will improve symptoms with two weeks. In severe cases, systemic antibiotics are indicated, with culture of the lid margin and antibiotic sensitivity studies are used to determine the appropriate regimen.

**angular b.** Blepharitis in which the lacrimal ducts of the lateral canthi of the eye are involved; often caused by *Morexella*.

**b. ciliaris** Inflammation affecting the ciliary margins of the eyelids. SYN: *blepharitis marginalis*.

**b. marginalis** Blepharitis ciliaris.

**b. parasitica** Blepharitis caused by parasites such as mites or lice.

**seborrhic b.** A nonulcerative form of blepharitis in which waxy scales form on the eyelids. It is usually associated with seborrhic dermatitis of the surrounding skin.

**b. squamosa** Chronic blepharitis with scaling.

**b. ulcerosa** Blepharitis with ulceration.

**blepharo-, blephar-** [Gr. *blepharon*, eyelid] Combining form meaning *eyelid*.

**blepharoadenoma** (bléf'ár-ō-ăd-ě-nō'mă) [" + " + *oma*, tumor] A glandular tumor of the eyelid.

**blepharoatheroma** (bléf'ár-ō-ăth'ě-rō'mă) [" + *athero*, thick fluid, + *oma*, tumor] A sebaceous cyst of the eyelid.

**blepharochalasis** (bléf'ár-ō-kăl'ă-sīs) [" + *chalasis*, relaxation] Hypertrophy of the skin of the upper eyelid due to loss of elasticity following edematous swellings as in recurrent angioneurotic edema of the lids. The skin may droop over the edge of the eyelid when the eyes are open.

**blepharoclonus** (bléf'ár-rök'lō-nūs) [" + *klonos*, tumult] Clonic spasm of the muscles that close the eyelids (orbicularis oculi).

**blepharconjunctivitis** (bléf'ár-rō-kōnjūnk'tĩ-vĩ'tis) [" + L. *conjungere*, to join together, + Gr. *itis*, inflammation] Inflammation of the eyelids and conjunctiva.

**blepharodistasis** (bléf'ár-rō-di-ăst'ă-sīs) [" + *diastasis*, separation] Excessive separation of the eyelids, causing the eyes to open wide.

**blepharocnus** (bléf'ár-rōn'kūs) [" + *onkos*, tumor] A tumor of the eyelid.

**blepharopachynsis** (bléf'ár-rō-pă-kĩn'sīs) [" + *pachynsis*, thickening] Abnormal thickening of the eyelid.

**blepharoplast** (bléf'ár-rō-plăst) Basal body.

**blepharoplasty** (bléf'ár-rō-plăs'tē) Plastic surgery upon the eyelid.

**blepharoplegia** (bléf'ár-rō-plē'jē-ă) [Gr. *blepharon*, eyelid, + *plege*, a stroke] Paralysis of an eyelid.

**blepharoptosis** (bléf'ár-rō-tō'sis) [" + *ptosis*, a dropping] Drooping of the upper eyelid; may be congenital or acquired.

**blepharopyorrhea** (bléf'ár-rō-pĩ-ō-rē'ă) [" + *pyon*, pus, + *rhoia*, flow] Purulent discharge from the eyelid.

**blepharorrhaphy** (bléf'ár-ror'ă-fē) [" + *rhaphe*, seam, ridge] Tarsorrhaphy.

**blepharorrhoea** (bléf'ár-rō-rē'ă) [" + *rhoia*, flow] Discharge from the eyelid.

**blepharospasm** (bléf'ár-rō-spăsm) [" + *spasmos*, a convulsion] A twitching or spasmodic contraction of the orbicularis oculi muscle due to tics, eyestrain, or nervous irritability. SEE: *Marcus Gunn syndrome*.

**essential b.** Blepharospasm of unknown cause. It may be so severe as to be debilitating. Surgery has helped some patients. Botulinum toxin A injected into the muscles that control the spasm has been of benefit. This treatment will need to be repeated after 2 to 3 months.

**blepharosphincterectomy** (bléf'ár-rō-sfĩnk'tēr-ěk'tō-mē) [" + *sphinkter*, a constrictor, + *ektome*, excision] Excision of part of the orbicularis palpebrarum to relieve pressure of the eyelid on the cornea.

**blepharostat** (bléf'ár-rō-stăt) [" + *histanai*, cause to stand] A device for separating the eyelids during an operation.

**blepharostenosis** (blĕf'ă-rō-stĕn-ō'sis) [*"* + *stenosis*, act of narrowing] Narrowing of the palpebral slit due to an inability to open the eye normally. SYN: *blepharophimosis*.

**blepharosynechia** (blĕf'ă-rō-sĭ-nĕ'kĕ-ă) [*"* + *synechia*, a holding together] Adhesion of the edges of the upper eyelid to the lower one. SYN: *ankyloblepharon*.

**blepharotomy** (blĕf-ă-rōt'ō-mĕ) [*"* + *tome*, incision] Surgical incision of the eyelid.

**Bleuler, Eugen** (bloy'lĕr, oy'gĕn) [1857–1939] Swiss psychiatrist known for studies on schizophrenia.

**blind** [AS.] **1.** Without sight. **2.** In research, a study in which the subjects and/or the researchers are unaware of which group is receiving active treatment and which is receiving a placebo. Blinding reduces the potential for bias.

**blind bronchoalveolar lavage** The use of a catheter inserted without bronchoscopic visualization into the tracheobronchial tree to obtain lower respiratory specimens of fluid for culture. A relatively low-cost alternative to bronchoscopically obtained cultures or brushings in patients suspected of having ventilator-associated pneumonia.

**blinded** Pert. to a method, study, or clinical trial in which neither the subject nor the investigator knows the hypothesis, problem, or condition being tested. Blinding reduces the potential for bias. SEE: *double-blind*; *single-blind*.

**blind loop syndrome** A condition caused by intraluminal growth of bacteria in the upper portion of the small intestine. Conditions associated with this syndrome are anatomical lesions that lead to stasis such as diverticula or surgically created blind loops; diseases associated with motor function of the small intestine; and any condition that decreases gastric acid secretion. The syndrome is diagnosed by the clinical signs and symptoms of malabsorption and the use of breath tests for detecting overgrowth of bacteria in the intestine.

**TREATMENT:** Antimicrobial therapy and nutritional support are needed. Surgery may be indicated to correct certain anatomical presentations.

**blindness** (blĭnd'nĕs) Inability to see. The leading causes of blindness in the U.S. are age-related macular degeneration, diabetic retinopathy, and glaucoma.

Blindness may be caused by diseases of the lens, retina, or other eye structures; diseases of the optic nerve; or lesions of the visual cortex or pathways of the brain. A small number of infants are born blind, but far more people become

blind during life. In the U.S., blindness due to infection is rare, but worldwide diseases like trachoma and onchocerciasis are relatively common causes of severe visual impairment. In malnourished persons, vitamin A deficiency is another important cause of blindness.

A variety of free services are available for the blind and physically handicapped. Talking Books Topics published bimonthly in large-print, cassette, and disc formats is distributed free to blind and physically handicapped individuals who participate in the Library of Congress free reading program. It lists recorded books and magazines available through a national network of cooperating libraries and provides news of developments and activities in library services. Subscription requests may be sent to Talking Books Topics, CMLS, P.O. Box 9150, Melbourne, FL 32902-9150.

**amnesic color b.** An inability to remember the names of colors.

**color b.** SEE: *color blindness*.

**cortical b.** Blindness due to lesions in the left and right occipital lobes of the brain. The eyes are still able to move and the pupillary light reflexes remain, but the blindness is as if the optic nerves had been severed. The usual cause is occlusion of the posterior cerebral arteries. Transitory cortical blindness may follow head injury.

**day b.** An inability to see in daylight; hemeralopia.

**eclipse b.** Blindness due to burning the macula while viewing an eclipse without using protective lenses. Looking directly at the sun anytime can damage the eyes. SYN: *solar blindness*; *solar maculopathy*.

**green b.** Aglaucopsia.

**hysterical b.** An inaccurate term for functional blindness (i.e., blindness caused by psychological disorders rather than demonstrable organic pathology).

**legal b.** A degree of loss of visual acuity that prevents a person from performing work requiring eyesight. In the U.S. this is defined as corrected visual acuity of 20/200 or less, or a visual field of 20° or less in the better eye. In the U.S. there are about three quarters of a million blind people, and about 8 or 9 million people with significant visual impairment.

**letter b.** An inability to understand the meaning of letters; a form of aphasia.

**night b.** Nyctalopia (1).

**note b.** The inability to recognize musical notes, due to a lesion of the central nervous system.

**object b.** A disorder in which the brain fails to recognize things even

though the eyes are functioning normally. SEE: *apraxia*.

**psychic b.** Sight without recognition due to a brain lesion.

**red-green color b.** Inability to see red hues; the most frequent type of color blindness.

**river b.** SEE: *onchocerciasis*.

**snow b.** Blindness, usually temporary, resulting from the glare of sunlight on snow. It may result in photophobia and conjunctivitis, the latter resulting from effects of ultraviolet radiation.

**solar b.** Eclipse *b.*

**transient monocular b.** A temporary loss of vision affecting one eye. In older adults it is usually a form of transient ischemic attack, caused by carotid atherosclerosis, and is therefore a harbinger of stroke. In young adults it may be caused by migraine. SYN: *amaurosis fugax*.

**ETIOLOGY:** In older adults, causes of carotid atherosclerosis include smoking, diabetes mellitus, hypertension, obesity, and hypercholesterolemia. When atherosclerotic plaques form within the carotid artery, they may ulcerate. The exposed endothelium within the artery becomes a focus of inflammation and blood clotting. Blindness occurs when tiny clots from the carotid arteries embolize to the ophthalmic arteries.

**SYMPTOMS:** Patients often describe a dark shade descending into the field of vision. At the same time they may have other stroke symptoms, such as difficulty with speech or weakness of the hand on the side opposite the affected eye.

**TREATMENT:** A patient who may have carotid atherosclerosis should begin taking aspirin or other antiplatelet drugs if these are tolerated. Blood pressure and lipid levels should be controlled. The patient should be referred for noninvasive evaluation of blood flow through the carotid arteries (e.g., ultrasonography). If the carotid arteries are significantly blocked, the patient and physician should consider the risks and benefits of carotid endarterectomy.

**violet b.** Inability to see violet tints.

**word b.** Word blindness.

**blink** To open and close the eyes involuntarily; to wink rapidly. Blinking, which normally occurs about 12 to 20 times a minute, helps protect the cornea against microscopic injury. It occurs less often in neurodegenerative diseases, such as Parkinson's disease, and more often in meningitis and corneal irritation. SEE: *reflex, blink*.

**blister** (blis'tēr) [MD. *bluyster*, a swelling] **1.** A collection of fluid below or within the epidermis. **2.** To form a blister.

**TREATMENT:** The area should be

cleansed with mild soap and a protective dressing applied. Unless a blister is painful or interferes with function due to its size, it should not be punctured. If puncturing is needed, it should be done aseptically, with the skin left in place. A sterile pressure bandage should be applied. SEE: *Standard Precautions Appendix*.



If infection develops, treatment is the same as for any other wound, including tetanus prophylaxis or booster as required.

**blood b.** A small subcutaneous or intracutaneous extravasation of blood due to the rupture of blood vessels.

**TREATMENT:** A firm dressing should be applied with moderate pressure to prevent extravasation and hasten absorption. In some cases it is desirable to puncture aseptically and aspirate.

**fever b.** A vesicular rash usually appearing on the lips or mucous membrane of the mouth during another infectious illness. The rash is caused by herpes simplex virus. SEE: *cold sore*.

**fly b.** A blister produced by application of cantharides to the skin.

**blister pack, blister package** A method of protecting individual doses of medications within a transparent cavity or cell made from a dome-shaped plastic barrier. The barrier separates one dose from another, protects the medication from moisture, and keeps it from being crushed or damaged during transportation or storage. Each dose of the medication can be individually released or unwrapped without affecting the integrity of the neighboring doses.

**bloated** (blōt'ēd) [AS. *blout*] Swollen or distended beyond normal size as by serum, water, or gas.

**bloating** (blōt) Abdominal discomfort related to disorders of intestinal motility and intestinal sensitivity to distention. This symptom is often presumed to be related to the retention of fluid or gas in the bowel, but it also may be produced by disorders of the ovaries or other genitourinary organs.

**block** [MD. *blok*, trunk of a tree] **1.** An obstruction or stoppage. **2.** SEE: *anesthesia*. **3.** To obstruct any passageway or opening. A method of regional anesthesia used to stop the passage of sensory impulses in a nerve, a nerve trunk, the dorsal root of a spinal nerve, or the spinal cord, thus depriving a patient of sensation in the area involved.

**air b.** Leakage of air from the respiratory passageways and its accumulation in connective tissues of the lungs, forming an obstruction to the normal flow of air.

**alveolar-capillary b.** Impaired ability

of gases to pass through the pulmonary alveolar-capillary membrane.

**atrioventricular b.** A condition in which the depolarization impulse is delayed or blocked at the atrioventricular (A-V) node or a more distal site, as in the A-V bundle or bundle branches. A-V block can be partial or complete. There are several degrees: *First-degree* block is due to prolonged A-V conduction; electrocardiograms show a characteristic prolonged PR interval. *Second-degree* blocks are intermittent (i.e., some, but not all, A-V impulses are transmitted to the ventricles). *Third-degree* block, also known as complete A-V block, is present when no atrial impulses are conducted to the ventricles.

A-V block may be caused by age-related degenerative changes; drugs such as digoxin, beta blockers, and calcium channel blockers; hyperkalemia; hypokalemia; increased vagus nerve activity; local hypoxia; and scarring from myocardial infarction.

**A-V b.** Atrioventricular block.

**bed b.** Blocks made of sturdy material, such as wood, to elevate one end of a bed relative to the other. Bed blocks may be used in the home, e.g., to treat people with gastroesophageal reflux disease. Most beds in health care institutions are built with devices that separately raise or lower the feet, legs, trunk, or head.

**bite b.** 1. A wedge of sturdy material used to maintain space between the two jaws. 2. A film holder held between the teeth for stable retention of the film packet during dental radiology.

**bundle branch b.** SEE: *bundle branch block*.

**Bunnell b.** SEE: *Bunnell block*.

**digital b.** The injection of a regional anesthetic into the proximal portion of a finger or toe.

**ear b.** Blockage of the auditory tube to the middle ear. It may result from trauma, infection, or an accumulation of cerumen. SEE: *aerotitis; otitis media*.

**epidural b.** SEE: *anesthesia, epidural*.

**field b.** Regional anesthesia in which a limited operative area is walled off by an anesthetic.

**first-degree atrioventricular b.** Delayed conduction through or from the atrioventricular node, marked on the electrocardiogram by a prolonged PR interval. Usually no treatment is necessary. SYN: *first-degree heart block*.

**heart b.** SEE: *bundle branch block*.

**mandibular b.** Regional anesthesia of the lower face and mandibular tissues by infiltration of the mandibular division of the trigeminal nerve.

**maxillary b.** Second division block.

**nerve b.** The induction of regional anesthesia by preventing sensory nerve

impulses from reaching the central nervous system. This is usually done by injecting an anesthetic solution (e.g., lidocaine) into a peripheral nerve or by electrically stimulating the nerve.

**neuromuscular b.** A disturbance in the transmission of impulses from a motor endplate to a muscle. It may be caused by an excess or deficiency of acetylcholine or by drugs that inhibit or destroy acetylcholine.

**paravertebral b.** Infiltration of the stellate ganglion with a local anesthetic.

**saddle b.** SEE: *anesthesia, saddle block*.

**second division b.** Regional anesthesia of the upper face and maxillary tissues by infiltration of the maxillary division of the trigeminal nerve. SYN: *maxillary block*.

**sinoatrial b.** Sinoatrial heart block. Heart block in which there is interference in the passage of impulses between the sinus node and the atria.

**spinal b.** Blockage in the flow of cerebrospinal fluid within the spinal canal.

**subarachnoid b.** Spinal anesthesia.

**ventricular b.** Interference in the flow of cerebrospinal fluid between the ventricles or from the ventricles through the foramina to the subarachnoid space.

**blockade** (blök-äd') Prevention of the action of something, such as a drug or a body function.

**adrenergic b.** Inhibition of responses to adrenergic sympathetic nerve impulses and to agents such as epinephrine.

**cholinergic b.** Inhibition of cholinergic nerve stimuli or cholinergic agents.

**lymphatic b.** A local defense mechanism in which minute bits of material, such as fibrinous exudate from injured tissue, enter local lymphatic vessels, obstructing them and preventing foreign substances, esp. bacteria, from passing through them.

**block design** A neuropsychological test involving the placement of wooden blocks according to three-dimensional drawings. The test assesses the presence of constructional apraxia, often exhibited in patients with brain lesions.

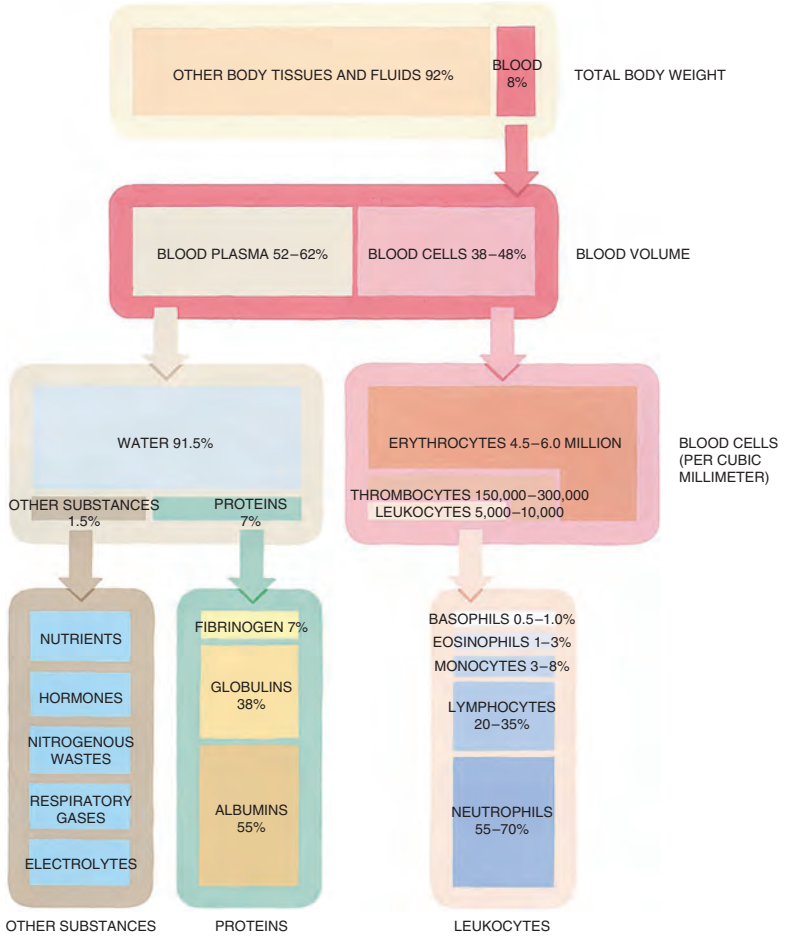
**blocker** (blök'ër) A drug that prevents the normal action of a system or cell receptor. SEE: *antagonist; blockade; inhibitor*.

**beta b.** Beta-adrenergic blocking agent.

**blocking** (blök'ing) 1. Obstructing. 2. In psychoanalysis, a sudden break in free association as a defense against unpleasant ideas.

**Blomia tropicalis** (blō'mē-ä trōp-ī-käl'is) The scientific name for a common house mite found in South and Central America. Allergens derived from this mite cause allergic reactions, including





**BLOOD COMPOSITION**

Components of blood and relationship to other body tissues

asthma and atopy. It is abbreviated Blot by the World Health Organization.

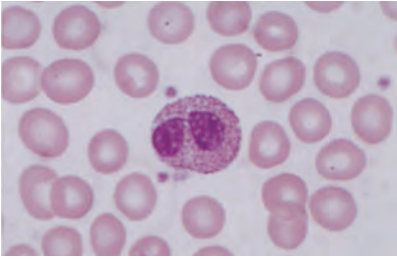
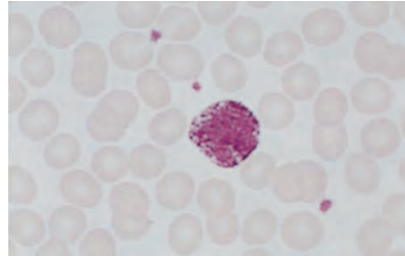
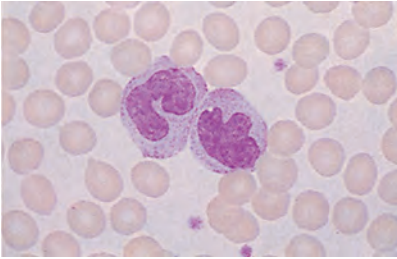
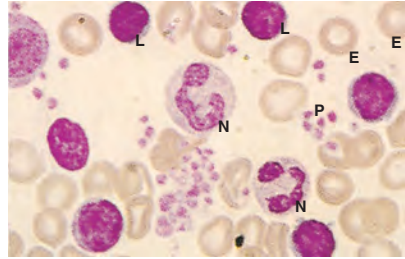
**blood** [AS. *blod*] The cell-containing fluid that circulates through the heart, arteries, veins, and capillaries, carrying nourishment, electrolytes, hormones, vitamins, antibodies, heat, and oxygen to the tissues and taking away waste matter and carbon dioxide. SEE: *erythropoietin*.

**CHARACTERISTICS:** Blood has a distinctive, somewhat metallic, odor. Arterial blood is bright red or scarlet and usually pulsates if the artery has been cut. Venous blood is dark red or crimson and flows steadily from a cut vein.

**COMPOSITION:** Human blood is about 52% to 62% plasma and 38% to 48% cells. The plasma is mostly water, ions, proteins, hormones, and lipids.

The cellular components are the erythrocytes (red blood cells [RBCs]), leukocytes (white blood cells [WBCs]), and thrombocytes (platelets). The leukocytes comprise neutrophils, eosinophils, basophils, lymphocytes, and monocytes. SEE: *illus. (Blood Composition) and (Types of Blood Cells); buffy coat; plasma; serum*.

An adult weighing 70 kg has a blood volume of about 5 L or 70 ml/kg of body weight. Blood constitutes about 7% to 8% of the body weight. The pH of the blood is from 7.35 to 7.45. The specific gravity of blood varies from 1.048 to 1.066, the cells being heavier and plasma lighter than this. Blood is of slightly higher specific gravity in men than in women. Specific gravity is higher after exercise and at night. SEE:

EOSINOPHIL ( $\times 640$ )BASOPHIL ( $\times 640$ )MONOCYTES ( $\times 640$ )ERYTHROCYTES (E), PLATELETS (P),  
NEUTROPHILS (N), AND  
LYMPHOCYTES (L) ( $\times 640$ )

### TYPES OF BLOOD CELLS

Cellular elements in blood include red blood cells (erythrocytes), white blood cells (neutrophils, lymphocytes, monocytes, eosinophils, basophils), and platelets (thrombocytes).

*blood count; cell; erythrocyte; leukocyte; plasma; platelet.*

**FUNCTION:** In passing through the lungs, the blood gives up carbon dioxide and absorbs oxygen; after leaving the heart, it is carried to the tissues as arterial blood and then returned to the heart in the venous system. It moves in the aorta at an average speed of 30 cm/sec, and it makes the circuit of the vascular system in about 60 seconds. RBCs carry oxygen; WBCs participate in the immune response to infection; platelets are important in blood clotting. The plasma transports nutrients, waste products, hormones, carbon dioxide, and other substances, and contributes to fluid-electrolyte balance and thermal regulation.

**FORMATION:** RBCs are produced in the red bone marrow at the rate of about 2,400,000/sec, and each RBC lives for about 120 days. In healthy individuals, the concentration of RBCs in the blood remains stable over time. Platelets and WBCs are also produced in the red bone marrow, and agranular WBCs are produced in lymphatic tissue.

**arterialized b.** Blood that has been exposed to oxygen in the lung.

**clotting of b.** SEE: *coagulation, blood.*

**cord b.** The blood present in the um-

bilical vessels connecting the placenta to the fetus. Because cord blood is immunologically immature, it is esp. useful in transfusion therapy and hematological transplantation.

**defibrinated b.** Whole blood from which fibrin has been removed. It does not clot.

**formed elements of b.** Blood cells, as opposed to blood proteins or other chemical constituents of blood.

**fresh b.** Blood that has been collected less than 48 hours prior to its use in a transfusion.

**occult b.** SEE: *under occult.*

**predonation of b.** The collection of a patient's own blood before surgery, to be used if the patient needs a transfusion during or after the surgery, to reduce the possibility of needing banked blood, and with it the risk of having a transfusion reaction or contracting a transmissible infection.

**PATIENT CARE:** The usual blood transfusion checks are performed: 1. The patient's armband name and number are verified by comparing them with those on the chart. 2. The number and blood type of the unit of blood are checked against those of the patient. 3. The number and blood type of the unit of blood should match that information on all the paperwork.

**reconstituted blood** A blood product used in transfusion therapy composed of components of blood (packed red blood cells plus plasma), which have been recombined after their separation and storage.

**sludged b.** Hemagglutinated blood.

**unit of b.** Approx. 1 pint (473 ml) of blood, the usual amount used in adult transfusion.

**blood alcohol concentration** ABBR: BAC. SEE: under *concentration*.

**blood bank** SEE: under *bank*.

**blood bank technologist** A technologist trained in blood banking and transfusion services. Areas of expertise include the collection of blood; the analysis of blood types with blood group antigen testing; the typing of tissues for organ transplantation; and the use of blood components in patients with coagulation disorders.

**blood cell casts** SEE: under *cast*.

**blood component therapy** Transfusion of one or more of the components of whole blood. The blood components may have been taken from the patient previously (autologous transfusion) or donated by someone else (homologous transfusion). Except in the case of acute hemorrhage, the transfusion of whole blood is rarely needed. Use of a component rather than whole blood permits several patients to benefit from a single blood donation. Blood components used in clinical medicine include packed red blood cells (RBCs); leukocyte-poor RBCs; frozen glycerolized RBCs; thawed deglycerolized RBCs; washed RBCs; whole blood; heparinized whole blood; granulocytes; platelets; and plasma and plasma fractions. The latter include antihemophilic factor (Factor VIII), prothrombin complex (Factors VII, IX, and X), gamma globulin, and albumin.

Irradiation of blood by gamma rays (gamma irradiation) incapacitates donor lymphocytes in whole blood, RBCs, platelets, or granulocytes. These lymphocytes are blocked from proliferating in response to foreign antigens, esp. those in the bone marrow, of immunocompromised recipients, causing transfusion-associated graft-versus-host disease. In patients who are not immunocompromised, the donor white blood cells (WBCs) are destroyed. Irradiated blood is given to patients who are donating or receiving bone marrow transplants or who have hematological or lymphatic cancers. In addition, blood used for intrauterine or neonatal exchange transfusions and blood donated by a biological relative also is irradiated.

Washing blood (RBCs, platelets) in 0.9% sodium chloride removes most, but not all, of the antibodies that could trig-

ger an adverse reaction, esp. in patients with a history of hypersensitivity reactions to blood transfusions, even when given antihistamine prophylaxis. Washed RBCs must be given within 24 hours because the risk of bacterial contamination is increased when the saline is injected into the bag of RBCs.

Use of leukocyte-poor blood reduces the risk of unwanted responses to WBCs (leukocytes), antibodies, and cytokines by the recipient. WBCs can be eliminated by using special filters in the intravenous line or through apheresis. The process is used for patients with a history of allergic reactions to blood products or those expected to require multiple transfusions. It also prevents transmission of cytomegalovirus (CMV) to immunocompromised patients.

Screening blood for CMV and RBC antigens helps to identify CMV-negative blood, which is needed for high-risk patients. More than half of persons over 35 years of age have been infected with CMV. However, this screened blood is beneficial for premature infants; infants under age 4 weeks; recipients of intrauterine transfusion regardless of the mother's CMV status; any patient who requires a bone marrow or organ donor transplant if the marrow or organ donor also is CMV-negative; and CMV-negative patients who are potential transplant candidates, pregnant, about to undergo splenectomy, or have AIDS/HIV or congenital immune deficiency. SEE: table; *blood transfusion*; *Standard Precautions Appendix*.

**blood corpuscle** An old term for a blood cell.

**blood count** The number of red cells and leukocytes per microliter ( $\mu\text{l}$ ) of whole blood. Normally, the number of erythrocytes in men averages 5 million/ $\mu\text{l}$ ; in women, 4.5 million/ $\mu\text{l}$ . Prolonged exposure to high altitude increases the number. Leukocytes average 5000 to 10,000/ $\mu\text{l}$ . Platelets range from 140,000 to 400,000/ $\mu\text{l}$ . Hemoglobin (12 to 18 g/100 ml) and hematocrit (38% to 48%) are determined from samples of whole blood.

**differential b.c.** The number and type of white blood cells as determined by microscopic examination of a thin layer of blood on a glass slide after it has been suitably stained to show the shape of the various cells. The number and variety of white cells in a sample of a given size are obtained. Even though the red cells are not counted by this method, their shape, size, and color can be evaluated. Some blood diseases and inflammatory conditions may be recognized in this way. In a differential count, the varieties of the leukocytes and their percentages normally should be: neutrophils (segmented), 40% to 60%; eosinophils, 1% to 3%; basophils, 0.5%

## Blood Components Used in Transfusion Therapy

| Component                 | When it is used  | Approximate volume (in ml) infused or typical preparation  | Storage/ viability  | Expected outcome                              |
|---------------------------|--|--|---|---|
| Packed red blood cells    | When needed to restore the oxygen-carrying capacity of the blood of the patient  | 470  | Refrigerated or frozen; may last as long as 42 days                           | An increase in hemoglobin of 1 g/dL           |
| Platelets                 | In severely thrombocytopenic patients, e.g., < 40,000/dL in hemorrhaging patients, or < 10,000, in patients who are not yet bleeding | “Five-pack” (i.e., a pooled concentrate from five donors); single-donor apheresis pack                   | Stored at room temperature (72° F); needs constant agitation; may last 5 days | An increase in platelet counts of > 20,000/dL |
| Fresh-frozen plasma (FFP) | To replace missing coagulation factors   | 225  | Must be frozen within 6 hours of donation; useful for up to a year            | Improvement in prothrombin time/INR           |
| Cryoprecipitate           | To supply blood components; esp., fibrinogen, Factors VIII and XIII, fibronectin, and von Willebrand Factor                          | Prepared from the insoluble proteins that remain when FFP is thawed for use. Ten-donor pack usually used | Can be re-frozen and stored after use of FFP; usually useful for 28 days      | Increase in fibrinogen level by 2-5 mg        |

Abbreviations: dL=deciliter; INR=international normalized ratio; ml=milliliter

to 1%; lymphocytes, 20% to 40%; monocytes, 4% to 8%.

**blood crossmatching** Crossmatching.

**blood donation, preoperative** The collection of blood before surgery from the patient, or a crossmatched donor, to be used if needed during an elective operation or during the postoperative recovery period.

**blood donor deferral** (dī-fūr'äl) [L. *deferre*, to carry down, report, accuse] The postponement or permanent exclusion of blood donation by a person suspected of having an infectious or hematological disease.

**blood gas analysis** Chemical analysis of the pH, carbon dioxide and oxygen concentrations, and oxygen saturation of the blood. This analysis is used to diagnose serious metabolic and respiratory disorders. It may be performed using arterial or venous blood, although

only arterial blood gas analysis evaluates lung function; the specimen may be obtained from numerous sites. Mixed venous samples may be obtained from the right atrium of the heart. The blood sample is usually collected in a heparinized syringe, with care being taken to ensure that the specimen is immediately placed on ice (to avoid misinterpretations caused by metabolism) and not exposed to air (to prevent oxygenation of the sample). SEE: *Allen test*; *blood gases*.



Rarely, arterial punctures taken from the wrist may damage the radial artery or compromise the blood supply of the hand.

**blood gases** SEE: under *gas*.

**blood glucose, unstable, risk for** Risk for

variation of blood glucose/sugar levels from the normal range. SEE: *Nursing Diagnoses Appendix*.

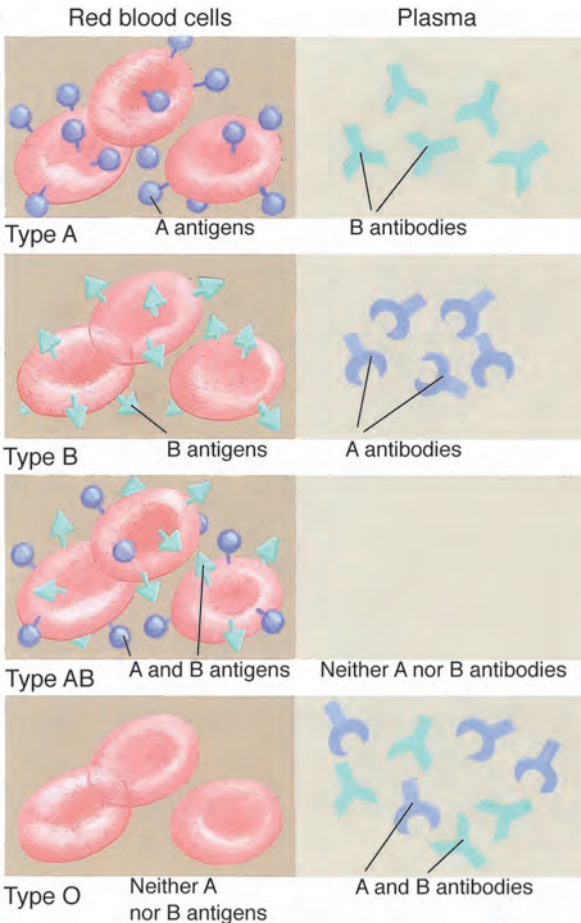
**blood group** A genetically determined system of antigens located on the surface of the erythrocyte. There are a number of human blood group systems; each system is determined by a series of two or more genes that are allelic or closely linked on a single autosomal chromosome. The ABO system (discovered in 1901 by Karl Landsteiner) is of prime importance in blood transfusions. The Rhesus (Rh) system is esp. important in obstetrics. There are about 30 Rh antigens. SEE: *illus.*; *Rh factor*.

The population can be phenotypically divided into four ABO blood groups: A, B, AB, and O. Individuals in the A group have the A antigen on the surface of their red cells; B group has the B anti-

gen on red cells; AB group has A and B antigens on red cells; and O group has neither A nor B antigens on red cells. The individuals in each group have in their sera the corresponding antibody to the red cell antigens that they lack. Thus, a group A person has the anti-B antibody; group B has anti-A antibodies; group AB has no antibodies for A and B; and group O individuals have anti-A and anti-B antibodies in their sera.

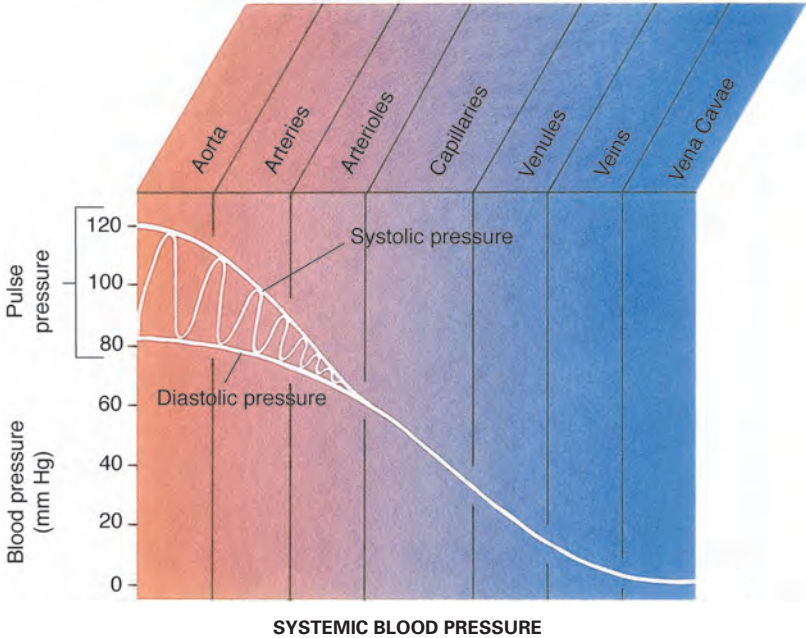
Blood group factors are important in blood banking and transfusion medicine. Analysis of blood groups also is important in identification of bloodstains for medicolegal purposes, in genetic and anthropological studies, and in the past in determination of the probability of fatherhood in paternity suits.

**bloodless** (blōd'lēś) Without blood.



**ABO BLOOD TYPES**

Schematic representation of antigens on RBCs and antibodies in plasma



Systemic BP changes through the vascular system; systolic and diastolic pressures merge as blood enters capillaries

**bloodletting** (blōd'let'ing) Removal of blood from the body as a therapeutic measure, usually by venipuncture. It is used to treat hemochromatosis, polycythemia vera, and infants born with excessively high hemoglobin levels.

**blood level** The concentration of anything, esp. a drug, in the plasma, serum, or blood.

**blood-nerve barrier** A physiological barrier between nerves and capillaries that partially blocks the flow of ions from the blood across the perineurium.

**blood patch** SEE: under *patch*.

**blood pressure** ABBR: BP. The tension exerted on the walls of arteries by the strength of the contraction of the heart; the resistance of arterioles and capillaries; the elasticity of blood vessels; the blood volume; and blood viscosity. SEE: *arterial pressure*; *chronic low blood pressure*; *end-diastolic pressure*; *normal blood pressure*.

Normal blood pressure is defined as a systolic BP between 100 and 120 mm Hg and a diastolic BP below 80 mm Hg (in adults over age 18). Prehypertension is present when measured blood pressures are between 120 and 140 mm Hg systolic or between 80 and 90 mm Hg diastolic. When either the systolic pressure exceeds 140 mm Hg or the diastolic exceeds 90 mm Hg, and these values are confirmed on two additional visits, stage

I hypertension (high blood pressure) is present. SEE: *ilus*.

Low blood pressure is sometimes present in healthy individuals, but it indicates shock in patients with fever, active bleeding, allergic reactions, active heart disease, spinal cord injuries, or trauma. Blood pressure should be checked routinely whenever a patient sees a health care provider because controlling abnormally high blood pressure effectively prevents damage to the heart and circulatory system as well as the kidneys, retina, brain, and other organs.

Many factors can result in erroneous BP recordings. If the BP cuff is too small or the cuff is placed over a shirt sleeve before it is inflated, the pressure may be falsely elevated. If the BP is checked in only one arm, falsely high or low values may be recorded (the pressure in the arms may differ because of subclavian artery atherosclerosis). The BP may be increased if measured while the patient is talking or just after the patient has had coffee or smoked a cigarette. When the pressure is taken in a clinic or by a physician, it may be temporarily elevated owing to patient anxiety. This phenomenon, called "white coat hypertension," resolves when the patient measures his or her own pressure in a less stressful setting. Devices for ambulatory BP monitoring are available

for home use by patients suspected of having this problem, as well as for patients in whom detailed BP records are needed. They are easy to use, and the information they provide is valuable to patients and health care providers in guiding therapy. SEE: *hypertension; shock*.

**TREATMENT:** Elevated blood pressures should first be addressed by giving advice to patients about lifestyle modifications, such as limiting the intake of alcohol, following a diet approved by the American Heart Association, and increasing the level of physical exercise. Weight loss in obese patients is also advisable. Medications are added to lifestyle instructions most of the time. Antihypertensive medications are used according to evidence-based guidelines and the side effects these drugs may cause in particular patients. Diuretics, for example, are esp. helpful in blacks and elderly patients (but may be inadvisable in patients with gout); beta blockers are the drugs of choice in patients with a history of myocardial infarction (but would be contraindicated in patients with advanced heart block); alpha blockers are well suited for men with prostatic hypertrophy; and angiotensin-converting enzyme inhibitors prevent kidney disease in patients with diabetes mellitus. Other antihypertensive drug classes include the angiotensin II receptor antagonists, centrally active alpha antagonists, and calcium channel blockers. Low blood pressure is not treated in healthy patients; in patients with acute illnesses, it is often corrected with hydration or pressor agents.

**augmented diastolic b.p.** An increase in diastolic pressure, usually by an artificial device, such as an intra-aortic balloon pump. SEE: *intra-aortic balloon counterpulsation*.

**central b.p.** Blood pressure in the heart chambers, in a great vein, or close to the heart. If determined in a vein, it is termed central venous pressure; if in the aorta or a similar large artery close to the heart, it is designated central arterial pressure.

**chronic low b.p.** A condition in which the systolic blood pressure is consistently less than 100 mm Hg. In the absence of associated disease, low blood pressure is often a predictor of longevity and continued health. SEE: *hypotension; orthostatic hypotension*.

**diastolic b.p.** The blood pressure when the ventricles of the heart are filling with blood. In health this equals about 60 to 80 mm Hg.

**direct measurement of b.p.** Determination of the blood pressure within the lumen of an artery or within a chamber of the heart with a catheter intro-

duced into the organ and attached to a pressure-monitoring transducer. It is done by placing a sterile needle or small catheter inside an artery and having the blood pressure transmitted through that system to a suitable recorder. As the blood pressure fluctuates, the changes are recorded graphically.

**high b.p.** Hypertension.

**indirect measurement of b.p.** A simple external method for measuring blood pressure.

**Palpation method:** The same arm, usually the right, should be used each time the pressure is measured. The arm should be raised to heart level if the patient is sitting, or kept parallel to the body if the patient is recumbent. The patient's arm should be relaxed and supported in a resting position. Exertion during the examination could result in a higher blood pressure reading. Either a mercury-gravity or aneroid-manometer type of blood pressure apparatus may be used. The blood compression cuff should be the width and length appropriate for the size of the subject's arm: narrow (2.5 to 6 cm) for infants and children and wide (13 cm) for adults. The inflatable bag encased in the cuff should be 20% wider than one third the circumference of the limb used. The deflated cuff is placed evenly and snugly around the upper arm so that its lower edge is about 1 in above the point of the brachial artery where the bell of the electronic sensor will be applied. While feeling the radial pulse, inflate the cuff until the pressure is about 30 mm above the point where the radial pulse was no longer felt. Deflate the cuff slowly and record as accurately as possible the pressure at which the pulse returns to the radial artery. Systolic blood pressure is determined by this method; diastolic blood pressure cannot be determined by this method.

This method is used for both continuous and intermittent readings, and while it formerly was used primarily in ICUs, it now is used routinely by nursing assistants on units throughout health care agencies and in clinics and physicians' offices. Measuring blood pressure at the wrist is more comfortable than a conventional BP cuff because it derives readings without pumping a bladder full of air, and with accuracy rivaling direct measurement from an arterial catheter. The sensor is placed directly over the radial artery and connected to an electronic monitor. Pressure is monitored every 15 heartbeats and systolic, diastolic, mean arterial pressure, waveforms, and pulse rate are displayed. The first reading appears in 15 seconds, and the sensor measures pressures from 40 to 240 mm Hg, with preset alarms to alert the

nurse to extreme highs and lows. Results are not affected by low cardiac output, arrhythmias, hypothermia, or obesity, and this method is being used increasingly on adults in hospital special care units where frequent serial readings are required.

**Auscultatory method:** Begin as above. After inflating the cuff until the pressure is about 30 mm above the point where the radial pulse disappears, place the bell of the stethoscope over the brachial artery just below the blood pressure cuff. Then deflate the cuff slowly, about 2 to 3 mm Hg per heartbeat. The first sound heard from the artery is recorded as the systolic pressure. The point at which sounds are no longer heard is recorded as the diastolic pressure. For convenience the blood pressure is recorded as figures separated by a slash. The systolic value is recorded first.

Sounds heard over the brachial artery change in quality at some point prior to the point the sounds disappear. Some physicians consider this the diastolic pressure. This value should be noted when recording the blood pressure by placing it between the systolic pressure and the pressure noted when the sound disappears. Thus, 120/90/80 indicates a systolic pressure of 120 with a first diastolic sound change at a pressure of 90 and a final diastolic pressure of 80. The latter pressure is the point of disappearance of all sounds from the artery. When the values are so recorded, the physician may use either of the last two figures as the diastolic pressure. When the change in sound and the disappearance of all sound coincide, the result should be written as follows: 120/80/80.

**mean b.p.** The sum of twice the diastolic blood pressure plus the systolic blood pressure, all divided by 3.

**negative b.p.** Blood pressure that is less than atmospheric pressure, as in the great veins near the heart.

**normal b.p.** A blood pressure between 100 and 120 mm Hg systolic and < 80 mm Hg diastolic.

**systolic b.p.** Blood pressure during contraction of the ventricles. It is normally 100 to 120 mm Hg. Higher systolic blood pressures are found in prehypertension and hypertension. SYN: *systolic pressure*.

#### **blood pressure monitoring, ambulatory**

The measurement with a portable blood pressure monitor of blood pressure of outpatients. It is used to record the patient's diastolic and systolic pressures during activity and rest throughout the day.

**blood salvage** A collection of the siphoned blood that has escaped from the operative site of non-contaminated sur-

geries so that after appropriate filtration it may be returned to the patient. SEE: *autologous blood transfusion; cell saver*.

**bloodshot** (blöd'shöt") Local congestion of the smaller blood vessels of a part, as when the vessels of the conjunctiva are dilated and visible.

**blood shunting** Shunting.

**bloodstream** (blöd'strēm") The blood that flows through the circulatory system of an organism.

**blood test** A test to determine the chemical, physical, or serological characteristics of the blood or some portion of it.

**blood thinner** A popular but erroneous name for an anticoagulant.

**blood transfusion** The replacement of blood or one of its components. Effective and safe transfusion therapy requires a thorough understanding of the clinical condition being treated. Most patients require blood components rather than whole blood. Administering a specific component decreases the risk of adverse reactions from unnecessary components. SEE: *illus. blood component therapy; autologous blood transfusion; exchange transfusion; transfusion reaction; Standard Precautions Appendix*.

The following measures should be taken during transfusion therapy:

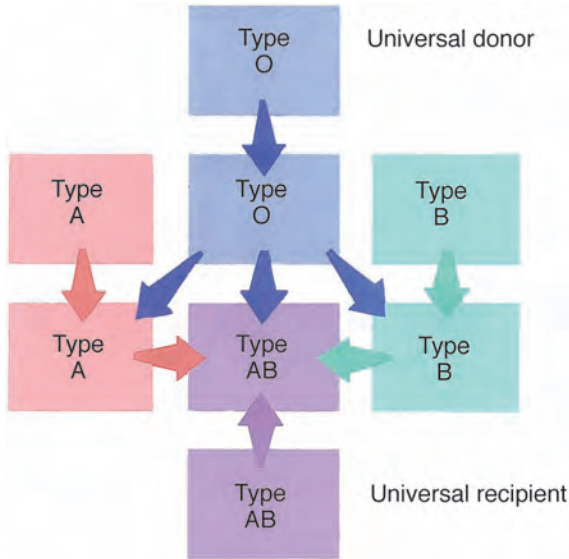
1. screen donors for transmissible diseases;
2. test blood for pathogens;
3. ensure that cross-matched blood products are given to correctly identified patients;
4. intervene promptly in transfusion reactions;
5. avoid unnecessary transfusions;
6. avoid volume overload during transfusions;
7. avoid hypothermia, electrolyte, and clotting disorders.

Administration of a single unit may be indicated in young or old surgical patients, in persons with coronary disease, and in patients who have an acute blood loss of several units but whose blood pressure, pulse, and oxygen are stabilized by use of one unit.

The risk of HIV, hepatitis B or C virus, West Nile virus, or other pathogens from blood collected and distributed in the U.S. and other industrialized nations is very low but finite. The risk in other geographical areas varies.

**PATIENT CARE:** The patient is identified from both the hospital identification band and blood bank band. Two health care professionals (one the administering nurse) verify the patient's ABO and Rh blood type and its compatibility with the unit of blood or packed cells to be administered as well as the unit's expiration date and time. Outdated blood is not used; it is returned to the blood bank for disposal. The blood





### BLOOD TRANSFUSION

Acceptable transfusions are diagrammed and presuppose compatible Rh factors.

or blood product is retrieved from the blood bank refrigerator immediately before administration because blood should not be stored in other than approved refrigerators. Also, it cannot be returned to blood bank storage if the unit's temperature exceeds 50°F (10°C), a change that will occur within about 30 min of removal from storage. Health care providers should check the shelf life of irradiated blood, which is limited to 28 days, because irradiation damages cells and reduces their viability. The shelf life of platelets and granulocytes is not affected because they are not damaged by irradiation.

Before the transfusion is started, the patient's vital signs (including temperature) are checked and documented. The blood is inspected visually for clots or discoloration, and then the transfusion is administered through an approved line containing a blood filter, preferably piggybacked through physiological saline solution on a Y-type blood administration set. No other IV solutions or drugs may be infused with blood (unless specifically prescribed) because of potential incompatibility. In the first 15 min the blood flow rate is limited to 50 ml, except when treating massive trauma, when rapid infusions of blood are always appropriate. A health care professional remains with the patient during this time and instructs the patient to report any adverse reactions, such as back or chest pain, hypotension, fever, increase in temper-

ature of more than 1.8°F or 1°C, chills, pain at the infusion site, tachycardia, tachypnea, wheezing, cyanosis, urticaria, or rashes. If any of these occurs, the transfusion is stopped immediately, the vein is kept open with physiological saline solution, and the patient's physician and the blood bank are notified. If incompatibility is suspected, the blood and set are returned to the blood bank; samples of the patient's blood and urine are obtained for laboratory analysis; and the data are recorded from the unit. If no symptoms occur in the first 15 min and vital signs remain stable, the transfusion rate is increased to complete the transfusion within the prescribed time, or (if necessary) the transfusion is administered as fast as the patient's overall condition permits. Once the transfusion begins, the blood is administered within a maximum of 4 hr to maintain biological effectiveness and limit the risk of bacterial growth. (If the patient's condition does not permit transfusing the prescribed amount within this time frame, arrangements are made to have the blood bank split the unit and properly store the second portion.) The patient's vital signs and response are monitored every 30 min throughout the transfusion and 30 min afterward; stated precautions are observed, and caregivers monitor for indications of volume overload (distended neck veins, bounding pulse, hypertension, dyspnea). Blood should not be administered through a central line unless an ap-

proved in-line warming device is used. A warmer also should be used whenever multiple transfusions place the patient at risk for hypothermia, which can lead to dysrhythmias and cardiac arrest. Transfusion-related lung injury (TRALI) is a rare but serious and potentially lethal response to allogenic blood. SEE: *transfusion-related acute lung injury*.

**blood typing** The classification of red blood cells by the proteins and carbohydrates (antigens) found on the surface of the erythrocyte membrane.

**blood urea nitrogen** ABBR: BUN. Nitrogen in the blood in the form of urea, the metabolic product of the breakdown of amino acids used for energy production. The normal concentration is about 8 to 18 mg/dl. The level of urea in the blood provides a rough estimate of kidney function. Blood urea nitrogen levels may be increased in the presence of dehydration, decreased renal function, upper gastrointestinal bleeding, or treatment with drugs such as steroids or tetracyclines. SEE: *creatinine*.

**blood vessels** The veins, arteries, and capillaries.

**blood warmer** A device that raises refrigerated blood or intravenous fluids to a desired temperature, usually 37.0°C, or a little above.

**Bloom's syndrome** [David Bloom, Am. dermatologist, b. 1892] An autosomal recessive disease, found predominantly but not exclusively in persons of Jewish ancestry, marked by chromosomal abnormalities, facial rashes, dwarfism, and a propensity to develop leukemia.

**blotch** (blōtch) A blemish, spot, or area of discoloration on the skin.

**blotting method** A technique for analyzing a tiny portion of the primary structure of genomic material (DNA or RNA).

**Northern b.m.** A blot analysis technique for analyzing a small portion of RNA. Operationally, this test is identical to Southern blotting except for the target (RNA) and the specific reagents used.

**Southern b.m.** A technique used in molecular genetics to analyze a small portion of DNA first by purifying it, then by controlled fragmentation, electrophoretic separation, and fixing the fragment identity using specific DNA probes. It is used most commonly for G cell and T cell rearrangement analysis, bcr gene rearrangement analysis, and fragile X syndrome analysis.

**Western b.m.** A technique for analyzing protein antigens.

**Blount's disease** [Walter Putman Blount, Am. surgeon, 1900–1992] A pathological bowing of the leg (genu varum). Unlike the physiological bowlegs of the infant and toddler, the bowing in Blount's disease progressively

worsens after the first 2 years of life and is often unilateral. The condition is more common in girls than in boys and more common in blacks than in European Americans. Most cases occur in the first 2 or 3 years of life, but a juvenile form (onset at age 4 to 10 years) and an adolescent form (onset at 11 years or older) are recognized. SYN: *tibia vara*.

**DIAGNOSIS:** Diagnosis is based on clinical presentation and x-ray of the leg.

**TREATMENT:** In the early stages, simple bracing and splinting may be all that is necessary. If the disease has gone undetected or untreated, or if it is one of the later-onset forms, surgery may be required.

**blowfly** (blō'fī") One of the flies belonging to the family Calliphoridae. Most blowflies are scavengers. Their larvae live in decaying flesh or meat, although occasionally they may live in decaying or suppurating tissue. However, one species, the screw-worm fly, *Callitroga hominivorax*, attacks living tissue, laying its eggs in the nostrils or open wounds of its domestic animal or human host, giving rise to myiasis. SEE: *Calliphora vomitoria*; *myiasis*.

**blowpipe** (blō'pīp") A tube through which a gas or current of air is passed under pressure and directed upon a flame to concentrate and intensify the heat.

**BLS** *basic life support*.

**blue** (bloo) [O. Fr. *bleu*] **1.** A primary color of the spectrum; sky color; azure. **2.** Cyanotic.

**blue bloater** A person with chronic bronchitis who demonstrates evidence of cyanosis and pedal edema. SEE: *chronic bronchitis*.

**ETIOLOGY:** It is most often the result of long-term cigarette smoking.

**TREATMENT:** The patient often benefits from oxygen therapy, bronchial hygiene (e.g., clearing of the lungs), and smoking cessation.

**bluebottle fly** SEE: under *fly*.

**Blue Cross** A nonprofit medical care insurer in the U.S. The insurance is mostly for hospital services. SEE: *Blue Shield*.

**blue diaper syndrome** A rare autosomal recessive syndrome in which the amino acid tryptophan is not absorbed from the gastrointestinal tract.

**blues** A colloquial term for depression or a depressed mood.

**Blue Shield** A nonprofit medical care insurer in the U.S. The insurance is for that part of medical care provided by health care professionals. SEE: *Blue Cross*.

**Blumberg's sign** (blūm'bērgs) [Jacob Moritz Blumberg, Ger. surgeon and gynecologist, 1873–1955] Rebound tenderness.

**blunt end** In a health care institution, the administrative or bureaucratic apparatus that supports and often directs patient care. Individuals actually providing the care (aides, midlevel personnel, nurses, and physicians) are said to work at the "sharp end" of health care.

**blush** (blüş) [AS. *blyscan*, to be red] Redness of the face and neck due to vasodilation caused by emotion or heat. Blushing may also be associated with certain diseases, including carcinoid syndrome, pheochromocytoma, and Zollinger-Ellison syndrome.

**BMA** *British Medical Association*.

**BME** *Biomedical Engineer*.

**BMET** *Biomedical Engineering Technologist*.

**BMI** *body mass index*.

**B-mode (brightness mode) display** B-mode ultrasound.

**BMR** *basal metabolic rate*.

**BMT** *bone marrow transplant*.

**BNA** *Basle Nomina Anatomica*.

**board** (börd) **1.** A long, flat piece of a substance such as wood or firm plastic. **2.** A governing or oversight committee, such as one that directs the affairs of a hospital, clinic, company, or other organization.

**arm b.** **1.** A board placed under and attached to the arm for stabilization during intravenous administration. **2.** A device attached to the sides of a wheelchair to permit support or positioning of the arm, esp. for persons with upper-extremity paralysis.

**bed b.** A firm board placed beneath a mattress to keep it from sagging. It is used to treat some persons with back difficulties. It is also used in cardiopulmonary resuscitation to improve the effectiveness of chest compressions.

**board eligible** In medicine, a designation that signifies that a physician has completed all the requirements for admission to the medical specialty board certification examination but has not yet taken and passed the examination. SEE: *certification, board*.

**boarder** A patient no longer requiring hospitalization who is provided with meals and lodging in a hospital, usually until other living arrangements can be made.

**Bochdalek's ganglion** (bök'däl-ěks) [Victor Bochdalek, Czech. anatomist, 1801–1883] A ganglion of the plexus of the dental nerve in the maxilla above the canine tooth.

**Bodo** (bō'dō) A genus of nonpathogenic, flagellate protozoa of the family Bodonidae often found in stale feces or urine and sometimes in the urinary bladder.

**body** (bō'dē) [AS. *bodig*] **1.** A complete organism, living or dead; the sum of its physical components. SYN: *soma* (1). **2.** Trunk (1). **3.** The principal mass of

any structure. **4.** The largest or most important part of any organ. SEE: *aortic body; foreign body; ketone body*.

**body armor** Clothing designed to resist blast waves, blunt force trauma, heat, penetrating objects, shrapnel, and other potential sources of physical injury.

**body burden** The amount of a substance present in an organism. The term is usually reserved for descriptions of infectious or toxic substances. It may be represented arithmetically as the concentration of the substance multiplied by the mass of the tissues that store it.

**body composition** The relative percentages of bony minerals, cell mass, lean body mass, body fat, and body water in an organism, and their distribution through the body. Determination of the specific gravity of the body is done to estimate the percentage of fat. This may be calculated by various methods, including underwater weighing, which determines the density of the individual; use of radioactive potassium, <sup>40</sup>K; measuring the total body water by dilution of tritium; and use of various anthropometric measurements such as height, weight, and skin fold thickness at various sites. None of these methods is free of the potential for error. Underwater weighing is useful but may provide misleading information when used in analyzing body composition of highly trained athletes. The obese person has a lower body density than does the lean person, because the specific gravity of fat tissue is less than that of muscle tissue. The fat content for young men will vary from about 5% to 27% and for women from about 18% to 35%.

**body dysmorphic disorder** ABBR: BDD. A preoccupation with one or more imagined defects in appearance.

**body image, disturbed** Disruption in the way one perceives one's body image (e.g., after an injury or illness) or an incongruity between one's actual appearance and the way one perceives it (e.g., in anorexia nervosa). SEE: *body dysmorphic disorder; Nursing Diagnoses Appendix*.

**body language** The revelation of attitude or mood through physical gestures, posture, or proximity; nonverbal communication. SEE: *kinesics*.

**body map** A drawing of a patient's injuries, lesions, or wounds, used to record maltreatment by another person in a case of physical abuse or violence.

**body packer syndrome** Drug overdose as a result of the ingestion of multiple small packages, usually containing drugs of abuse (esp. cocaine), to transport them illegally. Inadvertent overdose may occur if the packages rupture.

**body piercing** Placing an object, usually

a metal or plastic ornament, into a body part such as the ears, navel, nose, lips, tongue, nipple, or genitalia. Piercing may be associated with problems such as local skin infections, the transmission of blood-borne infections, and allergic reactions to the object.

**body rocking** SEE: under *rocking*.

**body scheme** Knowledge of one's body parts and their relative positions. SEE: *proprioception*.

**body snatching** Robbing a grave of its body, which was done in the past to obtain bodies for anatomical study in medical schools.

**body temperature, risk for imbalanced** At risk for failure to maintain body temperature within normal range. SEE: *Nursing Diagnoses Appendix*.

**body type** SEE: under *type*.

**body weight ratio** Body weight in grams divided by body height in centimeters.

**body work** Musculoskeletal manipulations such as massage, stretching, postural alignment, and breathing exercises that are used to relieve stress, treat pain, and promote a sense of wellness.

**Boeck's sarcoid** (bēks) [Caesar P. M. Boeck, Norwegian dermatologist, 1845–1917] Former name for sarcoidosis.

**Boerhaave syndrome** (boor'hā-vē) [Hermann Boerhaave, Dutch physician, 1668–1738] Spontaneous rupture of the esophagus usually associated with violent retching or vomiting. SEE: *Malory-Weiss syndrome*.

**Bohr effect** (bōr) [Christian Bohr, Danish physiologist, 1855–1911] The effect of an acid environment on hemoglobin; hydrogen ions alter the structure of hemoglobin and increase the release of oxygen. It is esp. important in active tissues producing carbon dioxide and lactic acid.

**boil** (boyl) [AS. *byl*, a swelling] A tender, dome-shaped skin lesion, typically caused by infection around a hair follicle with *Staphylococcus aureus*. Boils usually arise on the face, neck, axilla, or buttocks (i.e., on body surfaces that frequently perspire and chafe). When they first appear they are often superficial, but as they mature they form localized abscesses with pus and necrotic debris at their core. On rare occasions they spread to deeper tissues, sometimes with tragic consequences (e.g., a boil on the neck or face may spread to the brain or meninges). SYN: *furuncle*. SEE: *carbuncle*.

**TREATMENT:** Warm moist compresses relieve pain and encourage drainage of the infected nodule to the skin surface. Oral antimicrobial antibiotics, such as trimethoprim/sulfamethoxazole or clindamycin, are given when the lesion is surrounded by

local cellulitis. Incision and drainage is sometimes needed.

**boiling** (boyl'ing) Process of vaporizing a liquid. Boiling water destroys most microorganisms (but may not destroy spores or viruses), solidifies (denatures) albumin, weakens fibrin and muscle proteins in meat, bursts starch granules, and softens cellulose in cereals and vegetables.

**-bol, bol-** (bōl) [Fm. (*ana*)*bol(ic)*] A combining form used in pharmacology to designate an anabolic steroid.

**bolus** (bō'lūs) [L., from Gr. *bolos*, a lump] **1.** A mass of masticated food ready to be swallowed. **2.** A rounded preparation of medicine for oral ingestion. **3.** A concentrated mass of a diagnostic substance given rapidly intravenously, such as an opaque contrast medium, or an intravenous medication. **4.** In radiology, a tissue-equivalent material placed on the surface of the body to minimize the effects of an irregularly shaped body surface. The dose at the skin surface tends to increase, minimizing the skin-sparing effect of megavoltage radiation.

**alimentary b.** A mass of masticated food in the esophagus that is ready to be passed into the stomach.

**bombesin** (bōm'bē-sin) ABBR: BBS. A neuropeptide present in the gut and brain tissue of humans. It has antiulcer, anti-inflammatory, appetite-suppressing, and trophic effects. It has been identified in a number of malignancies and has been used in oncology as a biological marker of disease progression.

**bona fide** (bō'nā, bō'nā, fid, fid'ē, fē'dā) [L.] Carried out in good faith; honest, without fraud or deception.

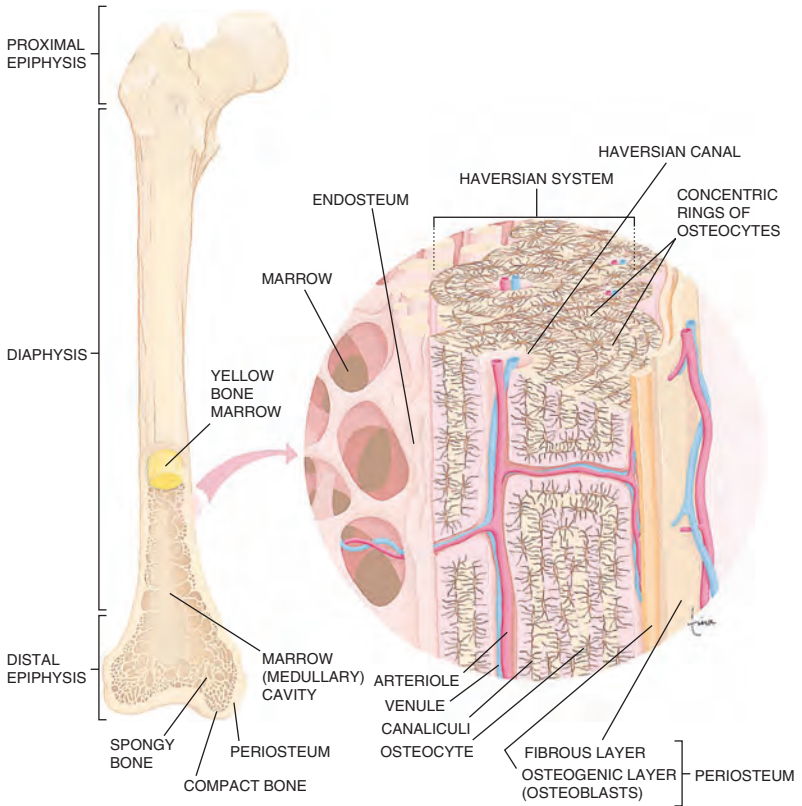
**bond** **1.** A force that binds ions or atoms together. It is represented by a line drawn from one molecule or atom to another as in H—O—H. **2.** An interpersonal connection or tie.

**covalent b.** Chemical bond formed when atoms share one, two, or three pairs of electrons. This is the type of bond found in organic molecules.

**disulfide b.** A covalent bond between two sulfur-containing amino acids, which helps maintain the shape of proteins such as insulin, keratin, and antibodies. SYN: *disulfide bridge*.

**hydrogen b.** The weak attraction of a covalently bonded hydrogen to nearby oxygen or nitrogen atoms in the same or a different molecule. Hydrogen bonds give water its cohesiveness and its surface tension. These bonds also help maintain the three-dimensional shape of proteins and nucleic acids; such shape is essential to their functioning.

**ionic b.** A chemical bond formed by the loss and gain of electrons between atoms. This type of bond is found in inorganic acids, bases, and salts.



### BONE TISSUE

(Left) Femur with distal end sectioned; (Right) compact bone with haversian systems

**nonpolar covalent b.** A covalent bond in which the pair of electrons is shared equally between two atoms.

**polar covalent b.** A covalent bond in which one atom attracts the shared pair of electrons more strongly than does the other atom, and thus has a slightly negative charge. The atom with the weaker attraction has a slightly positive charge.

**bonding** (bōnd'ing) **1.** In dentistry, the use of a low-viscosity polymerizable adhesive to provide mechanical retention of cast restorations, autopolymerizing restorations, and orthodontic appliances. **2.** Development of a strong emotional attachment between individuals (e.g., a mother and child) after frequent or prolonged close contact.

**mother-infant b.** The emotional and physical attachment between infant and mother that is initiated in the first hour or two after normal delivery of a baby who has not been dulled by anesthetic agents or drugs. It is believed that the stronger this bond, the greater the chances of a mentally healthy infant-

mother relationship in both the short- and long-term periods after childbirth. For that reason, the initial contact between mother and infant should be in the delivery room and the contact should continue for as long as possible in the first hours after birth. It is also called mother-infant attachment.

**bone** [AS. *ban*, bone] **1.** Osseous tissue, a specialized form of dense connective tissue consisting of bone cells (osteocytes) embedded in a nonliving matrix. Bone matrix is made of calcium carbonate, calcium phosphate, and collagen fibers. SYN: *os*. SEE: *illus.* (Bone Tissue).

**2.** A unit of the skeleton; the human skeleton has 206 bones. Bones surround and protect some vital organs, and give points of attachment for the muscles, serving as levers and making movement possible. In the embryo, the bones of the skull are first made of fibrous connective tissue, which is gradually replaced by bone matrix. The remainder of the skeleton is first made of hyaline cartilage, which is also replaced by bone matrix,

beginning during the third month of gestation. The outer surface of a bone is compact bone, and the inner more porous portion is cancellous (spongy) bone. The shafts of long bones are made of compact bone that surrounds a marrow canal. Compact bone is made of haversian systems, which are precise arrangements of osteocytes, blood vessels, and lymphatics within the bony matrix. All of these contribute to the maintenance and repair of bone. The periosteum is the fibrous connective tissue membrane that covers a bone. It has blood vessels that enter the bone, and it provides a site of attachment for tendons and ligaments. Bones are classified according to shape as long, short, flat, or irregular. In the elderly, esp. women, osteoporosis may develop, a condition in which bones become brittle and break easily. **SEE: *ilus. (Bony Structures of the Thorax, Abdomen, and Pelvis); skeleton*** for names of principal bones.

**alveolar b.** The bony tissue or process of the maxilla or mandible that supports the teeth. **SYN: *alveolar process.***

**breast b.** Sternum.

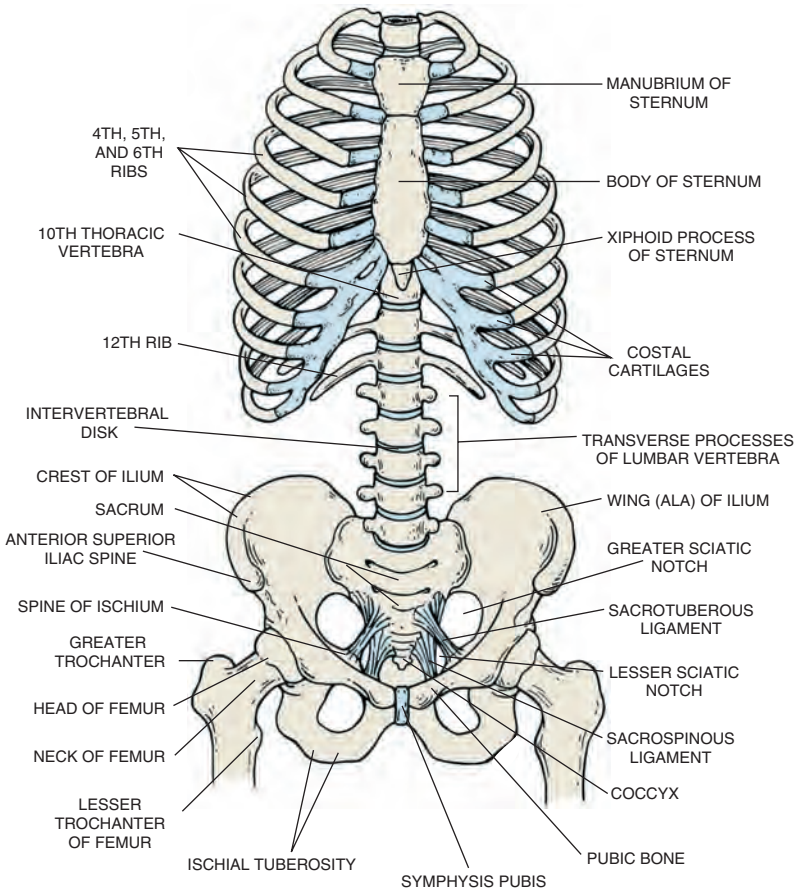
**brittle b.** Bone that is abnormally fragile, as in osteogenesis imperfecta.

**cancellous b.** A spongy bone in which the matrix forms connecting bars and plates, partially enclosing many intercommunicating spaces filled with bone marrow. **SYN: *spongy bone.***

**carpal bone** One of the eight wrist bones, which are aligned in two rows. The proximal row contains (from the thumb to the little finger) the scaphoid, lunate, triquetral, and pisiform bones. The distal row contains (from thumb to little finger) the trapezium, trapezoid, capitate, and hamate bones.

**cartilage b.** A bone formed by endochondral ossification developing from the primary centers of bone formation. **SYN: *endochondral bone.***

**cavalry b.** Rider's b.



**BONY STRUCTURES OF THE THORAX, ABDOMEN, AND PELVIS**

**collar b.** Clavicle.

**compact b.** The hard, dense bone made of haversian systems that forms the surface layer of all bones and the shafts of long bones, in contrast to spongy bone that forms the bulk of the short, flat, and irregular bones and the ends of long bones.

**cotyloid b.** A bone that forms a part of the medial portion of the acetabulum during fetal development. It subsequently fuses with the pubis.

**cranial b.** A bone of the skull or brain case.

**cuboid b.** The outer bone of the instep bones of the foot that articulates posteriorly with the calcaneus and anteriorly with the fourth and fifth metatarsals.

**cuneiform b.** One of the bones of the internal, middle, and external tarsus.

**dermal b.** Membrane b.

**ear b.** One of the ossicles of the tympanic cavity: the malleus, incus, and stapes. SEE: *ear* for illus.

**endochondral b.** Cartilage b.

**ethmoid b.** A complex thin-walled bone, roughly cuboidal in shape, located in the middle of the skull above the nasal cavities and below the anterior fossa of the cranial cavity. Its flat upper surface is the cribriform plate, which forms much of the roof of the nasal cavities; its upper surface has a midline bony keel that projects up into the cranial cavity and on both sides of which are perforated valleys through which the olfactory nerves project up from the olfactory epithelium. In the midline under the cribriform plate is a mirror-image (to the crista galli) keel, the perpendicular plate, which projects down between the nasal cavities as part of the bony nasal septum. The right and left sides of the ethmoid bone are the ethmoidal labyrinths, composed of ethmoidal air cells; the inner surfaces of the labyrinths form the middle nasal conchae, while the lateral surfaces form the orbital plates, which are part of the mosaic of bones that form the inner walls of the orbits.

**frontal b.** The forehead bone.

**funny b.** A colloquial term for the groove along the inner back side of the elbow (behind and underneath the medial epicondyle of the humerus) in which the ulnar nerve runs. Pressure on the groove compresses the ulnar nerve, producing a tingling discomfort on the inside of the forearm as well as the 4th and 5th fingers.

**hamate b.** The most medial wrist (carpal) bone in the distal row. It has a hooked process on its palmar side. The hamate articulates with the 4th and 5th metacarpals. SYN: *hamatum*; *os hamatum*; *unciform bone*.

**heel b.** Calcaneus.

**hip b.** Innominate b.

**hyoid b.** The horseshoe-shaped bone at the base of the tongue. It is mobile and its ends hang by the stylohyoid ligaments from the styloid process on each side of the base of the skull. The hyoid bone is suspended by many muscles (the hyoid muscles): the suprahyoid muscles (geniohyoid, mylohyoid, digastric, and hyoglossus) attach the hyoid bone to the mandible and the floor of the mouth; the infrahyoid muscles (omohyoid, sternohyoid, and thyrohyoid) attach it to the larynx and the thoracic cage. The hyoid bone anchors and moves with the jaw, tongue, pharynx, and larynx. SEE: *illus.*

**innominate b.** The hip bone or os coxae, composed of the ilium, ischium, and pubis. It is united with the sacrum and coccyx by ligaments to form the pelvis. SYN: *pelvic bone*; *os coxae*.

**interradicular b.** The alveolar bone between the roots of multirooted teeth.

**intramembraneous b.** Membrane bone.

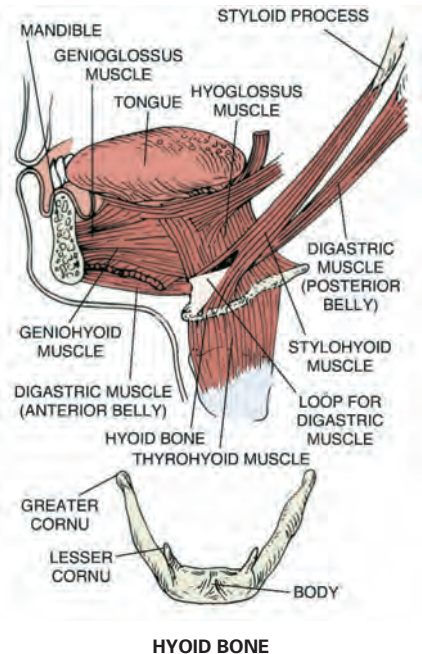
**ivory b.** Marble b.

**lacrimal b.** A thin, irregularly shaped bone on the medial side of the orbit.

**lesser multangular b.** The second in distal row of carpal bones. SYN: *trapezoid bone*.

**lunate b.** Semilunar b.

**malar b.** A four-pointed bone on each side of the face, uniting the frontal and superior maxillary bones with the zygomatic process of the temporal bone. SYN: *cheekbone*; *zygoma*; *zygomatic bone*.



**marble b.** An abnormally calcified bone with a spotted appearance on a radiograph. SYN: *ivory bone*. SEE: *osteopetrosis*.

**membrane b.** Bone formed within embryonic fibrous connective tissue, in which fibroblasts differentiate into osteoblasts. Such bone is formed without a cartilage model and includes the bones of the face and cranium. SYN: *dermal bone*; *intramembraneous bone*.

**mosaic b.** Bone appearing as small pieces fitted together, characteristic of Paget's disease.

**nasal b.** Either of the two small bones forming the bridge of the nose.

**occipital b.** The bone that forms the lower, posterior skull; it articulates with the parietal and temporal bones anteriorly, and the atlas inferiorly.

**orbicular b.** The rounded end of the long process of the incus, a middle ear ossicle. It probably represents a secondary ossification center in the long or lenticular process.

**palate b.** Palatine bone.

**palatine b.** One of the bones forming the posterior part of the hard palate and lateral nasal wall between the interior pterygoid plate of the sphenoid bone and maxilla. SYN: *palate bone*.

**parietal b.** One of two bones that together form the posterior roof and sides of the skull.

**pelvic b.** Innominate b.

**perichondrial b.** Bone formed beneath the perichondrium.

**periosteal b.** Bone formed by osteoblasts of the periosteum.

**ping pong b.** A thin shell of osseous tissue covering a giant-cell sarcoma in a bone.

**plastic deformation of b.** A bow-shaped deformity of bone from trauma strong enough to cause the bone to bend but not break. It is typically seen in children, esp. in the ulna or fibula. SYN: *bend fracture*.

**pubic b.** The lower anterior part of the innominate bone. It is a separate bone at birth; it begins to fuse with the ischium by age 8, and it is fully fused with the ischium and ilium by 16-18 years of age. SYN: *os pubis*.

**replacement b.** Any bone that develops within cartilage.

**rider's b.** Ossification of the distal end of the adductor muscles of the thigh, as may be seen in horseback riders. SYN: *cavalry bone*.

**sacral b.** Sacrum.

**scaphoid b.** The largest carpal bone in the first row of wristbones. It is on the thumb side of the hand and articulates directly with the radius. SYN: *os scaphoideum*.

**semilunar b.** Crescent-shaped bone of the carpus. SYN: *lunate bone*.

**sesamoid b.** A type of short bone oc-

curing in the hands and feet and embedded in tendons or joint capsules.

**Soemmering's b.** SEE: *Soemmering's bone*.

**sphenoid b.** The large bone at the base of the skull that has the ethmoid bone in front of it, the occipital bone behind it, and the parietal and temporal bones at the sides. It is shaped like a large moth. Its two broad, curved wings form the front walls of the middle cranial fossae, and its two "tails," the pterygoid processes, which hang in front of the neurocranium in the pterygoid fossa behind the facial skeleton. Between the wings, in the center of the body of the sphenoid bone, there is a deep, concave pocket (the sella turcica), in which the pituitary gland lies.

**spongy b.** Cancellous b.

**squamous b.** The upper anterior portion of temporal bone.

**sutural b.** Wormian bone.

**tabular b.** A flat bone, or one with two compact bone portions enclosing a center of spongy bone.

**tarsal b.** One of the seven bones of the ankle, hind-foot, and midfoot, consisting of the talus, calcaneus, navicular, cuboid, and three cuneiform bones.

**temporal b.** A bone on both sides of the skull at its base. It is composed of squamous, mastoid, and petrous portions, the latter enclosing the receptors for hearing and equilibrium. SYN: *os temporale*. SEE: *Arnold's canal*; *mastoid*; *petrosa*; *styloid process*.

**thigh b.** Femur.

**trapezoid b.** The second bone in the distal row of carpal bones. It lies between the trapezium and capitate bones.

**triquetral b.** The third carpal bone in the proximal row, enumerated from the radial side. SYN: *triquetrum*.

**wormian b.** (wür mē-än) [Ole Worm, Danish physician, 1588-1654] One of the small, irregular bones found along the cranial sutures. SYN: *sutural bone*.

**woven b.** Embryonic or rapidly growing bone characterized microscopically by a prominent fibrous matrix.

**zygomatic b.** The cheekbone; the bone on either side of the face below the eye. SYN: *malar bone*.

**bone densitometry** A method of determining the density of bone by use of radiographic techniques. The use of dual photon absorptiometry provides density data of the axial skeleton with a precision of 97% to 98%. It is used in testing for degree of osteoporosis. SEE: *osteoporosis*; *dual energy x-ray absorptiometry*.

**bone fracture, nonunion, electrical stimulation for** A method of stimulating a nonunion bone fracture to heal through an invasive or noninvasive electromagnetic field. Invasive electrical stimula-



tion involves the implantation of electrodes into the bone proximal and distal to the fracture site. Surface electrodes are placed on the skin over the area of fracture for the noninvasive technique. SEE: *nonunion*.

**bonelet** (bōn'let) Ossicle.

**bone marrow** The soft tissue in the marrow cavities of long bones (yellow marrow) and in the spaces between trabeculae of spongy bone in the sternum and other flat and irregular bones (red marrow). Yellow marrow is mostly fat, stored energy. Red marrow produces all the types of blood cells.

**b.m. aspiration and biopsy** The removal of a small amount of tissue (bone marrow biopsy) and fluid filled with blood cells (bone marrow aspiration) from the central core of a bone, used to diagnose blood disorders such as anemias and cancers; or infectious diseases that affect the marrow; or to gather cells for later infusion into a patient (e.g., in bone marrow transplantation).

**PATIENT CARE:** The purpose of the test is explained to the patient (and family as necessary). The patient is advised that some discomfort or pressure may be felt, and a crunching or popping sound may be heard as the needle penetrates the bone. A signed, informed consent must be obtained prior to the procedure. The patient's bleeding risk is assessed, reviewing his or her history, coagulation studies, platelet count, anticoagulant therapy, and use of drugs or supplements that interfere with clotting. The patient also is assessed for allergies to antiseptic or anesthetic solutions. The patient is advised that he or she must remain still throughout the procedure, and his or her ability to do so is assessed. Baseline vital signs are recorded and a sedative administered as prescribed. The patient is assisted to the appropriate position for the insertion site: lateral decubitus for the posterior iliac crest; supine for the sternum or anterior iliac crest. The health care provider assists the patient to maintain the desired position. The patient is encouraged to take deep breaths and use relaxation techniques during the procedure.

A sterile prepackaged set is used for the aspiration, and the practitioner is assisted as necessary. The patient is assessed throughout for pallor, diaphoresis, or other changes. Following the aspiration, direct pressure is applied to the puncture site for 5 to 10 minutes or according to agency policy until bleeding is controlled, then the wound is covered with a sterile dressing. The patient is assisted to a position of comfort, and vital signs are checked. The puncture site is reassessed as necessary for bleeding. All specimens are properly labeled

and promptly transported to the laboratory. Postprocedure pain intensity is assessed, and analgesia is provided as prescribed. The patient is advised to watch for and report any signs of infection, and warned to avoid any drugs containing aspirin, as these may potentiate bleeding.

Specimens of marrow and aspirate are sent to the cytology or pathology laboratory for microscopic analysis; to microbiology (if cultures are needed); and/or the clinical laboratory for chromosomal analysis or staining. A biopsy or aspirate that does not yield adequate material for analysis is known colloquially as a dry tap.

**bone mineral density** ABBR: BMD. The average mineral concentration of a specimen of bone; skeletal mass. Bone mineral density is reduced in osteopenia and osteoporosis. A reduction in BMD predisposes patients to fractures. SYN: *density, bone mass*.

**PATIENT CARE:** BMD can be measured by techniques such as dual x-ray absorptiometry (DEXA). Women who are postmenopausal should be assessed for osteoporosis risk and receive some form of BMD measurement so that if inadequate bone density is present, they can be given treatment to lower the risk of fractures. Any postmenopausal woman with risk factors for osteoporosis or who has sustained an osteoporotic fracture should undergo BMD testing.

**bone morphogenetic protein** (mor'fō-gē-nēt'ik) A bone graft substitute.

**bone paste** One of several composite materials that can be used to repair defects in bones during orthopedic surgery.

**bone-patellar tendon-bone** ABBR: BPT-B. An autologous graft used to repair a ruptured anterior cruciate ligament. It consists of the central portion of the patellar tendon linked to a segment of bone taken from the patella (colloquially the kneecap) and a segment extracted from the tibia (the shin).

**bony** (bō'nē) Resembling or of the nature of bone. SYN: *osseous*.

**bonzo** (bōn'zō) A receptor found on the surface of cellular membranes that facilitates the entry of the human immunodeficiency virus.

**Boophilus** (bō-ŏ'fil-ūs) [L. *bos*, ox, cow, Gr. *philein*, to love] A genus of ticks that parasitizes humans and cattle and other animals. SEE: *Ixodes*.

**boost** (boost) In radiation oncology the delivery of a large dose of radiation to a tumor in addition to the radiation supplied by an external beam.

**booster** (boo'stēr) An additional dose of an immunizing agent to increase the protection afforded by the original series of injections. The booster is given some months or years after the initial immunization.

**booster effect** 1. A strong immune response generated by a second exposure to an antigen. 2. An increase in the size of the reaction to intradermally injected tuberculin when a second injection is given 7 to 21 days after the first.

**BOOSTRIX** (boos'triks) Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine, adsorbed.

**boot** A special shoe, brace, or bandage for covering, protecting, and/or immobilizing the foot, ankle, and lower leg.

**borate** (bō'rāt) Any basic salt of boric acid. SEE: *Poisons and Poisoning Appendix*. **borated**, *adj.*

**borax** (bor'äks) [L., from Arabic, from Persian *burah*] Sodium borate, used as a detergent, a water softener, and a weak antiseptic.

**borborygmus** (bor'bö-rīg'müs) *pl.* **borborygmi** [Gr. *borborygmōs*, rumbling in the bowels] A gurgling, splashing sound normally heard over the large intestine; it is caused by passage of gas through the liquid contents of the intestine. Its absence may indicate paralytic ileus or obstruction of the bowels due to torsion, volvulus, or strangulated hernia.

**border** (baw'r'dēr) The outer part or edge; boundary.

**brush b.** The microvilli on the free surface of the cells lining the small intestine and the proximal convoluted portion of the renal tubules. Microvilli are folds of the cell membrane and greatly increase the surface area for absorption.

**vermilion b.** The red boundary of the lips that represents the highly vascular, hyalinized, keratinized epithelial covering between the outer skin and the moist oral mucosa of the mouth.

**borderline** (bor'dēr-līn") An incomplete state, as in a borderline diagnosis, in a patient who has some of the requirements for a definite diagnosis but not enough for certainty; a condition judged numerically (e.g., high blood pressure in which the value is close to a hypertensive level but not at a diagnostic level).

**Bordetella** (bor'dē-tēl'lä) [Jules Bordet, Belg. physician, bacteriologist, and physiologist, 1870–1961] A genus of hemolytic gram-negative coccobacilli of the family Brucellaceae. Some species are parasitic and pathogenic in warm-blooded animals, including humans.

**B. pertussis** The causative agent of whooping cough. SEE: *pertussis*.

**bore** 1. The internal diameter of a tube. 2. To drill, e.g. into the surface of a bone or tooth.

**boredom** (bor'döm") A feeling of fatigue, depression, or disinterest caused by a lack of challenging or meaningful work or stimulation. SEE: *apathy*.

**Borg's dyspnea scale** (börgz) A system used to document the severity of the pa-

tient's shortness of breath using numbers anchored with verbal descriptions (e.g., 10 = completely out of breath; 5 = somewhat breathless; 1 = breathing easily). The patient or athlete chooses the number that best corresponds to his or her current perceived respiratory effort.

**boric acid poisoning** SEE: under *poisoning*.

**borism** (baw'r'i-zīm) The symptoms caused by the internal use of borax or boron compounds. These include dry skin, eruptions, and gastric disturbances.

**Bornholm disease** (born'höm) [named for the Danish island Bornholm] An epidemic disease marked by sudden intense pleuritic or abdominal pain and fever. It is caused by various coxsackie viruses. SYN: *devil's grip*; *epidemic pleurodynia*.

**TREATMENT:** Nonsteroidal anti-inflammatory agents and local application of heat may control symptoms.

**boron** (bōr'ōn) [*borax* + *carbon*] SYMB: B. A nonmetallic element found only as a compound such as boric acid or borax; atomic weight 10.81, atomic number 5.

**Borrelia** (bor-rē'lē-ä) A genus of spirochetes, some of which cause disease in humans.

**B. burgdorferi** The causative agent of Lyme disease.

**B. duttonii** The causative agent for East African tick-borne relapsing fever. Other causes of endemic relapsing fever include *Borrelia hermsii*.

**B. lonestari** The causative agent of Southern tick-associated rash illness.

**B. recurrentis** The causative agent of louse-borne relapsing fever.

**borreliosis** (bo-rel'ē-ō'sis) Any of several arthropod-borne diseases caused by spirochetes of the genus *Borrelia*.

**boss** (bös) [O. Fr. *boce*, a swelling] A round circumscribed swelling or growth (e.g., a tumor) that becomes large enough to produce swelling.

**bosselated** (bös'ē-lät-éd) Marked by numerous bosses.

**bossing** (bös'īng) Protuberance of the frontal areas of the skull.

**Boston arm** A myoelectric prosthesis for above-the-elbow amputations. The elbow is powered by a small battery-driven motor, activated in proportion to the strength of contraction detected in the control muscle. SYN: *Boston elbow*; *Liberty Mutual elbow*.

**Boston brace** A low-profile plastic thoracolumbosacral orthosis (spinal jacket) with no metal suprastructure, used to treat mild to moderate lower thoracic and lumbar scoliosis.

**Boston elbow** Boston arm.

**Boston Naming Test** ABBR: BNT. A neuropsychiatric test to measure apha-

sia and naming ability. In the test the subject must name 60 line drawings of common and rarely seen objects. It is frequently used to assess patients with autism, brain injuries, or strokes.

**Boswellia** (bōs-wel'ē-ā, bōz) A genus of trees found in the Middle East and India. The trees produce an oleoresin used in ayurvedic medicine as antiinflammatory treatment for arthritis and asthma.

**Botallo's duct** (bō-tāl'ōz) [Leonardo Botallo, It. anatomist, 1530–1600] Ductus arteriosus.

**botanical** (bō-tā'nī-kl) **1.** Relating to botany or plants. **2.** A plant extract used to maintain health, treat, or prevent illness.

**botany** (bōt'n-ē) [Gr. *botanikos*, pert. to plants] The study of plants; a division of biology.

**botfly** (bōt'fī) *pl.* **botflies** Dermatobia.

**botryoid** (bōt'rē-oyd) [Gr. *botrys*, bunch of grapes, + *oidos*, form, shape] Resembling a bunch of grapes. SYN: *staphyline*.

**botryomycosis** (bō'trē-ō-mī-kō'sīs) [Gr. *botrys*, bunch of grapes + ""] A boil or furuncle, resembling an actinomycotic mass, but composed instead of bacteria, specifically *Staphylococcus aureus*.

**botuliform** (bō-chū'li-form") [L. *botulus*, sausage, + ""] Shaped like a sausage.

**botulin** (bōch-ā-līn) The protein neurotoxin that causes the clinical disease botulism. It may be used to efface skin wrinkles, and to treat neurological conditions such as torticollis.

**botulinic acid** (bōch-ā-līn'īk) A toxin found in putrid sausage.

**botulism** (bōt'ū-līzm) [" + Gr. *-ismos*, condition] A paralytic and occasionally fatal illness caused by exposure to toxins released from *Clostridium botulinum*, an anaerobic, gram-positive bacillus. In adults, the disease usually occurs after food contaminated by the toxin is eaten, after gastrointestinal surgery, or after the toxin is released into an infected wound. In infants (usually between 3 and 20 weeks of age), the illness results from intestinal colonization by clostridial spores (perhaps related to honey or corn syrup ingestion), then production of the exotoxin within the intestine. Because the toxin is extraordinarily lethal and easy to manufacture and distribute, concern has been raised regarding its use as an agent of biological warfare.

Foodborne botulism may result from consumption of improperly cooked and canned meals, in which the spores of the bacillus survive and reproduce. Wound botulism may begin in abscesses, where an anaerobic environment promotes the proliferation of the bacterium and absorption of its poison. In either case cranial nerve paralysis and failure of the

autonomic and respiratory systems may occur; however, gastrointestinal symptoms are likely only in foodborne outbreaks.

The poison responsible for botulism damages the nervous system by blocking the release of acetylcholine at the neuromuscular junction. This is the cause of the paralysis associated with the illness.

**SYMPTOMS:** Nausea, diarrhea, vomiting, ptosis, double vision, slurred speech, and swallowing difficulties are all common in adults. Constipation, poor feeding, and flaccidity (floppy baby syndrome) may occur in children. The spectrum of illness is broad; some patients suffer other complications, including generalized paralysis and respiratory failure, the usual cause of death (25% mortality).

**DIAGNOSIS:** Positive serum, gastric contents, stool, or suspected food cultures for botulinum toxin, or a positive mouse inoculation test (using samples from suspected food sources), will make the diagnosis in patients in whom other neurological evaluations are negative. Because the clinical presentation is similar to stroke and Guillain-Barré and Eaton-Lambert syndromes, neural imaging and spinal fluid analysis are generally performed; results are negative in botulism.

**TREATMENT:** Trivalent antitoxin (ABE), an antitoxin made from horses, should be administered IV or IM early in patients suspected of having botulism. Early usage decreases mortality and morbidity associated with the illness. Botulinum antitoxin is available from the Centers for Disease Control and Prevention by calling (404) 639-2206 (daytime) or (404) 639-2888 (evening). SEE: *Poisons and Poisoning Appendix*.

**PATIENT CARE:** Patients who have ingested tainted foods may benefit from gastrointestinal decontamination (lavage and enema to remove unabsorbed toxin). IV fluids provide hydration. Very close monitoring of affected patients, preferably in intensive care units, is indicated so that prompt intubation and mechanical ventilation can begin if respiratory failure develops. Vital signs, respiratory effort, and respiratory distress are documented and reported. Arterial blood gases are monitored. Neuro-motor function is carefully and repeatedly assessed. Before botulinum antitoxin is administered, a history of the patient's allergies, esp. to horse serum, is obtained and a skin sensitivity test performed. After antitoxin administration, the patient must be closely watched for anaphylaxis. Epinephrine 1:1,000 (SC) and airway equipment should be readily available for such an

emergency. Other hypersensitivity reactions and serum sickness can also occur.

If relatives or other close contacts of the patient have eaten similar foods or shown similar symptoms, they should be carefully assessed and treated. Botulism is a reportable illness in every state in the U.S. Health care professionals can help to prevent botulism by explaining proper food processing and preserving techniques. Food obtained from a bulging container or food with a peculiar odor should always be avoided.

**infant b.** A form of botulism that affects infants less than 1 year old who ingest soil or food (esp. honey) containing *Clostridium botulinum* spores. The infant's protective intestinal flora is not yet established, and the spores germinate into active bacteria that produce the neurotoxin. It is treated with oral amoxicillin.

**SYMPTOMS:** The symptoms include constipation, lethargy, listlessness, poor feeding, ptosis, loss of head control, difficulty in swallowing, hypotonia, generalized weakness, and respiratory insufficiency. The disease may be mild or severe.

**intestinal b.** Botulism caused by production of botulinum toxin in the colon following ingestion of spores of *Clostridium botulinum*. Most cases occur in infants. SEE: *infant b.*

**wound b.** Botulism acquired when spores of the bacteria contaminate an anaerobic wound, germinate, and produce the neurotoxin.

**bouba** Yaws.

**Bouchard's nodes** (boo-shärz', -shärdz') Bony enlargements or nodules, located at the proximal interphalangeal joints, that result from osteoarthritis or degenerative joint disease.

**bougie** (boo'zhē) [Fr. *bougie*, candle] A slender, flexible instrument for exploring and dilating tubal organs, e.g., the male urethra.

**gum elastic b.** A small, flexible instrument used to locate the trachea. It is used as an intubation aid, esp. when intubation with standard techniques is difficult.

**bouillon** (boo-, bool-yōn') [Fr.] A clear broth made from meat or vegetables. It may be used as a culture medium for bacteria.

**Bouin's fluid** (boo-āns') [Paul Bouin, Fr. anatomist, 1870–1962] A fixative for embryological and histological tissue. It consists of formaldehyde, glacial acetic acid, trinitrophenol, and water.

**bound** (bownd) **1.** In chemistry, the holding in combination of one molecule by another. SEE: *bind* (2). **2.** Contained, not free.

**bouquet** (boo-kā') [Fr., nosegay] A clus-

ter or bunch of structures, esp. blood vessels.

**Bourdon gauge** A low-pressure flow metering device.

**Bourneville disease** Tuberos sclerosi.  
**boutonneuse fever, Boutonneuse** (bootōn-ooz') Mediterranean spotted fever.

**boutonnière** (boo-tōn-yār') [Fr., button-hole] A surgically produced buttonhole-like opening in a membrane.

**boutonnière deformity** SEE: under *deformity*, *boutonnière*; **illus.**



**BOUTONNIERE DEFORMITY**

**boutons terminaux** (boo-tōn' tēr-mī-nō') [Fr., terminal buttons] The bulblike expansions at the tips of axons that come into synaptic contact with the cell bodies of other neurons.

**Bouveret syndrome** (boo-vrā') [Leon Bouveret, French internist, 1850-1929] Gastric outlet obstruction resulting from impaction of a gallstone in the duodenum.

**bovine** (bō'vīn) [L. *bovinus*] Pert. to cattle; derived from cattle.

**bovine somatotropin A** ABBR: BST A. A growth hormone used to increase milk production in cows.

**bowel** (bow'ēl) [O. Fr. *boel*, intestine] Intestine.

**bowel bypass syndrome** A febrile illness occurring after intestinal bypass surgery for morbidly obese patients. Affected patients typically report aching joints and muscles, and have pustules and papules on the arms, legs, and or chest.

**bowel incontinence** Change in normal bowel habits characterized by involuntary passage of stool. SEE: *Nursing Diagnoses Appendix*.

**bowel rest** The intentional restriction of oral nutrition, typically used with other therapies for patients with gastrointestinal diseases such as bowel obstruction, ileus, pancreatitis, or acute abdomen.

**bowel sounds** SEE: under *sound*.

**bowel training** SEE: under *training*.

**bowleg** (bō'lēg) A bending outward of the leg. SYN: *bandy leg*.

**Bowman's capsule** (bō'māns) [Sir Wil-

liam Bowman, Brit. physician, 1816–1892] Part of the renal corpuscle. It consists of a visceral layer of podocytes closely applied to the glomerulus and an outer parietal layer. The podocyte layer is part of the filter for the formation of renal filtrate in the space between the two layers. SEE: *kidney* for *illus.*

**Bowman's lamina** Bowman's membrane.

**Bowman's membrane** The thin homogeneous membrane separating the corneal epithelium from the corneal substance. SYN: *anterior elastic lamina*; *Bowman's lamina*.

**box and block test** A standardized, timed test of manual dexterity and endurance, used in rehabilitation, in which the subject transfers small blocks from one side of a box to another.

**boxing** (böks'ing) In dentistry, the building up of vertical walls, usually in wax, around an impression to produce the desired size and form of the base of the cast and to preserve certain landmarks of the impression.

**box-note** In emphysema, a hollow sound heard on percussion.

**Boyden chamber** (boyd'ën) A chamber used to measure chemotaxis. Cells are placed on one side of a membrane and chemotactic material on the other. The number of cells migrating to the filter quantitates the chemotactic effect.

**Boyer's cyst** A painless and gradual enlargement of the subhyoid bursa.

**Boyle's law** (boylz) [Robert Boyle, Brit. physicist, 1627–1691] A law stating that, at a constant temperature, the volume of a gas varies inversely with the pressure. SEE: *Charles' law*; *Gay-Lussac's law*.

**Bozeman-Fritsch catheter** (böz'män-frítch) [Nathan Bozeman, U.S. surgeon, 1825–1905; Heinrich Fritsch, Ger. gynecologist, 1844–1915] A double-lumen uterine catheter with several openings at the tip.

**BP** *blood pressure*; *British Pharmacopoeia*.

**b.p.** *boiling point*.

**BPD** *biparietal diameter*; *bronchopulmonary dysplasia*.

**BPH** *benign prostatic hypertrophy*.

**BPP** *Biophysical profile*.

**Bq** *becquerel*.

**Br** 1. Symbol for the element bromine. 2. *Brucella*.

**brace** (bräs)*pl. braces* 1. Any of a variety of devices used in orthopedics for holding joints or limbs in place, as a Boston brace, Milwaukee brace, Taylor brace, or Yale brace. 2. A colloquial term for temporary dental prostheses used to align or reposition teeth.

**Boston b.** SEE: *Boston brace*.

**unloader knee b.** A brace that produces a valgus force on the knee to reduce compressive forces on the medial articular surfaces. It is used to treat pa-

tients with deformity and pain caused by osteoarthritis of the knee.

**brachi-** SEE: *brachio-*.

**brachial** (brä'kē-äl) [L. *brachialis*] Pert. to the arm.

**brachialgia** (brä'kē-äl'jē-ä) [L. *brachialis*, brachial, + Gr. *algos*, pain] Intense pain in the arm.

**brachialis** (brä'kē-äl'is) [L. *brachialis*, brachial] A muscle of the arm lying immediately under the biceps brachii. It flexes the forearm.

**brachio-, brachi-** [L. *brachium*, arm] Combining forms meaning *arm*.

**brachioplasty** (bräk'ē-ō-pläs'tē) [ " + " ] Cosmetic surgery to remove unwanted skin and fat from the upper arm. SEE: *arm lift*.

**brachioradialis** (brä'kē-ō-rä'dē-ä'lis) [ " + *radialis*, radius] A muscle lying on the lateral side of the forearm. It flexes the forearm.

**brachium** (brä'kē-üm) *pl. brachia* [L., arm, from Gr. *brakhion*, shorter, hence "upper arm" as opposed to longer forearm] 1. The upper arm from shoulder to elbow. 2. Anatomical structure resembling an arm.

**b. conjunctivum** Superior cerebellar peduncle.

**b. pontis** Middle cerebellar peduncle.

**brachy-** [Gr. *brachys*, short] Combining form meaning *short*.

**brachybasia** (bräk-ē-bä'sē-ä) [ " + *basia*, walking] A slow, shuffling gait.

**brachycardia** (bräk-ē-kär'dē-ä) [ " + *kardia*, heart] Bradycardia.

**brachycephalic, brachycephalous** (bräk'ē-sē-fäl'ik, -sēf'ä-lūs) [ " + *kephale*, head] Having a cephalic index of 81.0 to 85.4. This is considered a short head but not necessarily abnormal, as this index falls within the standard range of variation among humans.

**brachycheilia** (bräk'ē-kī'lē-ä) [ " + *cheilos*, lip] Abnormal shortness of the lips.

**brachydactylia** (bräk'ē-däk-tīl'ē-ä) [ " + *daktylos*, finger] Abnormal shortness of the fingers and toes.

**brachygnathia** (bräk-ig-nä'thē-ä) [ " + *gnathos*, jaw] Abnormal shortness of the lower jaw.

**brachymorphic** (bräk'ē-mor'fik) [ " + *morphe*, form] Shorter and broader than usual, with reference to body type.

**brachyphalangia** (bräk'ē-fäl-län'jē-ä) [ " + *phalanx*, closely knit row] Shortness of a bone or bones of a finger or toe.

**Brachyspira** (brä'kē-spi'rä) [ " + *spir(ochete)*] A genus of spirochete that occasionally colonizes the lower gastrointestinal tract. It causes dysentery in animals such as dogs or pigs and has been identified as a cause of human dis-

ease, e.g., abdominal cramping, diarrhea, and rectal bleeding.

**brachytherapy** (brāk"ē-thēr'ā-pē) [*" + therapeia*, treatment] In radiation therapy, the use of implants of radioactive materials such as radium, cesium, iridium, or gold at the treatment site (e.g., an internal organ with a malignant lesion).



The treated patient can emit radiation and can endanger others. If the radiation source is dislodged, it is removed by a radiation safety officer using special long-handled tongs and is placed in a lead container. All linens and dressings are considered contaminated. Pregnant women and children younger than 16 should not visit the patient.

**bracket** (brā'kēt) A support of wood, metal, or some durable material. In orthodontics, brackets may be bonded to teeth or attached to them indirectly. Orthodontic brackets are used to attach arch wires, which apply pressure to the teeth to realign them.

**Braden scale** A validated assessment tool commonly used to quantify a patient's degree of risk for developing a pressure ulcer. Each assessment parameter is measured on a scale from high risk of 1 to low risk of 3 or 4. The parameters include sensory perception, moisture, activity, mobility, nutrition, and friction and shear, with a possible total score range of 4 to 23. The lower the total score, the higher the risk for pressure ulcer development. Individuals are at risk for developing pressure ulcers if the total score is less than 17.

**Bradford frame** (brād'fērd) [Edward H. Bradford, U.S. orthopedic surgeon, 1848–1926] An oblong frame, about 7 × 3 ft (2.13 × 0.91 m), that allows patients with fractures or disease of the hip or spine to urinate and defecate without moving the spine or changing position. The frame is made of 1 in (2.5 cm) pipe covered with movable canvas strips that run from one side of the frame to the other.

**brady-** [Gr. *bradys*, slow] Combining form meaning *slow*.

**bradyacusia** (brād"ē-ā-koo'sē-ā) [*" + akouein*, to hear] An abnormally diminished hearing acuity.

**bradyarrhythmia** (brād"ē-ā-rīth'mē-ā) [*" + a-*, not, + *rhythmos*, rhythm] A heart rate of less than 60 beats per minute found in an adult. SYN: *bradycardia*.

**bradycardia** (brād"ē-kār'dē-ā) [*" + kardia*, heart] A slow heartbeat marked by a pulse rate below 60 beats per minute in an adult. SEE: *arrhythmia*; *dysrhythmia*.

**fetal b.** Persistent fetal heart rate slower than 110 beats per minute.

**relative b.** A heart rate that is too slow for a person's immediate physiological needs, although it may be more than 60 beats per minute. Heart rates are said to be relatively slow when they do not allow adequate circulation of blood to the brain, coronary arteries, or other vital organs.

**sinus b.** A slow sinus rhythm with an atrial rate below 60 beats per minute in an adult or 70 beats per minute in a child.

**bradycrotic** (brād"ē-krōt'ik) [*" + krotos*, pulsation] Pert. to slowness of pulse.

**bradydiastole** (brād"ē-dī-ās'tō-lē) [*" + diastole*, dilatation] Prolongation of the diastolic pause.

**bradydysrhythmia** (brād"ē-dīs-rīth'mē-ā) Bradyarrhythmia.

**bradyeccoia** (brād"ē-ē-koy'ā) [Gr. *bradyekos*, slow to hear] Partial deafness.

**bradyesthesia** (brād"ē-ēs-thē'zē-ā) [*" + aisthesis*, sensation] Slowness of perception.

**bradykinesia** (brād"ē-kī-nē'sē-ā) [*" + kinesis*, movement] Extreme slowness of movement.

**bradykinin** (brād"ē-kī'nīn) A plasma kinin. SEE: *kinin*.

**bradylexia** (brād"ē-lēks'ē-ā) [Gr. *bradys*, slow, + *lexis*, word] Abnormal slowness of reading that cannot be attributed to lack of intelligence. SEE: *dyslexia*.

**bradylogia** (brād"ē-lō'jē-ā) [*" + logos*, word, reason] Slow speech due to mental impairment.

**bradyphagia** (brād"ē-fā'jē-ā) [*" + phagein*, to eat] Abnormal slowness in eating or swallowing.

**bradyphrenia** (brād"ē-frēn'ē-ā) [*" + Gr. phren*, mind] Slowness of thought and information processing, seen in some forms of dementia.

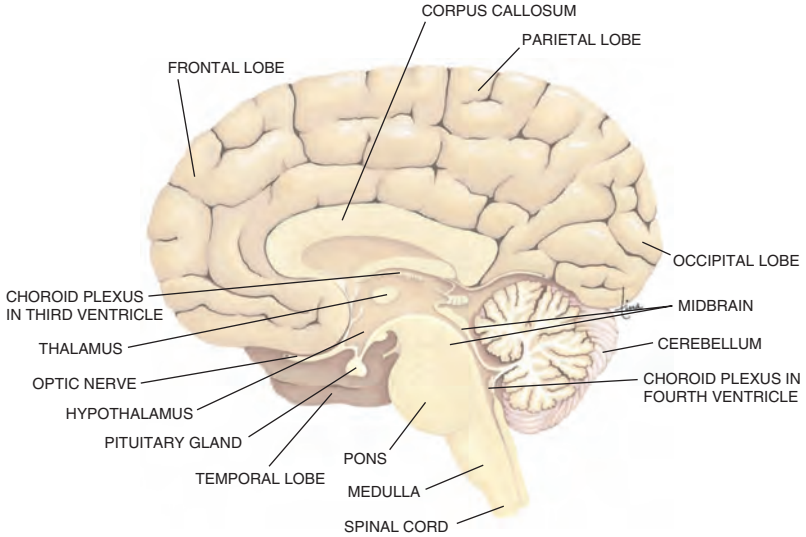
**bradypnea** (brād"īp-nē'ā, brād"ī-nē'ā) [*" + pneo*, breathing] Abnormally slow breathing.

**bradyrhythmia** (brād"ē-rīth'mē-ā) [*" + rhythmos*, rhythm] 1. Slowness of heart or pulse rate. 2. In electroencephalography, slowness of brain waves (1 to 6 per sec).

**bradytachycardia** (brād"ē-tāk'ē-kār'dē-ā) [*" + tachys*, swift, + *kardia*, heart] Increased heart rate alternating with slow rate. SEE: *sick sinus syndrome*.

**Bragard's test** [K. Bragard, 20th century German orthopedic surgeon] Lasègue's sign.

**braille** (brāl) [Louis Braille, blind Fr. educator, 1809–1852] A system of reading and printing that enables the blind to read by using the sense of touch. Raised dots arranged in patterns represent numerals and letters of the al-



### BRAIN

Midsagittal section of brain as seen from left

phabet and can be identified by the fingers.

**contracted b.** A version of braille in which abbreviations, contractions and other short forms of words are used in addition to the use of the standard alphabet and standard punctuation marks.

**noncontracted b.** A type of braille in which only the regular alphabet and punctuation marks are used. SEE: *contracted b.*

**brain** (brān) [AS. *braegen*] A large soft mass of nerve tissue contained within the cranium; the cranial portion of the central nervous system. SYN: *encephalon*.

**ANATOMY:** The brain is composed of neurons (nerve cells) and neuroglia or supporting cells. The brain consists of gray and white matter. Gray matter is composed mainly of neuron cell bodies and is concentrated in the cerebral cortex and the nuclei and basal ganglia. White matter is composed of axons, which form tracts connecting parts of the brain with each other and with the spinal cord.

The major parts of the brain are the cerebrum, thalamus, hypothalamus, cerebellum, and brain stem (medulla, pons, and midbrain). The weight of the brain and spinal cord is about 1350 to 1400 g, of which 2% is the cord. The cerebrum represents about 85% of the weight of the brain. **Lobes:** Frontal, parietal, occipital, temporal, insular. **Glands:** Pituitary, pineal. **Membranes:** Meninges—the dura mater (external),

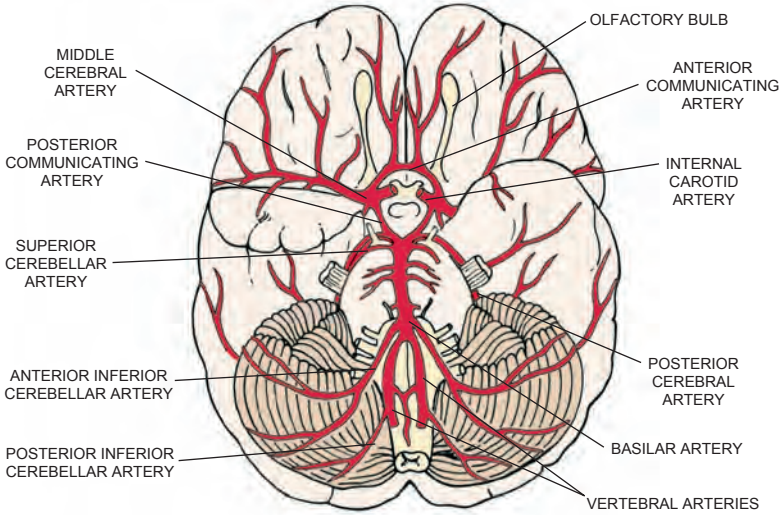
arachnoid (middle), and pia mater (internal). **Nerves:** Cranial. SEE: *illus. (Brain); cranial nerve* for *illus.*

**Subdivisions** of the brain are (1) diencephalon, including the epithalamus, thalamus, and hypothalamus (optic chiasma, tuber cinereum, and mammillary bodies); (2) myelencephalon, including the corpora quadrigemina, tegmentum, crura cerebri, and the medulla oblongata; (3) metencephalon, including the cerebellum and pons; (4) telencephalon, including the rhinencephalon, corpora striata, and cerebrum (cerebral cortex).

**Ventricles:** The cavities of the brain are the first and second lateral ventricles, which lie in the cerebral hemispheres, the third ventricle of the diencephalon, and the fourth ventricle posterior to the medulla and pons. The first and second communicate with the third by the interventricular foramina, the third with the fourth by the cerebral aqueduct (of Sylvius), the fourth with the subarachnoid spaces by the two foramina of Luschka and the foramen of Magendie. The ventricles are filled with cerebrospinal fluid, which is formed by the choroid plexuses in the walls and roofs of the ventricles. SEE: *illus. (Vascular Anatomy of Brain)*.

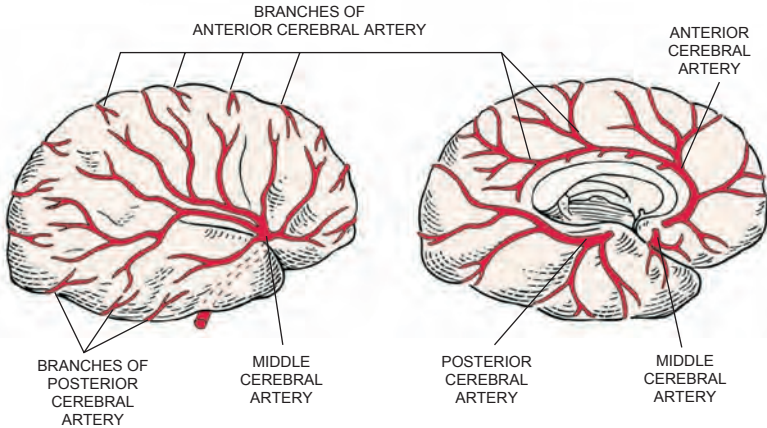
**PHYSIOLOGY:** The brain is the primary center for regulating and coordinating body activities. Sensory impulses are received through afferent nerves and register as sensations, the basis for perception. It is the seat of consciousness, thought, memory, reason,

VENTRAL VIEW



LATERAL VIEW

MEDIAL VIEW



VASCULAR ANATOMY OF BRAIN (VENTRAL, LATERAL, AND MEDIAL VIEWS)

judgment, and emotion. Motor impulses are discharged through efferent nerves to muscles and glands initiating activities. Through reflex centers automatic control of body activities is maintained. The most important reflex centers are the cardiac, vasomotor, and respiratory centers in the medulla, which regulate circulation and respiration. SEE: *central nervous system; spinal cord.*

**brain attack** SEE: *under attack.*

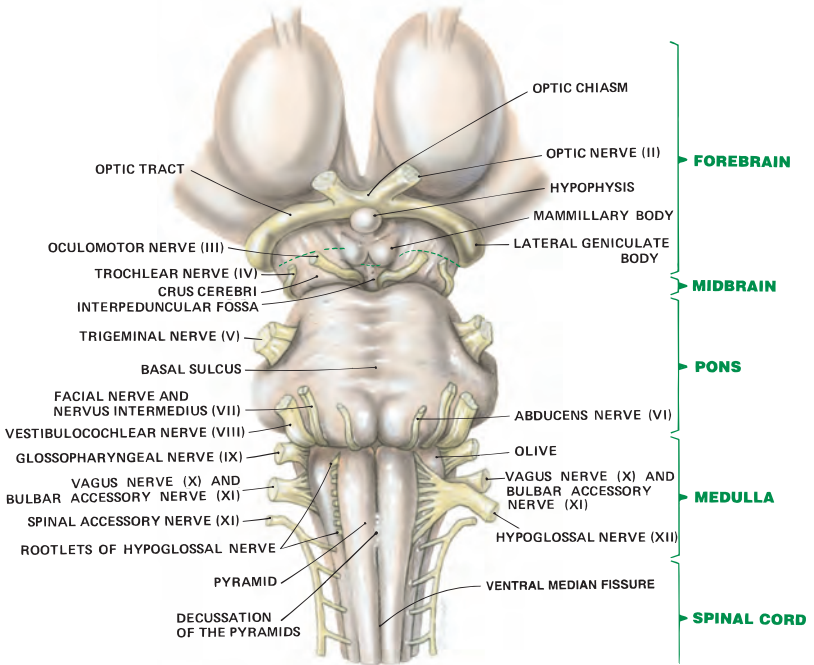
**Brain's reflex** (brānz) [Walter Russell Brain, Brit. physician, 1895–1966] Ex-

tension of the flexed arm when the quadrupedal posture is assumed.

**brainstem** (brān'stēm") The stemlike part of the brain that connects the cerebral hemispheres with the spinal cord. It comprises the medulla oblongata, the pons, and the midbrain. SEE: *illus.*

**brainstem auditory evoked potential** ABBR: BAEP. Brainwaves that are produced in response to sounds, i.e., stimulation of the cochlear nerve. Tests of auditory evoked potential are used to determine the threshold of sound





### BRAINSTEM

Ventral surface of the brainstem and surrounding structures

required to produce a brainstem response, e.g., in people with hearing loss or brain death. SEE: *auditory evoked response*; *evoked potential*; *somatosensory evoked response*; *visual evoked response*.

**brainstem implant, auditory brainstem implant** A device that helps the hearing-impaired hear. The implant is used for those who cannot benefit from cochlear implants because of lesions of the cochlea and/or auditory nerve. The implant electrode is inserted directly into the auditory brainstem. It has been used to treat patients who have undergone surgical excision of an acoustic neuroma.

**brainstorming** A free and uncritical exchange of ideas about potential solutions to a problem.

**brain tumor** SEE: under *tumor*.

**brainwashing** (brān'wāsh-ing) Intense psychological indoctrination for the purpose of displacing the individual's previous thoughts and attitudes with those selected by the regime or person inflicting the indoctrination.

**bran** The outer covering of cereal grains, such as wheat, oats, and rice, which are rich in hemicellulose. Some of this fiber is insoluble and may be used to add bulk to the diet to help pre-

vent or treat constipation. SEE: *dietary fiber*.

**branch** (brānch) In anatomy, a subdivision arising from a main or larger portion, esp. of an artery, vein, nerve, or lymphatic vessel.

**branchial** (brāng'kē-āl) [L. *branchia*, gills] Pert. to or resembling gills of a fish or a homologous structure in higher animals.

**branchioma** (brāng'kē-ō'mă) [" + Gr. *oma*, tumor] A tumor derived from the branchial epithelium.

**branchiomic** (brāng'kē-ō-mēr'ik) [" + Gr. *meros*, part] Pert. to the branchial arches.

**Brandt-Andrews maneuver** (brānt-ān'drēwz) A technique for expressing the placenta from the uterus during the third stage of labor. One hand puts gentle traction on the cord while the other presses the anterior surface of the uterus backward. SEE: *Credé's method*.

**Brandt-Daroff maneuvers** (brānt' dār'ōf) A series of exercises for patients with refractory positional vertigo. Patients are repeatedly asked to assume the positions that typically trigger attacks. After multiple attempts, habituation to the vertigo occurs, and the symptoms are relieved. The maneuvers are effective in about 80% of patients.

**Branham's sign** (brän'häms sīn) In a patient with an arteriovenous fistula, the slowing of the heart rate that occurs when the fistula is compressed.

**brash** (brāsh) A burning sensation in the stomach sometimes accompanied by belching of sour fluid. SYN: *heartburn*; *pyrosis*.

**water b.** Reflex salivary hypersecretion in response to peptic esophagitis.

**brass chills** SEE: *metal fume fever*.

**brassica** (brās'ī-kā) [L. "cabbage"] The family of vegetables that includes broccoli, Brussels sprouts, cabbage, and cauliflower.

**Braxton Hicks contractions** (brāk'stōn-hīks") [John Braxton Hicks, Brit. gynecologist, 1823–1897] False labor. These contractions are not true labor pains because they do not cause dilation and effacement of the cervix, but are often interpreted as such. SYN: *Hicks sign*.

**Brazelton Neonatal Assessment Scale** (brä'zēl-tōn") [T. Berry Brazelton, American pediatrician, b. 1918] A scale for evaluating the behavior and responses of the newborn infant. It is based on four dimensions: interaction with the environment; motor processes, including motor responses, general activity level, and reflexes; control of physiological state as determined by reaction to a distinct stimulus such as a rattle, bell, light, or a pinprick; and response to stress as judged by tremulousness, startle reaction, and change in skin coloration. The test has been used as late as 1 week after birth to demonstrate alteration in an infant's behavior due to drugs administered to the mother while the infant was in utero.

**BRCA1** A breast cancer gene that is found in a small percentage of patients with this malignancy, and carried by some individuals who will develop breast cancer later in life.

**BRCA2** A breast cancer gene found in a small number of patients with breast and ovarian cancers, and carried by some individuals who will develop breast cancer later in life.

**break** (brāk) **1.** In orthopedics, a fracture. **2.** To interrupt the continuity in a tissue or electric circuit or the channel of flow or communication.

**breakage, chromosomal** (brāk'āj) The disruption of a chromosome (e.g., by radiation or toxic chemicals). When this occurs, the two fragments may rejoin or a fragment may rejoin another broken chromosome. Unrepaired chromosome breaks are associated with many malignant and premalignant conditions.

**breakaway** (brāk'ā-wā') In orthodontics, a device to apply tension or force to a facebow.

**breakdown, nervous** SEE: *nervous breakdown*.

**breakthrough disease** (brāk'throo") Any disease that occurs in spite of adequate vaccination to prevent it, (e.g., "breakthrough varicella" or "breakthrough influenza").

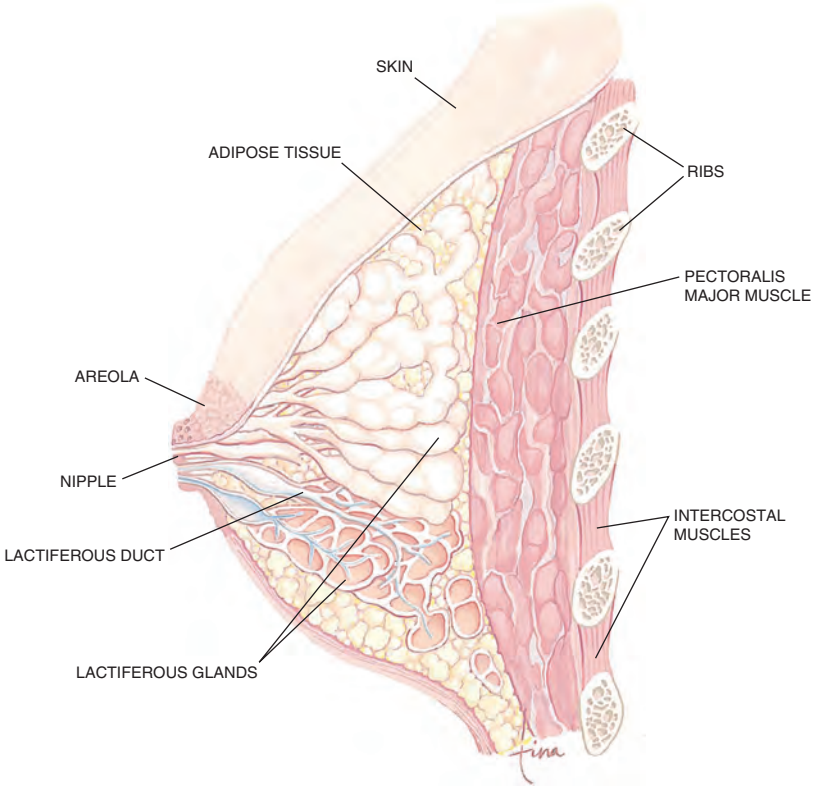
**breakthrough pain** Transient episodes of pain that occur in patients with chronic pain that has been previously reduced to tolerable levels. The term is often used to describe painful episodes that disrupt the well-being of cancer or hospice patients who have been prescribed regular doses of narcotic analgesics. The painful episodes may occur as a previous dose of pain-relieving medication wears off (so-called "end-of-dose" pain), or after unusual or unanticipated body movements ("incident pain").

**breast** [AS. *broest* ] **1.** The upper anterior aspect of the chest. **2.** The mammary gland, a compound alveolar gland consisting of 15 to 20 lobes of glandular tissue separated from each other by interlobular septa. Each lobe is drained by a lactiferous duct that opens onto the tip of the nipple. The mammary gland secretes milk used for nourishment of the infant. For purposes of description, the female breast is divided into four quadrants: upper inner (the top medial quarter), lower inner (the bottom medial quarter), upper outer (the top lateral quarter), and the lower outer (the bottom lateral quarter). The tail of the breast extends up and away from the upper outer quadrant. SEE: *illus.; mammary gland; milk*.

**DEVELOPMENT:** During puberty, estrogens from the ovary stimulate growth and development of the duct system. During pregnancy, progesterone secreted by the corpus luteum and placenta acts synergistically with estrogens to bring the alveoli to complete development. Following parturition, prolactin in conjunction with adrenal steroids initiates lactation, and oxytocin from the posterior pituitary induces ejection of milk. Sucking or milking reflexly stimulates both milk secretion and discharge of milk.

**CHANGES IN PREGNANCY:** During the first 6 to 12 weeks, there is fullness and tenderness, erectile tissue develop in the nipples, nodules are felt, pigment is deposited around the nipple (primary areola) (in blondes the areolae and nipples become darker pink and in brunettes they become dark brown and in some cases even black), and a few drops of fluid may be squeezed out. During the next 16 to 20 weeks, the secondary areola shows small whitish spots in pigmentation due to hypertrophy of the sebaceous glands (glands of Montgomery).

**caked b.** An accumulation of milk in the secretory ducts of the breast following delivery, causing a large area to become inflamed, hard, and tender.



### BREAST

#### Mammary gland in midsagittal section

**chicken b.** A deformity in which the sternum projects anteriorly; caused by rickets or obstructed respiration in childhood. SYN: *pigeon breast*.

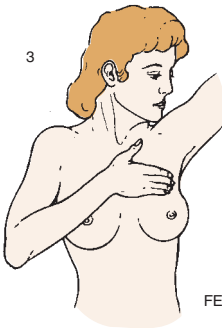
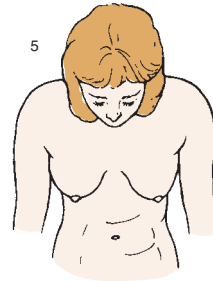
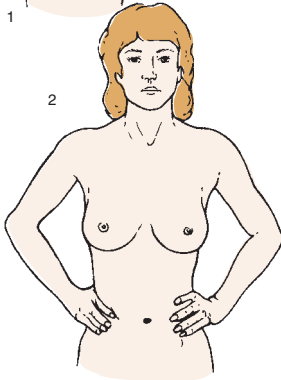
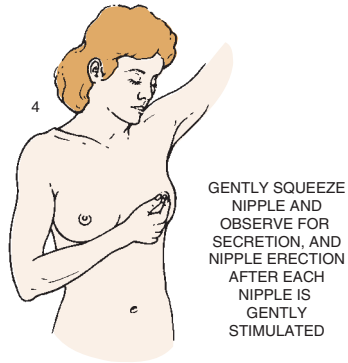
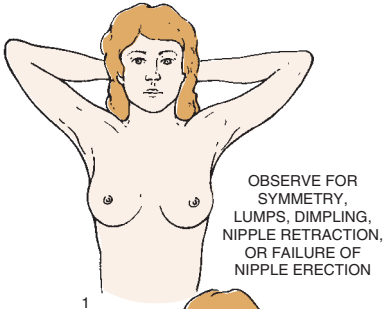
**ductal carcinoma in situ of the b.** ABBR: DCIS. A cluster of malignant cells in the mammary ducts. If left untreated, as many as 50% of patients with DCIS will develop invasive cancer. Because these cells grow in the ducts, they develop without forming a palpable mass. In its early stage this condition can be diagnosed through the use of mammography. SYN: *comedocarcinoma*. SEE: *breast cancer*; *mammography*.

**pigeon b.** Chicken b.

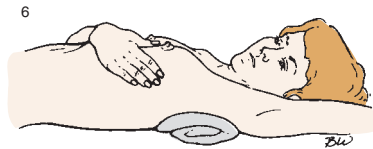
**b. self-examination** ABBR: BSE. A technique that enables a woman to detect changes in her breasts. The accompanying illustration explains the specific steps to be followed. The examination should be done each month soon after the menstrual period ends, as normal physiological changes that may confuse results occur in the premenstrual period. This method of self-ex-

amination is useful in the early detection of breast cancer, esp. when combined with regular professional examinations and mammography. SEE: *illus.*; *mammography*.

**breast cancer** A malignant neoplasm (usually an adenocarcinoma) of the breast; the most common malignancy of American women and the leading cause of death in American women aged 40 to 55. In 2006 the American Cancer Society estimated that 212,920 women would be newly diagnosed with invasive breast cancer and that 40,970 women would die of the disease. Breast cancer usually presents as a dominant mass in one breast although the malignancy may first become evident when nipple discharge, nipple retraction, skin dimpling, or asymmetric swelling of the breast occurs. In most cases breast cancers are first identified by women performing breast self-examination. A smaller but considerable number are detected by professional examination or mammography. About 1000 men are diagnosed with breast cancer annually.



WHILE LEANING FORWARD, OBSERVE BREASTS AS THEY ARE REFLECTED IN MIRROR TO DETECT IRREGULARITY, RETRACTED AREAS, NIPPLE RETRACTION ESPECIALLY ON ONE SIDE ONLY



FEEL FOR NODES, IRREGULARITY, AND TENDERNESS BOTH IN BREASTS AND AXILLARY AREAS

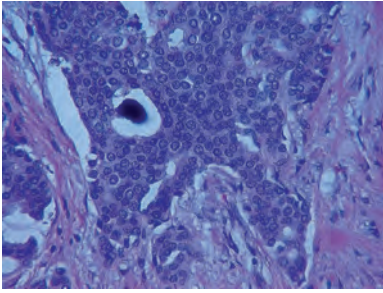
### BREAST SELF-EXAMINATION

Breast cancer has several pathological variants. Carcinoma in situ, the most localized form of the disease, represents a preinvasive stage confined to a duct or lobule. Other presentations include lobular carcinoma, infiltrating ductal carcinoma, inflammatory carcinoma, and Paget's disease of the nipple. **SEE: illus.**

**ETIOLOGY:** There are several known risk factors for breast cancer. **SEE: table.**

**SYMPTOMS:** A dominant breast mass; bloody, brown, or serous discharge from a nipple; and/or breast nodularity or lumpiness are the most common symptoms of breast cancer.

**DIAGNOSIS:** Regular breast self-examination, professional breast examination, and mammography are the keys to screening for breast cancer. All these screenings identify many more benign lesions than malignant ones, esp. in younger patients, and none of these techniques can definitively exclude breast cancer. Many mammographically detected lesions are benign, and



### BREAST CANCER

#### Infiltrating ductal carcinoma

about 15% of the time mammography will fail to detect lesions that are truly malignant. Digital mammography (a computerized, electronic image) provides significantly better detection in women with dense breasts, those under age 50, and those who are premenopausal or perimenopausal. If a suspicious mass is identified, fine needle aspiration, core biopsy, or excisional biopsy must be used to obtain tissue for analysis. Ultrasonography can be used before biopsy to identify solid masses and cysts. Solid breast masses have a much greater chance of being malignant than cysts. Other imaging techniques used to help identify breast cancers include: magnetic resonance imaging, positron emission tomography, and ductal imaging. SEE: *breast self-examination; double reading; mammography.*

**STAGING:** The size of tumors and their possible metastasis to the chest wall, skin, axilla, or distant sites all determine the stage of breast cancer. Lymphatic mapping during cancer surgery can be used to find metastases to sentinel lymph nodes and guide therapies. Staging provides important information about the need for particular forms of therapy and the prognosis. SEE: *illus.*



A biopsy (obtained by fine needle aspiration, with a stereotactic core needle, or by surgical lumpectomy) is usually recommended for any breast mass that does not resolve spontaneously within one or two menstrual cycles and for all postmenopausal women. Negative results from mammography and ultrasonography are not always accurate enough to rule out a malignant diagnosis.

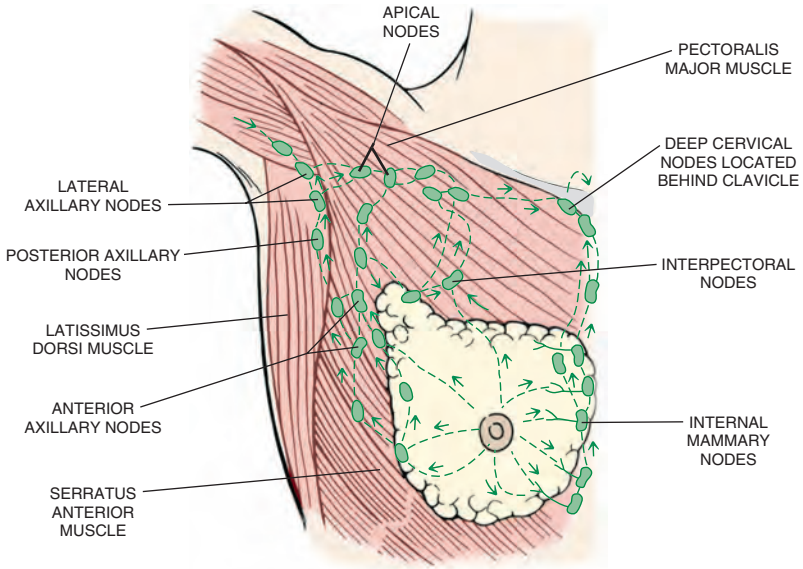
**TREATMENT:** Combined modalities (including surgery, radiation, or drug therapies) are offered to many women with breast cancer, depending on their menopausal status and the stage of their disease at the time of diagnosis. Patients with stage I or II disease are

offered either modified radical mastectomy (removal of the breast and 20 to 30 axillary lymph nodes) or lumpectomy with sentinel node or axillary dissection (as required) and radiotherapy, provided they have no contraindications to either of these choices. A variety of radiotherapy options are available, depending upon the individual patient's cancer. In premenopausal women with tumors larger than a centimeter, adjuvant chemotherapy prolongs survival, probably by eliminating microscopic metastases. Chemotherapeutic regimens commonly used include CMF (cyclophosphamide, methotrexate, and fluorouracil), CAF (cyclophosphamide, doxorubicin [Adriamycin] and fluorouracil), AC (doxorubicin [Adriamycin] and cyclophosphamide), doxorubicin (Adriamycin) followed by CMF, or FEC (fluorouracil, epirubicin, and cyclophosphamide). All of these agents are given several times in cycles of treatment. These same regimens are offered to vigorous postmenopausal women whose

### Selected Risk Factors for Breast Cancer

- A personal history of breast cancer
- Age (the risk increases with age)
- Family history of breast cancer (in a mother, sister, daughter, or two or more close relatives such as cousins)
- Age at first live birth (women who had their first child after age 30 and women who have never given birth are at higher risk)
- Age at first menstrual period (women who had their first period before age 12 are at slightly higher risk)
- Benign breast changes (atypical hyperplasia) or two or more breast biopsies even if no atypical cells were found
- Race (white women are more likely to develop breast cancer than black women, but blacks are more likely than whites to die of it; Hispanic and Asian women have a lower risk of developing the disease)
- Genetics: Several genes (including BRCA1 and BRCA2, among others) increase a woman's chance of developing breast cancer.
- Oral contraceptive pills and hormone replacement therapy may both slightly increase the risk of a woman's developing breast cancer.
- Obesity increases the risk of a woman's developing breast cancer.
- Alcohol use: The greater the alcohol intake of a woman, the greater the risk of breast cancer.

SOURCE: Adapted from the National Cancer Institute and other sources.



### BREAST CANCER

Possible paths of lymphatic spread

cancer has spread to axillary lymph nodes. Hormonal therapies like tamoxifen or raloxifene (two estrogen-receptor blockers) are also beneficial in patients with estrogen-receptor positive tumors. Aromatase inhibitors (e.g., letrozole), and monoclonal antibodies (e.g., trastuzumab) may be prescribed to selected patients. After breast surgery, some women choose to have cosmetic restoration of the breast, either with saline- or silicone-filled implants or with tissue reconstructions made from the abdominal muscles. If breast cancer recurs after treatment, very high-dose chemotherapies are prescribed and peripheral stem cell transplantation is occasionally considered, but only in research settings. Bone metastases may be treated with monthly dosing of intravenous zoledronic acid (Zometa). SEE: *breast, ductal carcinoma in situ of the*.

**PATIENT CARE:** The patient's feelings and level of knowledge about her disease are determined. She is encouraged to express fears and concerns, and her family, supporters, or health care professionals stay with her during periods of anxiety or anguish. If surgery is planned, the procedure, postoperative care, and expected outcomes are explained.

While undergoing chemotherapy, the patient is monitored for adverse reactions (e.g., nausea, vomiting, anorexia, stomatitis, GI ulceration, anemia, leukopenia, thrombocytopenia, and bleed-

ing), so that they can be managed early. Weight and nutrition status are evaluated. Skin is inspected for redness, irritation, or breakdown if radiation therapy is prescribed, and aloe or a prescribed cream applied. Bisphosphate drugs (e.g., alendronate or zoledronic acid) are administered to prevent or treat bony metastases or hypercalcemia, but their use may be associated with osteonecrosis of the jaw.

Comfort measures are used to promote relaxation and rest and to relieve anxiety. If immobility develops late in the disease, careful repositioning, excellent skin care, respiratory toilet, and low-pressure mattresses are used to prevent complications (skin breakdown, respiratory problems, pathological fractures). The patient's and family's coping abilities are evaluated, and referral for counseling and support services may be necessary. End-stage disease patients benefit from hospice care. Women judged to be at high-risk for breast cancer may have tamoxifen or raloxifene prescribed as preventative therapy.

**breastfeeding** (brĕst'fĕd'ing) The giving of mother's milk to a newborn, infant, or child. Mature mother's milk and its precursor, colostrum, are considered the most balanced foods available for normal newborns and infants. Breast milk is sterile, easily digested, and nonallergenic. It contains maternal antibodies that protect against many early childhood illnesses and lipids that stimulate

early brain development. Suckling by the baby in turn stimulates release of oxytocin, a pituitary hormone that stimulates uterine contractions and promotes the return of the uterus to a normal nongravid size and state. Breastfeeding may engender or strengthen early bonding. The World Health Organization and the American Academy of Pediatrics (AAP) – among many other groups – encourage health care professionals to promote, protect, and support breastfeeding as the exclusive nourishment for the first 6 months of life, followed by gradual supplementation with iron-rich foods for the next 6 months, with continuation of breastfeeding for as long as the mother and child desire.

**PATIENT CARE:** *Prenatal preparations:* During the last trimester of pregnancy, techniques that increase the potential for successful breastfeeding are discussed with women who have selected that infant-feeding option. Lactation consultants commonly encourage nipple-rolling. The woman is instructed to cup her breast in one hand, supporting the weight with three fingers while grasping the nipple with the thumb and forefinger, and gently rolling it between the two fingers. She should implement ten to 20 repetitions of these actions several times daily. Precoital suckling by the woman's partner also helps in preparing the nipples for breastfeeding. Nipple shells or shields may be recommended for women whose nipples are either flat or inverted. Women who are at high-risk for preterm labor are discouraged from engaging in prenatal nipple stimulation.

*Postpartum breastfeeding:* A successful breastfeeding experience is potentiated by assisting the woman to develop confidence, comfort, and skill in using techniques for appropriate infant latch-on, feeding, and disengagement. Basic breast care is described, discussed, and demonstrated to minimize the potential for discomforts that interfere with successful breastfeeding, such as nipple soreness. Washing the breasts and nipples with clear water and avoiding the use of soap, which removes the natural breast lubricants that protect the nipples against drying and cracking, are recommended. Drying the nipples thoroughly by exposing them to air, sunlight, or a hair dryer set on low heat prevents excoriation. The woman should be encouraged to wear a nursing bra that effectively supports her breasts 24 hr a day. Soft disposable fabric pads may be inserted to absorb any milk leakage; however, plastic liners should be avoided because they retain moisture and body heat, which softens and macerates the nipple. Skin-to-skin contact

is encouraged and is associated with longer periods of breast-feeding, better temperature regulation, less crying, enhanced maternal responsiveness, and skill competence.

*Positioning:* Both mother and infant should be positioned for comfort and convenience of nursing. Mother and infant should face each other in the chest-to-chest position. The mother's nipple should be at the level of the infant's nose.

*Latching-on:* To elicit nipple erection and to facilitate latch-on, the mother cups her hand under her breast and either places her thumb (C-hold) or her index finger (scissors-hold) above the areola with the other three fingers below the areola, supporting the weight of the breast. The infant should grasp the whole nipple with its gums on the areola. Suckling then compresses the milk ducts and effectively ejects milk. Preventing the infant from suckling only on the end of the nipple reduces potential for nipple soreness, erosion, and cracking.

*Feeding:* Infants should be allowed to feed until they exhibit signs of satisfaction. Feeding from a single breast is allowable as long as the infant nurses approximately every 2 hr and feeds until satisfied; this encourages the intake of the higher-calorie, high-fat hind milk.

*Disengaging:* The mother should gently insert her fingers between the infant's gums to break the suction and withdraw the breast from the baby's mouth.

*Engorgement:* Feeding the newborn on demand usually prevents the development of engorgement. Should it occur, the mother either may apply warm wet compresses or stand beneath a shower of warm water to stimulate the let-down reflex and initiate milk flow. The mother also should be taught how to manually express enough milk to relieve the pressure and soften the areola to encourage latch-on when feeding.

*Nipple soreness:* Some discomfort is common during the first few breastfeeding days. The mother's first actions should be to check the infant's feeding position and grasp of the nipple. Altering her position for feeding also alters the stress points on the nipple as the infant suckles and enhances breast emptying. If soreness is related to the newborn's vigorous sucking because of hunger, the mother may elect to nurse more frequently. The mother is encouraged to continue with breastfeeding; however, if the suggested measures prove ineffective and discomfort persists throughout the feeding interval or does not subside by the end of the first postpartum week, the mother should be

assisted to seek consultation with a lactation specialist. When breastfeeding must be interrupted for even a short time period, the breasts should be pumped every 3 hr for 10 to 15 min to preserve lactation, and the colostrum or milk fed to the infant unless contraindicated. Exclusive breastfeeding for 6 months helps to prevent infant ear infections, diarrhea and other GI problems, and respiratory illness such as asthma and pneumonia. It also may reduce excessive childhood weight gain and obesity, and reduce the mother's risk for breast and ovarian cancer.



Women who are infected with the human immunodeficiency virus (HIV) may transmit it to their children by breastfeeding.

In most instances, however, maternal illness does not contraindicate breastfeeding, or does so only for a short time until treatment is initiated. If maternal surgery is anticipated, the mother can be encouraged to pump and store milk in advance, then assisted to pump or breastfeed directly as soon as possible after surgery. Many medications required by mothers are safe for their infants either because drug concentration in breast milk will be insignificant or because the infant's gut will absorb only a minimal amount of the drug. Resources containing information on breastfeeding and breastfeeding/medications include: the AAP's "Transfer of Drugs & Other Chemicals into Human Milk" (170 usually compatible drugs, effects on milk production, minor adverse effects on mother or infant, drugs requiring temporary cessation of breastfeeding, "caution" drugs) (<http://aappolicy.aappublications.org/cgi/content/full/pediatrics:108/3/776>); International Lactation Consultant Association ([www.ilca.org](http://www.ilca.org)); National Center for Chronic Disease Prevention and Health Promotion: Breastfeeding ([www.cdc.gov/breastfeeding](http://www.cdc.gov/breastfeeding)); La Leche League International ([www.la.lecheleague.org](http://www.la.lecheleague.org)). Health care professionals should carefully examine and question policies that limit women's rights, abilities, or opportunities to breastfeed.

**breastfeeding, effective** The state in which the mother-infant exhibit appropriate proficiency and satisfaction with breastfeeding. Expected outcomes, including maternal nipple trauma and soreness related to breastfeeding, are minimized. Infant weight gain proceeds within expected parameters. SEE: *Nursing Diagnoses Appendix*.

**breastfeeding, ineffective** The state in which a mother, infant, or child experiences dissatisfaction or difficulty with

breastfeeding process. SEE: *Nursing Diagnoses Appendix*.

**breastfeeding, interrupted** A break in the continuity of the breastfeeding process as a result of inability or inadvisability to put a baby to breast for feeding. SEE: *Nursing Diagnoses Appendix*.

**breast implant** SEE: *under implant*.

**breath** (brèth) [AS. *braeth*, odor] The air inhaled and exhaled in respiration.

**bad b.** Halitosis.

**liver b.** The characteristic odor of the breath that accompanies severe liver disease. It has been described as "mousy." SEE: *hepatic coma*.

**uremic b.** The "fishy" or ammoniacal breath odor characteristic of individuals with uremia.

**breath actuation** (ăk"chū-ă'shūn) The release by inspiration of a substance to a patient. Breath-actuated inhalers are used in respiratory medicine to increase the probability that a patient will deliver a dose of inhaled medication to the lungs when the airway is open.

**breath-holding** (brèth-hōl'ding) The voluntary or involuntary stopping of breathing may be seen in children who use this to attempt to control the behavior of their parents.

**breath-holding attacks** A benign condition that always has its onset with crying. The young child stops breathing and becomes cyanotic, the limbs become rigid and extended, and consciousness may be lost. This is followed by the body becoming limp, resumption of respirations and, after a few seconds, full alertness. This pattern of behavior usually disappears spontaneously prior to school age.

**breathing** (brèth'ing) The act of inhaling and exhaling air. SEE: *chest; respiration*.

**apneustic b.** An abnormal breathing pattern marked by prolonged inspiratory pauses. This is usually associated with brainstem injuries.

**assisted b.** Any technique that improves respiration. Examples include: the provision of supplemental oxygen; bag-valve-mask ventilation; BiPAP; mechanical ventilation; and mouth-to-mouth ventilation.

**asthmatic b.** Harsh breathing with prolonged wheezing heard throughout expiration.

**ataxic b.** An irregular, uncoordinated breathing pattern common in infants.

**Biot's b.** SEE: *Biot's breathing*.

**bronchial b.** Bronchial sounds.

**Cheyne-Stokes b.** SEE: *Cheyne-Stokes respiration*.

**continuous positive-pressure b.** A method of mechanically assisted pulmonary inflation. A device administers air or oxygen to the lungs under a continuous pressure that is always greater



than zero. SYN: *continuous positive-pressure ventilation*.

**frog b.** A respiratory pattern in which the air in the mouth and pharynx is forced into the lungs by gulping and swallowing it. This may be observed in patients whose respiratory muscles are weak or paralyzed.

**glossopharyngeal b.** A technique of breathing in which the patient with inspiratory muscle weakness increases the volume of air breathed in by taking several "gulps" of air, closing the mouth, and forcing air into the lungs.

**inspiratory resistive b.** Inspiration with an added workload to increase the strength and endurance of the inspiratory muscles.

**intermittent positive-pressure b.** ABBR: IPPB. A mechanical method for assisting pulmonary ventilation employing a device that administers air or oxygen for the inflation of the lungs under positive pressure. Exhalation is usually passive. SYN: *intermittent positive-pressure ventilation*.

**Kussmaul b.** A very deep, repetitive, gasping respiratory pattern associated with profound acidosis (e.g., diabetic ketoacidosis). Kussmaul's respiration may be a sign of impending death.

**periodic b.** An irregular respiratory pattern marked by alternating periods of rapid and slow respirations and by apneic periods lasting 15 sec or less.

**pursed-lip b.** An expiratory maneuver in which the patient exhales through puckered lips to slow expiratory flow and to create slight back pressure. This action may prevent premature closure of intrapulmonary airways, esp. in the patient with chronic obstructive lung disease.

**shallow b.** Breathing in which the volume of inspired and expired air is diminished (e.g., 200 ml per breath in adults). It is common in elderly patients, patients with rib or pleural pain, or restrictive lung diseases.

**work of b.** ABBR: WOB. The amount of effort used to expand the lungs. It is determined by lung and thoracic compliance, airway resistance, and the use of accessory muscles for inspiration or forced expiration. It is measured in joules/L, joules/min and sometimes kg/m/min.

**yogic b.** Pranayama.

**breathing pattern, ineffective** Inspiration and/or expiration that does not provide adequate ventilation. SEE: *Nursing Diagnoses Appendix*.

**breathlessness** (brēth'lēs-nēs") Dyspnea.

**breath test** A test that may be used to detect a specific substance in the breath to help explain metabolic changes. Breath tests are used, for example, to detect evidence of bacterial overgrowth

in the intestines, to investigate the causes of malabsorption, to detect *Helicobacter pylori* in the stomach, and to estimate alcohol in the tissues, due to micro-organisms in the patient.

**carbon-urea b.t.** A diagnostic test in which the patient ingests <sup>13</sup>C-labeled or <sup>14</sup>C-labeled urea, which binds to and can be measured in exhaled carbon dioxide. It is used to diagnose infection with *Helicobacter pylori*, a common cause of peptic ulcer. SEE: *Helicobacter pylori*; *peptic ulcer*.

**breath test for lactase deficiency** The measurement of hydrogen in the breath after ingestion of 50 g of lactase. SEE: *lactase deficiency syndrome*.

**breech** (brēch) [AS. *brec*, buttocks] The nates, or buttocks.

**bregma** (brēg'mă) *pl.* *bregmata* [Gr., front of head] The point on the skull where the coronal and sagittal sutures join. The anterior fontanel in the fetus and young infant. **bregmatic** (-măt'ik), *adj.*

**Brenner's tumor** [Fritz Brenner, Ger. pathologist, 1877-1969] A benign tumor composed of fibrous and epithelial elements.

**brevicollis** (brēv'ī-kōl'īs) [L. *brevis*, short, + *collum*, neck] Shortness of the neck.

**bridge** (brīj) [AS. *brycg*] **1.** A narrow band of tissue. **2.** A cast dental restoration that replaces missing teeth. The restoration is usually made of gold alloy, with or without a porcelain exterior, and is attached to adjacent or abutment teeth for support. Lay persons often call such a restoration a "bridge." **3.** A temporary treatment used until a more durable one becomes available.

**disulfide b.** Disulfide bond.

**b. of nose** The upper part of the external nose formed by the junction of the nasal bones.

**bridgework** (brīj'wōrk) A partial denture held in place by attachments other than clasps.

**fixed b.** A cast restoration or bridge cemented to natural teeth.

**removable b.** Partial denture.

**bridging** (brīj'īng) A treatment activity used to activate abdominal and hip extensor muscles. To bridge, a person lies in a supine position with knees flexed and feet flat against a horizontal surface, such as a floor, bed, or plinth (treatment table). The hips are then lifted, while the feet, shoulders, and head maintain contact with the surface.

**bridle** (brī'dl) In anatomy, a frenum.

**Bright's disease** (brīts) [Richard Bright, Brit. physician, 1789-1858] A vague and obsolete term for kidney disease. It usually refers to nonsuppurative inflammatory or degenerative kidney disease marked by proteinuria and hematuria and sometimes by edema,

hypertension, and nitrogen retention. SEE: *nephritis*.

**bright light therapy** Treatment of sleep and/or mood disorders by exposure to bright fluorescent lights (typically 10,000 lux) for at least 2 hours a day. Bright light therapy has been used as an alternative to drug therapy for seasonal affective disorder and insomnia (e.g., in shift workers).

**brightness gain** SEE: under *gain*.

**brim** 1. An edge or margin. 2. The brim of the pelvis; the inlet, or superior opening, of the true pelvis. It is formed by the iliopectineal line of the innominate bone and the sacral promontory. It is oval-shaped in the female, heart-shaped in the male.

**Briquet's syndrome** (brī-kāz') [Paul Briquet, Fr. physician, 1796–1881] 1. A personality disorder in which alcoholism and somatization disorder occur. 2. Somatization disorder. 3. An old term for hysterical personality disorder.

**Brissaud's reflex** (brīs-sōz') [Edouard Brissaud, Fr. physician, 1852–1909] Contraction of the tensor fasciae latae muscle when the sole of the foot is stroked or tickled; a component of the extensor plantar response.

**British antilewisite** ABBR: BAL. Trade name for dimercaprol, a compound used as an antidote in poisoning due to heavy metals such as arsenic, gold, and mercury.

**British Pharmacopoeia** ABBR: B.P. The standard reference on drugs and their preparations used in Great Britain.

**British thermal unit** ABBR: BTU. The amount of heat necessary to raise the temperature of 1 lb of water from 39°F to 40°F.

**brittle diabetes** Diabetes, brittle.

**broach** (brōch) [ME, *broche*, pointed rod] 1. A dental device used to remove the arteries, veins, lymph vessels, and nerves in the pulp of a tooth. 2. A technique used for preparing the intramedullary canal of a bone by using a cutting device. This is done in preparation for a prosthetic replacement.

**Broadbent's sign** (brōd'bēnts) [Sir William Henry Broadbent, Brit. physician, 1835–1907] A visible retraction of the left side and back in the region of the 11th and 12th ribs synchronous with the cardiac systole in adhesive pericarditis.

**Broca's aphasia** Motor aphasia.

**Broca's area** (brō'kās) [Pierre Paul Broca, Fr. anatomist, anthropologist, neurologist, and surgeon, 1824–1880] The area of the left hemisphere of the brain at the posterior end of the inferior frontal gyrus. It contains the motor speech area and controls movements of tongue, lips, and vocal cords. Loss of speech may follow any stroke affecting

this area. SYN: *motor speech area*; *speech center*. SEE: *motor aphasia*.

**Brodie's abscess** (brō'dēz) [Sir Benjamin Collins Brodie, Brit. surgeon, 1783–1862] A localized infection of bone, esp. of one of the long bones of the lower extremities. SYN: *bone abscess*. SEE: *subperiosteal abscess*.

**brodifacoum** A long-acting warfarin-like anticoagulant used to kill mice and other rodents.

**Brodmann's areas** (brōd'mānz) [Korbinian Brodmann, Ger. neurologist, 1868–1918] The division of the cerebral cortex into 47 areas. This was originally done on the basis of cytoarchitectural characteristics, but the areas are now classified according to their functions.

**brom-, bromo-** [Gr. *bromos*, stench] Combining forms indicating the presence of bromine.

**bromelain** (brō'mē-lān) A group of protein-digesting enzymes derived from pineapples. Its applications include tenderizing meat.

**bromide** (brō'mīd) [Gr. *bromos*, stench] A binary compound of bromine combined with an element or a radical. It is a central nervous system depressant, and overdose can cause serious mental disturbance.

**bromide poisoning** SEE: under *poisoning*.

**bromidrosiphobia** (brō'mī-drō-sī-fō'bē-ās) [" + *hidros*, sweat, + *phobos*, fear] An abnormal fear of personal odors, accompanied by hallucinations.

**bromidrosis, bromhidrosis** (brō'mī-drō'sīs) Sweat that is fetid or offensive due to bacterial decomposition. It occurs mostly on the feet, in the groin, and under the arms.

**PATIENT CARE:** The axillae, groin, and feet should be cleansed daily with soap and water, rinsing well and drying thoroughly. Deodorant preparations should be used; and clothing and shoes changed, aired, and cleaned frequently. SYN: *kakidrosis*.

**bromine** (brō'mēn, -mīn) [Gr. *bromos*, stench] SYMB: Br. A liquid nonmetallic element obtained from natural brines from wells and sea water; atomic mass 79.904, atomic number 35. Its compounds are used in medicine and photography. SEE: *bromide*.

**bromism, brominism** (brō'mīzm, brō'mīn-īzm) [" + *-ismos*, condition] Poisoning that results from prolonged use of bromides. SEE: *Poisons and Poisoning Appendix*.

**bromobenzylcyanide** A toxic gas used as a riot control agent.

**bromocresol green** (brō'mō-krē'sōl) [" + "] A stain used in histologic and pathologic studies to stain cellular components with a pH of 3.8 to 5.4, and in

microbiology as a culture medium for yeasts.

**bromocriptine mesylate** (brō'mō-krip'tēn) An ergot derivative that suppresses secretion of prolactin. It has been used to treat patients with hyperprolactinemia (e.g., in those with pituitary adenomas); to stimulate ovulation in patients with amenorrhea; to treat patients with acromegaly; and to treat patients with parkinsonism, as an adjunct to levodopa. Common side effects include nausea, dizziness, and headache.

**bromoderma** (brō'mō-dēr'mā) [r' + *derma*, skin] An acne-like eruption due to allergic sensitivity to bromides.

**bromiodism** (brō'mō-ī'ō-dīzm) [r' + *ioides*, violet colored, + *-ismos*, condition] Poisoning from bromine and iodine or their compounds.

**bromomenorrhea** (brō'mō-mēn-ō-rē'ā) [r' + *men*, month, + *rhoia*, flow] Menstrual discharge marked by an offensive odor.

**bronch-** SEE: *broncho-*.

**bronchi** (brōng'ki) *sing.*, **bronchus** [L.] The two main branches leading from the trachea to the lungs, providing a passageway for air. The trachea divides opposite the third thoracic vertebra into the right and left main bronchi. The point of division, called the carina trachea, is the site where foreign bodies too large to enter either bronchus would rest after passing through the trachea. The right bronchus is shorter and more vertical than the left one. After entering the lung each bronchus divides further and terminates in bronchioles. SEE: *bronchus* for illus.

**foreign bodies in b.** Any materials that are aspirated into the lower airways, such as beans, nuts, seeds, or coins. These items, which usually lodge in the right bronchus because of its anatomical relation to the trachea, may cause pneumonia, airway inflammation, abscess formation, or atelectasis.

**TREATMENT:** They can be removed with postural drainage or bronchoscopy.

**bronchi-** SEE: *broncho-*.

**bronchial** (brōng'kē-āl) Pert. to the bronchi or bronchioles.

**bronchial blocker** ABBR: BB. A device used to facilitate single-lung ventilation during thoracic surgery or thoracoscopy. The bronchial blocker is placed into the mainstem bronchus on the side of the chest where the operation is being performed, and its balloon is inflated within the airway. Potential complications of the device include dislodgement, misplacement, or accumulation of fluid behind the blockade.

**bronchial breath sounds** SEE: *sound, bronchial*.

**bronchial thermoplasty** The reduction in the amount of smooth muscle mass in

the airways when heat energy is applied to the airways bronchoscopically. The procedure uses heat energy generated with radiofrequency technology to ablate smooth muscle. It has been used as an experimental treatment for asthma.

**bronchial tube** One of the smaller divisions of the bronchi.

**bronchial washing** Irrigation of one or both bronchi to collect cells for cytologic study or to help cleanse the bronchi.

**bronchiectasis** (brōng'kē-ēk'tā-sis) [r' + *ektasis*, dilatation] Chronic dilation of a bronchus or bronchi, usually in the lower portions of the lung, caused by the damaging effects of a long-standing infection.

**SYMPTOMS:** Chronic cough, foul-smelling, mucopurulent sputum production, dyspnea, and wheezing are common.

**ETIOLOGY:** The condition may be acquired or congenital and may occur in one or both lungs. Bronchiectasis has three forms (cylindrical, varicose, and saccular), which may occur individually or together. Acquired bronchiectasis usually occurs secondary to an obstruction or an infection such as bronchopneumonia, chronic bronchitis, tuberculosis, cystic fibrosis, or whooping cough. The incidence has decreased with antibiotic treatment of acute infections.

**DIAGNOSIS:** Radiography is used to assist in the diagnosis, either with chest x-rays, or computed tomography of the lung; the disease may be visualized and cultures taken during bronchoscopy.

**TREATMENT:** Therapy consists of oral or IV antibiotics for 7 to 10 days, pulmonary hygiene, and postural drainage. Resection of affected areas may be done in selected patients. Aerosols may be useful for bronchodilation if bronchospasm is present. SEE: *postural drainage*.

**PATIENT CARE:** The patient is assessed for the presence or increased severity of respiratory distress. Ventilatory rate, pattern, and effort are observed, breath sounds are auscultated, and sputum is inspected for changes in quantity, color, or viscosity. The respiratory therapist evaluates gas exchange by monitoring arterial blood gas values, and administers oxygen according to protocol or as prescribed. The patient is observed for complications such as cor pulmonale. The patient should increase oral fluid intake and be shown how to use a humidifier or nebulizer to help thin inspissated secretions. The patient also is taught to breathe deeply and cough effectively. Chest physiotherapy is most effective and least disruptive if carried out in the morning, 1 or 2 hr before meals, and at

bedtime. The patient is taught to remain in each prescribed position for at least 10 minutes, then percussion is performed followed by two-stage coughing to remove secretions. The nurse or respiratory therapist suctions the oropharynx if the patient is unable to clear the airway and teaches the patient and family how to do this. The need for frequent oral hygiene to remove foul-smelling secretions and to help prevent anorexia is explained. The patient is taught to dispose of secretions, to cleanse items contaminated by secretions, and to wash hands thoroughly to avoid spreading infections. Air pollutants and people with upper respiratory infections should be avoided. If the patient smokes, he or she may need referral to a smoking cessation program or nicotine patch therapy. Prescribed medications, such as antibiotics, bronchodilators, and expectorants, are given, and both patient and family are instructed in their use, action, and side effects. The patient is advised not to take over-the-counter drugs without the health care provider's approval, and to have respiratory infections treated promptly. Supportive care is provided to help the patient adjust to the lifestyle changes that irreversible lung damage requires. Balanced, high-protein meals (in frequent, small amount if necessary) aid tissue healing. If surgery is scheduled, the patient is prepared physically and emotionally. Preoperative and postoperative teaching and care are conducted, and the patient's status is monitored to prevent complications.

**saccular b.** Dilated bronchi that are of saccular or irregular shape. The proximal third to fourth branches of the bronchi are severely dilated and end blindly with extensive collapse.

**varicose b.** Dilated bronchi that resemble varicose veins; irregular dilatation and constriction as seen in cystic fibrosis.

**bronchiloquy** (brōng-kīl'ō-kwē) [*l'* + *L. loqui*, to speak] Unusual vocal resonance over a bronchus surrounded by consolidated lung tissue.

**bronchiocele** (brōng'kē-ō-sēl) [*l'* + *kele*, tumor, swelling] Circumscribed dilatation of a bronchus.

**bronchiogenic** (brōng'kē-ō-jěn'ik) [*l'* + *gennan*, to produce] Having origin in the bronchi.

**bronchiol-** SEE: *bronchiolo-*.

**bronchiole** (brōng'kē-ōl) *pl.* **bronchioles** [*L. bronchiolus*, air passage] One of the smaller subdivisions of the bronchial tubes. Bronchioles have no cartilage in their walls; they also have few glands in their mucosa.

**respiratory b.** The last division of the bronchial tree. Respiratory bronchioles are branches of terminal bronchioles

and continue to the alveolar ducts, which lead to the alveoli.

**terminal b.** The next-to-last subdivision of a bronchiole, leading to the respiratory bronchioles.

**bronchiolectasis** (brōng'kē-ō-lēk'tā-sīs) [*l'* + *Gr. ektasis*, dilatation] Dilatation of the bronchioles; capillary bronchiectasis.

**bronchiolitis** (brōng'kē-ō-lī'tis) [*l'* + *Gr. itis*, inflammation] Inflammation of the bronchioles, particularly as an acute process in children during the first 2 years of life, with peak incidence around 6 months of age. Most cases occur during the winter and early spring months.

**ETIOLOGY:** The respiratory syncytial virus (RSV) accounts for 50% of cases. Other viruses (parainfluenza, adenoviruses) and mycoplasma species make up the remaining cases. There is no evidence that bacteria cause the illness, or that antibiotics cure it.

**SYMPTOMS:** URI symptoms (runny nose, sneezing) appear first, quickly replaced by the hallmarks of the disease, respiratory distress, nasal flaring, retractions, tachypnea, cyanosis, and wheezing. The wheezing is what gives the disease its commonly used name, "baby asthma." Some infants, especially those a few months old, develop severe respiratory distress with hypoxia and gasping respirations, requiring hospitalization, oxygen, and assisted ventilation. Chest x-ray films show hyperinflation of the lungs with scattered areas of pneumonia and/or atelectasis.

**TREATMENT:** Infants with moderate or worse respiratory distress should be admitted to the hospital for observation, respiratory therapy, and oxygen. Whether bronchodilators such as nebulized albuterol have any value in the treatment is still debated, but they are often used. Ribavirin, a nebulized antiviral agent, is used in severe cases of bronchiolitis due to proven RSV infection in children under age 2.

**PROGNOSIS:** The case fatality rate is less than 1%, but a significant proportion of affected infants develop reactive airway disease (i.e., asthma) in later childhood.

**PREVENTION:** Preventive drugs have been developed for infants with bronchopulmonary dysplasia and other congenital cardiac or pulmonary diseases. These include palivizumab, a monoclonal antibody, and an RSV immune globulin.

**PATIENT CARE:** The infant requires close observation regarding the demands imposed by airway obstruction at the bronchiolar level. The infant is observed for gradually increasing respiratory distress, paroxysmal cough, dyspnea and irritability, as well as for tachypnea with flaring nostrils and in-

tercostal and subcostal retractions, and shallow respiratory excursion.

The infant should be percussed for hyperresonance and scattered consolidation and auscultated for fine crackles, prolonged expiratory phase, and diminished breath sounds by the nurse, respiratory therapist, and physician. Audible or auscultatory wheezing may be present, as well as hyperinflation leading to increased A-P diameter and depressed diaphragm.

The parents are educated regarding the need for hospitalization, and treatments that will be employed are explained. The use of a mist tent and oxygen are discussed as well as assisted ventilation if this becomes necessary, and the parents are taught how to maintain contact with their infant. The parents also need to understand that tachypnea, weakness, and fatigue limit the infant's ability to obtain fluids in sufficient amounts to provide adequate hydration, thus intravenous fluids will be used until symptoms abate. Since parents expect medications to be prescribed for their infant, the nurse explains why various drugs (antibiotics, bronchodilators, corticosteroids, cough suppressants, and expectorants) are not employed and helps them to understand why sedatives are contraindicated although rest is an important part of therapy. Hospitalization of an infant is traumatic to parents and to the child depending on his or her age and severity of illness, so emotional support is provided to all throughout this crisis. The parents are helped to provide love, touch, and care for their infant, are instructed on how they can contact the nurse if they must be absent from the crib-side, and are assisted to understand and deal with behavioral regression that may occur.

**b. exudativa** Bronchiolitis with fibrinous exudation and grayish sputum; often associated with asthma.

**b. obliterans** Bronchiolitis in which the bronchioles and, occasionally, some of the smaller bronchi are partly or completely obliterated by nodular masses that contain granulation and fibrotic tissue.

**bronchiolo-, bronchiol-, bronchiolio-** [L. *bronchiolus*, air passage] Combining forms meaning *bronchiole*.

**bronchiolus** (brŏng-kē'ō-lŭs) *pl.* **bronchioli** [L.] Bronchiole.

**bronchiostenosis** (brŏng'kē-ō-stēn-ō'sīs) [*'* + *stenosis*, act of narrowing] Narrowing of the bronchial tubes.

**bronchitis** (brŏng-kī'tis) [*'* + *itis*, inflammation] Inflammation of the mucous membranes of the bronchial airways, caused by irritation or infection, or both, by pathogen. Bronchitis can be

acute or chronic. SEE: *Nursing Diagnoses Appendix*.

**ETIOLOGY:** Bronchitis is caused by infectious agents such as viruses (esp. rhinoviruses, influenza A and B, parainfluenza, adenoviruses, and respiratory syncytial virus) or, less often, mycoplasma, chlamydia, streptococcus, haemophilus, brambhamella, or staphylococcus. Infection is often indistinguishable from the common cold and is usually treated as such unless pneumonia is also present. Acute bronchial irritation (noninfectious bronchitis) may also be caused by exposure to various physical and chemical agents such as dust, fumes, or pollens. Allergies and pre-existing conditions such as asthma or chronic obstructive lung disease may be important cofactors.

**PATIENT CARE:** A history is obtained documenting tobacco use, including type, duration, and frequency. Calculation of pack-year history gives useful information. The health care provider assesses for other known respiratory irritants and allergens, exertional or worsening dyspnea, and productive cough. The patient is evaluated for changes in baseline respiratory function such as the use of accessory muscles in breathing, cyanosis, neck vein distention, pedal edema, prolonged expiratory time, tachypnea, and wheezes or crackles. The color (gray, white, or yellow) and characteristics of sputum are often documented (but may have little diagnostic significance). Tests such as arterial blood gas analysis, chest x-rays, oximetry, peak flow measurements, pulmonary function testing, and sputum Gram stain are occasionally employed. They are explained to the patient if they have been ordered. Prescribed antihistamines, bronchodilators, corticosteroids, decongestants, expectorants, and other medications are administered and the response is documented. Antibiotics are rarely indicated. Daily activities are interspersed with rest periods to conserve energy and to prevent fatigue. Patients with comorbid conditions should be hospitalized, in which case all general patient care concerns apply. Patients needing help to quit smoking are given counseling and support and referred to smoking cessation programs and for adjunctive drug therapy when prescribed.

**acute b. 1.** An infection of the bronchi that may be indistinguishable from the common cold, often associated with repetitive coughing or sputum production. It is usually caused by viruses (esp. rhinoviruses, influenza A or B, parainfluenza, adenoviruses, or respiratory syncytial virus) or less often by *Mycoplasma pneumoniae*, Chlamydia, streptococci, *Haemophilus spp.*, *Moraxella lacunata*, *Bordetella pertussis*, or

staphylococci. 2. Noninfectious inflammation of the bronchi caused by exposure to such irritants as dusts, fumes, or pollens.

**TREATMENT:** Patients are treated with bedrest, increased fluid intake, and antipyretics and analgesics for comfort. Vaporizers may be used to decrease bronchial irritation. Antibiotics are rarely indicated (even if purulent sputum is present), unless bacterial infection is determined by culture or the symptoms continue for more than 10 days or there is an underlying disease such as congestive heart failure, chronic obstructive lung disease, or an immunodeficiency. Some prolonged cases of acute bronchitis will eventually prove to be caused by pertussis, which will respond to erythromycin-based drugs. A chest x-ray examination to check for pneumonia is indicated when clinically suspected (e.g., if severe respiratory symptoms, fever, tachycardia, hypoxia, or abnormal lung sounds are present).

**asthmatic b.** Bronchitis compounded by wheezing, caused by spasm of hyperreactive airways.

**chronic b.** Bronchitis marked by increased mucus secretion by the tracheobronchial tree. A productive cough must be present for at least 3 months in two consecutive years for the clinical diagnosis of chronic bronchitis to be made; also, other bronchopulmonary diseases (e.g., bronchiectasis, tuberculosis, tumor) must be excluded. SEE: *chronic obstructive pulmonary disease*.

**ETIOLOGY:** Chronic irritation by inhaled irritants (esp. cigarette smoking) and repeated infections are the primary risk factors. Chronic bronchitis is 4 to 10 times more common in heavy smokers; cigarette smoke interferes with the movement of cilia and inhibits the activity of white blood cells in the bronchi and alveoli. The predominant pathological changes are hypertrophy and hyperplasia of the mucus-secreting glands of the large and small airways. Some patients also have hyperreactive airways with widespread inflammation, narrowing and distortion. The changes in the respiratory epithelium may increase the risk of lung cancer.

**DIAGNOSIS:** Diagnostic studies may include chest x-ray, pulmonary function or peak flow testing, arterial blood gas studies, and ECG.

**SYMPTOMS:** Although the disease begins earlier, signs and symptoms may not appear until patients are 40 to 50 years old. A chronic cough producing copious amounts of sputum occurs early, and patients have frequent respiratory problems, often as a result of acute bronchopulmonary infections. Dyspnea is generally moderate and occurs rela-

tively late in the disease process. Over time, right-sided heart failure (cor pulmonale) develops, marked by dependent edema, distended neck veins, pulmonary hypertension, and an enlarged right ventricle.

**TREATMENT:** Bronchodilators, inhaled steroids, and other drugs are used to prevent bronchospasm, improve airflow, and aid in the removal of secretions. Increased fluid intake (about 3 L/day), ultrasonic or mechanical nebulizer treatments, and chest physiotherapy may be needed to help thin, loosen and remove secretions. Acute respiratory infections are treated with empirical antibiotics such as azithromycin or trimethoprim/sulfamethoxazole, among others. Patients with underlying chronic bronchitis should receive pneumococcal and influenza vaccines. Other treatments are symptom based. Cessation of smoking is an important part of the overall treatment. Oxygen therapy is frequently needed.

**PATIENT CARE:** The initial history and assessment covers tobacco use, presence of other known respiratory irritants and allergens, degree of dyspnea, use of accessory muscles for breathing, presence of wheezes or rhonchi, color, sputum characteristics, nutritional status, and the effect of the disease on desired activity. Patients who smoke are referred to a smoking cessation program. The patient's lungs are auscultated before and after aerosol therapy to assess the effectiveness of bronchodilators.

The patient/family need extensive education and ongoing psychosocial support to cope with this chronic disease. Simple pathophysiology of the disease process is taught and used as a basis for explanations about diagnostic tests (e.g., pulmonary function tests) and all interventions to increase patient cooperation in the complex care regimen. Written materials usually augment verbal instruction. Patients and families are taught how to ensure and document adequate fluid intake (about 3 L/day unless otherwise restricted) to loosen secretions; to schedule small, frequent, high-protein meals to combat anorexia and weight loss; to use pursed-lip breathing and controlled cough to increase airflow and prevent fatigue from coughing spasms; to provide oral care frequently to minimize anorexia and the risk of infection; and to maintain muscle strength by continuing to exercise, but with a plan to pace activities to avoid fatigue. They also are taught to watch for and report signs of possible heart failure (e.g., dependent edema, or weight gain of more than 1 kg/day) or acute respiratory infection (e.g., increased dyspnea and changes in sputum

characteristics such as color or amount). As the disease progresses, the family is assisted to make decisions about how routines may be modified to best meet individual needs.

The respiratory therapist delivers bronchodilators and humidity therapy as indicated by the presence of wheezing or evidence of retained airway secretions. Chest physical therapy may prove useful when the patient cannot easily cough the secretions out. Oxygen therapy is administered based on evidence of hypoxemia, inadequate perfusion of vital organs, or cor pulmonale.

**eosinophilic b.** A condition marked by chronic cough, eosinophils in sputum, and improvement in symptoms after the administration of corticosteroids. It is similar to asthma, but there is no wheezing or airway reactivity, and the airways are not infiltrated by mast cells.

**plastic b.** Bronchitis marked by violent cough and paroxysms of dyspnea in which casts of the bronchial tubes are expectorated.

**putrid b.** A chronic form of bronchitis with foul-smelling sputum.

**vegetal b.** Bronchitis resulting from lodging of foods of vegetable origin in the bronchus.

**broncho-, bronch-, bronchi-** [Gr. *brónchos*, windpipe] Combining forms meaning *airway*.

**bronchoblennorrhœa** (brông'kô-blên'ô-rê'ă) [" + *blennos*, mucus, + *rhoia*, flow] Chronic bronchitis in which sputum is copious and thin.

**bronchocele** (brông'kô-sêl) [" + *kele*, tumor, swelling] A localized dilatation of a bronchus.

**bronchoconstriction** (brông'kô-kôn-strîk'shŭn) [" + L. *constringere*, to draw together] Constriction of the bronchial tubes.

**bronchodilatation** (brông'kô-dîl-ă-tă'shŭn) [" + L. *dilatare*, to open] Expansion or relaxation of the large airways.

**bronchodilator** (brông'kô-dî-lă'tor) A drug that expands the bronchi by relaxing bronchial muscle. There are three classes of bronchodilators: beta<sub>2</sub> adrenergic-receptor agonists, methylxanthines, and anticholinergic agents. The beta<sub>2</sub> adrenergic-receptor agonists produce the greatest bronchodilation in patients with bronchial asthma. The beta<sub>2</sub> adrenergic-receptor agonists are the best drugs for patients with mild, intermittent asthma and for acute attacks of reactive airway disease. SEE: table.

**bronchoedema** (brông'kô-ê-dê'mă) [" + *oidema*, swelling] Edematous swelling of the mucosa of the bronchial tubes, reducing the size of air passageways and inducing dyspnea.

**bronchogenic** (brông-kô-jên'îk) [" + *gennan*, to produce] Having origin in a bronchus.

**bronchiole** SEE: *bronchiolo-*.

**broncholith** (brông'kô-lîth) [" + *lithos*, stone] A calculus in a bronchus.

**broncholithiasis** (brông'kô-lîth-î'ă-sîs) [" + *lithos*, stone, + *-iasis*, state] Bronchial inflammation or obstruction caused by calculi in the bronchi.

**bronchomotor** (brông'kô-mô'tor) [" + L. *motus*, moving] Causing dilation or constriction of the bronchi.

**bronchomycosis** (brông'kô-mî-kô'sîs) [" + *mykes*, fungus, + *osis*, condition] Any fungal infection of the bronchi or bronchial tubes, usually caused by fungi of the genus *Candida*.

**bronchopathy** (brông-kôp'ă-thê) [" + *pathos*, disease, suffering] Any pathological condition involving the bronchi or bronchioles.

**bronchophony** (brông-kôf'ô-nê) [" + *phone*, voice] An abnormal increase in tone or clarity in vocal resonance.

**bronchoplasty** (brông'kô-plăs'tê) [" + *plassein*, to form] Surgical repair of a bronchial defect.

**bronchopneumonia** (brông'kô-nŭ-mô'nê-ă) [" + *pneumonia*, lung inflammation] A type of pneumonia marked by scattered consolidation (areas

Features of Bronchodilator Drugs

| Drug Class   | Route                   | Uses  | Common Side Effects                                    |
|--|-------------------------|---|--|
| Beta <sub>2</sub> agonists (e.g., albuterol, salmeterol) | Orally or by inhalation | Intermittent attacks of wheezing; exercise-induced asthma; Prevention of asthma | Palpitations, tachycardia, nervousness                 |
| Methylxanthines (e.g., theophylline)                     | Orally, intravenously   | Asthma; COPD  | Palpitations, tachycardias, nausea, vomiting, seizures |
| Anticholinergics (e.g., ipratropium)                     | By inhalation           | COPD; acute asthma (when combined with beta-agonist drug)                       | Dry mouth, cough, nausea                               |

filled with inflammatory exudate) in one or more lobes of the lung. It occurs primarily in infants and in elderly persons, both of whom have decreased resistance to bacterial and viral infections. It is often a complication of bronchitis.

**bronchopulmonary lavage** Lavage, bronchoalveolar.

**bronchorrhagia** (bröng'kor-ä'jē-ä) [" + *rhegnynai*, to break forth] A bronchial hemorrhage.

**bronchorrhaphy** (bröng'kor'ä'fē) [" + *rhaphe*, seam, ridge] The suturing of a bronchial wound.

**bronchorrhea** (bröng-kō-rē'ä) [" + *rhoia*, flow] An abnormal secretion from the bronchial mucous membranes.

**bronchorrhoeus** (bröng'kor-ön'küus) [" + *rhonchos*, snore] A bronchial crackle.

**bronchoscope** (bröng'kō-sköp) [" + *skopein*, to examine] An endoscope designed to pass through the trachea for visual inspection of the tracheobronchial tree. The device can be used for lavage, or to remove tissue for biopsy or foreign bodies from the tracheobronchial tree.

**bronchoscopy** (bröng-kös'kō-pē) Examination of the bronchi through a bronchoscope.

**autofluorescence b.** Bronchoscopy in which tissues are illuminated with pure blue laser light. The wavelength of blue light enhances the difference in appearance between normal and malignant tissues, since malignant and premalignant surfaces glow (fluoresce) when compared with healthy tissues.

**white light b.** ABBR: WLB. Standard bronchoscopy, i.e., bronchoscopy in which tissues are illuminated with the normal light spectrum available for use in fiberoptic evaluation of tissues. The term "white light bronchoscopy" is used to distinguish standard bronchoscopy from bronchoscopy performed with other light wavelengths. SEE: *autofluorescence b.*

**bronchosisinitis** (bröng'kō-sī'nūs-ī'tīs) [" + *L. sinus*, a hollow, + *Gr. itis*, inflammation] Infection of a bronchus and a sinus at the same time.

**bronchospasm** (bröng'kō-spāzm) [" + *spasmos*, a convulsion] An abnormal narrowing with partial obstruction of the lumen of the bronchi due to spasm of the peribronchial smooth muscle. Clinically this is accompanied by coughing and wheezing. Bronchospasm occurs in reactive airway diseases such as asthma and bronchitis. Treatment may include bronchodilators and corticosteroids. SEE: *asthma*.

**bronchspirometer** (bröng'kō-spī-röm'ētēr) [" + *L. spirare*, to breathe, + *Gr. metron*, measure] An instrument for determining the volume of air inspired from one lung and for collecting air for analysis.

**bronchostaxis** (bröng'kō-stāk'sīs) [" +

*staxis*, dripping] Hemorrhage from the walls of a bronchus.

**bronchostenosis** (bröng'kō-stēn-ō'sīs) [" + *stenosis*, act of narrowing] Stenosis of a bronchus.

**bronchostomy** (bröng-kös'tō-mē) [" + *stoma*, mouth] The surgical formation of an opening into a bronchus.

**bronchotomy** (bröng-köt'ō-mē) [" + *tome*, incision] Surgical incision of a bronchus, the larynx, or the trachea.

**bronchovesicular** (bröng'kō-vē-sīk'ū-lār) [" + *L. vesicula*, a tiny bladder] Pert. to bronchial tubes and alveoli with special reference to sounds intermediate between bronchial or tracheal sounds and vesicular sounds.

**b. breath sounds** SEE: *sound, bronchovesicular*.

**bronchus** (bröng'küus) **pl. bronchi** [*Gr. bronchos*, windpipe] One of the two large branches of the trachea. The trachea proper terminates at the level of the fourth thoracic vertebra. Each main (primary) bronchus enters the lung at its hilus. Inside the lung, the main bronchus branches into a bronchial tree (a set of smaller bronchi and bronchioles). SEE: *illus.; bronchi*.

**broth** (brawth) [ME.] **1.** A liquid nutrient made from simmering any food (cereals, meats, vegetables) in liquid. **2.** A liquid nutrient medium used to facilitate the growth of microorganisms.

**brow** The forehead.

**browlift** (brow'lift') [" + "] A colloquial term for ophryoplasty.

**brown baby syndrome** The dark grayish brown skin color seen in infants undergoing extensive phototherapy for hyperbilirubinemia. The condition may last for months but is not known to produce permanent harm.

**brownian movement** (brow'nē-än) [Robert Brown, Brit. botanist, 1773–1858] The oscillatory movement of particles resulting from chance bombardment by other particles.

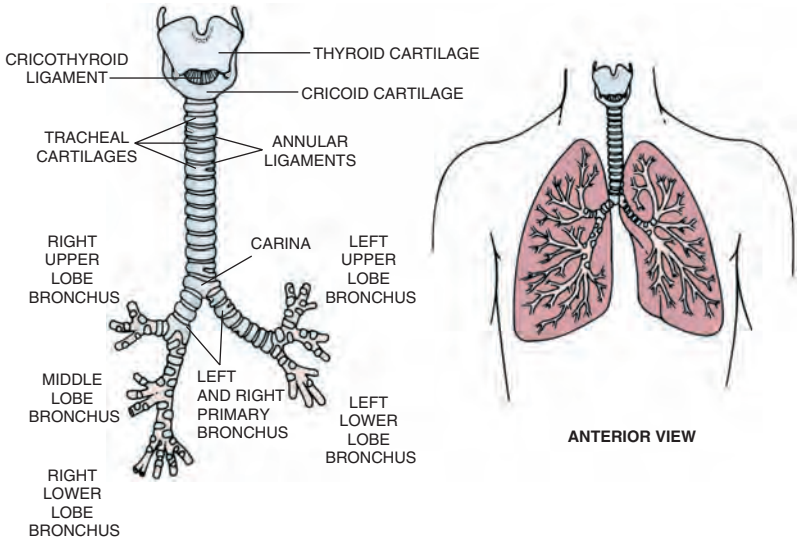
**Brown-Séguard's syndrome** (brown'sä-kärz') [Charles E. Brown-Séguard, Fr. physician, 1817–1894] Hemisection of the spinal cord with: paralysis, loss of position and vibratory sense, and ataxia on the same side of the body as the lesion; and loss of pain and temperature sensitivity on the side opposite the lesion.

**Brucella** (broo-sēl'ä) [Sir David Bruce, Brit. physician and bacteriologist, 1855–1931] A genus of gram-negative, aerobic, coccobacilli that are pathogenic to humans and cause undulant fever and abortion in cattle, hogs, and goats. SEE: *brucellosis*.

**brucella pl. brucellae pl. brucellas** Any bacterium of the genus *Brucella*. **brucellar** (broo-sēl'ēr), *adj.*

**brucellin** (broo-sēl'in) A protein extract of any species of *Brucella*. It formerly was used in human skin tests to diagnose brucellosis and is still used for that





TRACHEA AND BRONCHI

purpose by veterinarians. Agglutination tests and cultures are now preferred for human testing.

**brucellosis** (broo'sèl-ò'sis) [*Brucella* + Gr. *osis*, condition] A widespread, infectious disease affecting cattle, swine, and goats, and sometimes other animals and humans. Human infection occurs most commonly in ranchers, veterinarians, and people who consume unpasteurized dairy products. It is caused by bacteria of several *Brucella* species. *B. melitensis* and *B. suis* cause brucellosis in goats and swine, respectively, and *B. abortus* causes contagious abortion in cattle, dogs, and other domestic animals. The organisms are intracellular parasites. Brucellosis is also known as Malta or Gibraltar fever. It produces an influenza-like illness, with fevers, chills, headache, and body aches. It is a rare cause of endocarditis. SYN: *Gibraltar fever*; *Mediterranean fever*.

**TREATMENT:** In adults, treatment consists of doxycycline and rifampin for 6 weeks. In children and pregnant women tetracyclines should be avoided because they damage developing teeth and bones.

**Bruch's membrane** (brooks) [Karl W. L. Bruch, Ger. anatomist, 1819–1884] A glassy membrane of the uvea of the eye, lying between the choroid membrane and the pigmented epithelium of the retina. SYN: *lamina basalis choroideae*; *vitreous lamella*.

**Bruck's disease** (brooks) [Alfred Bruck, Ger. physician, b. 1865] Osteogenesis imperfecta.

**Brudzinski sign** (bru-jin'skē) [Józef Brudzinski, Polish physician, 1874–

1917] Flexion of the hips when the neck is flexed from a supine position. It occurs in patients with meningeal inflammation. SEE: *Kernig's sign*; *meningitis*.

**Brugada syndrome** (broo-gòd'ä) A rare hereditary syndrome, occasionally autosomal dominant, marked by right bundle branch block, S-T segment elevation in the right precordial leads of the ECG, and a high risk of sudden death from ventricular arrhythmias.

**Brugia malayi** (broo'jä mah-lä'-ī) A filarial parasitic worm that can invade lymphatics and cause massive swelling of the scrotum or of the lower extremities. The latter condition is called elephantiasis. SEE: *elephantiasis*; *Wuchereria*.

**Bruininks-Oseretsky Test of Motor Proficiency** ABBR: BOTMP. A standardized test of gross and fine motor performance for children from 4 to 14 years of age.

**bruise** (brooz) [O. Fr. *bruiser*, to break] A traumatic injury (usually to the skin but sometimes to internal organs) in which blood vessels are broken but tissue surfaces remain intact. Discoloration, swelling, inflammation, and pain are typical signs and symptoms. Fresh bruises on the skin are often red or purple. Older bruises may turn green and then yellow or brown, as the blood products within them age and are reabsorbed, but gauging the age of a bruise by its color is imprecise, at best. Bruising in infants may suggest occult child abuse. Bruising in the elderly is more often an indication of the use of anticoagulant drugs than of physical mistreatment. SYN: *echymosis*.

**FIRST AID:** Cold packs may reduce

swelling and discomfort, esp. when provided soon after injury. Twenty-four to 48 hr later, application of heat may be desirable, followed by gentle massage.

**b. of head, chest, and abdomen** A bruise that may be associated with internal injuries. SEE: *ecchymosis*.

**PATIENT CARE:** Historical data are collected regarding the exact cause and location of the injury. The possibility of an abusive injury is investigated if the history given does not seem consistent with the injury, or if the related details change. The bruised area is inspected, and the location, color, size, discomfort, and other pertinent characteristics are documented. The patient is assessed for other injuries dependent on the specific location and severity of the original injury. Related skin abrasions are cleaned thoroughly. Neurological status (AVPU) is monitored hourly or as needed for any patient with a suspected head injury.

**stone b.** A pain perceived of the bottom of the foot, often the result of metatarsalgia or plantar fasciitis.

**bruit** (brwē, broot) [Fr., noise] An adventitious sound of venous or arterial origin heard on auscultation.

**placental b.** Placental soufflé.

**Brunner's glands** (brün'ēr) [Johann C. Brunner, Swiss anatomist, 1653–1727] Compound glands of the duodenum and upper jejunum that are similar to the pyloric glands of the stomach. They are embedded in the submucosa and lined with columnar epithelium. They secrete alkaline mucus which neutralizes the hydrochloric acid entering the duodenum from the stomach. SYN: *duodenal glands*.

**Brunner's syndrome** (brün'ēr) [H.G. Brunner, D. geneticist] A rare X-linked deficiency of monoamine oxidase A. Mild mental retardation and impulsive or aggressive behaviors are characteristically found in affected children.

**brush** A tool with bristles on its end designed to remove debris or damaged cells from a body part.

**Brushfield spots** (brūsh'fēld) [T. Brushfield, Brit. physician, 1858–1937] Gray or pale yellow spots sometimes present at the periphery of the iris. They may be an isolated finding but are sometimes found in Down syndrome.

**brushing** (brūsh'ing) **1.** A technique of tactile stimulation using small brushes over selected dermatomes to elicit muscular responses in the rehabilitation of persons with central nervous system damage. **2.** Cleaning with a brush, as in toothbrushing. **3.** A clinical specimen obtained by rubbing a body part with a brush. The tissue or cells obtained are examined microscopically for evidence of disease.

**bruxism** (brūk'sizm) [Gr. *brychein*, to grind the teeth, + *-ismos*, condition]

The grinding of the teeth, esp. in children, during sleep.

**ETIOLOGY:** Psychological stress or abnormalities of tooth occlusion are the principal causes.

**TREATMENT:** If the condition is due to psychological causes, tension, anxiety, and stress should be reduced. The teeth should be treated for caries, malocclusion, or periodontal disease. Occlusal guards for the teeth may be of benefit. SYN: *oromandibular sleep movement disorder*.

**Bryant's traction** (brī'ānts) [Sir Thomas Bryant, Brit. surgeon, 1828–1914] Traction applied to the lower legs with the force pulling vertically. It is used esp. in treating fractures of the femur in children.

**B.S.** *Bowel sounds*.

**BSE 1.** *Breast self-examination*. **2.** *Bovine spongiform encephalopathy*.

**BSI** *Body substance isolation*.

**BTPS** *body temperature and pressure* (saturated with water vapor).

**BTU** *British thermal unit*.

**bubo** (boo'bō) *pl. buboes* [Gr. *boubon*, groin, swollen gland] An inflamed, swollen, or enlarged lymph node often exhibiting suppuration, occurring commonly after infective disease due to absorption of infective material. The nodes most commonly affected are those of the groin and axilla.

**axillary b.** A bubo in the armpit.

**indolent b.** A bubo in which suppuration does not occur.

**inguinal b.** A bubo in the region of the groin. SYN: *buboadenitis*.

**venereal b.** A bubo resulting from a venereal disease. SEE: *lymphogranuloma venereum*.

**buboadenitis** (boo-bōn-ād-ē-nī'tis) [*'* + *aden*, gland, + *itis*, inflammation] Inguinal bubo.

**bucc-** SEE: *bucco-*.

**bucca** (būk'ā) *pl. buccae* [L., cheek] The cheek.

**buccal** (būk'āl) Pert. to the cheek or mouth.

**bucco-, bucc-** [L. *bucca*, mouth] Combining forms meaning *cheek*.

**buccocervical** (būk'kō-sēr'vī-kāl) Concerning the buccal surface and cervical margin of a tooth.

**Buck's extension** (büks) [Gurdon Buck, U.S. surgeon, 1807–1877] A method of producing traction by applying regular or flannel-backed adhesive tape to the skin and keeping it in smooth close contact by circular bandaging of the part to which it is applied. The adhesive strips are aligned with the long axis of the arm or leg, the superior ends being about 1 in. (2.5 cm) from the fracture site. Weights sufficient to produce the required extension are fastened to the inferior end of the adhesive strips by a rope that is run over a pulley to permit free motion. SYN: *Buck's traction*.

**Bucky diaphragm, Potter-Bucky dia-**

**phragm** (būk'ē) [Gustav P. Bucky, Ger.-born U.S. radiologist, 1880–1963; Hollis Potter, U.S. radiologist, 1880–1964] A specialized film holder with a moving grid located immediately beneath the radiographic table or upright apparatus. It decreases the effects of scatter and secondary radiation during a radiographic exposure.

**Bucky factor** A measure of the amount of radiation absorbed by the Bucky diaphragm. This indicates the amount by which to increase the technical factors when a grid is being used.

**bud** [ME. *budde*, to swell] **1.** In anatomy, a small structure resembling a bud of a plant. **2.** In embryology, a small protuberance or outgrowth that is the anlage or primordium of an organ or structure.

**limb b.** In the embryo, a clump of cells that is the precursor of one of the four limbs.

**lung b.** In the embryo, a pouch that grows out of each side of the developing foregut tube beginning at stage 12 (26 days). It pushes into the primitive pleural coeloms and continues to elongate and branch to become the embryonic lung.

**taste b.** Any of the primary sensory cells that are found mainly on the margins and the back of the tongue and respond to a range of chemicals introduced into the mouth. Sensory cells of the taste buds live for approx. 10 days and are then replaced from basal stem cells. SEE: *taste*.

**tooth b.** The earliest evidence of tooth development. The tooth buds form in the dental lamina. Tooth buds for the deciduous teeth develop first (6 weeks of gestation) and more superficially; tooth buds for the permanent teeth develop later (10 weeks of gestation) and deeper in the dental lamina. SEE: *enamel organ*.

**Budd-Chiari syndrome** (būd'kē-ār'ē) SEE: *thrombosis, hepatic vein*.

**budding** (būd'ing) A method of asexual reproduction in which a small offshoot or sprout grows from the side or end of the parent and develops into a new organism, which in some cases remains attached and in others separates and lives an independent existence. Budding is common in sponges and coelenterates. The budding of yeasts is mitosis with unequal division of cytoplasm.

**Buerger, Leo** (bürg'ēr) [Austrian-born U.S. surgeon, pathologist, and urologist, 1879–1943] He was a professor of urology in New York City and Los Angeles.

**B.-Allen exercise** Buerger's postural exercise.

**B.'s disease** A chronic, recurring, inflammatory, but nonatheromatous vascular occlusive disease, chiefly of the peripheral small and medium-sized arteries (and sometimes veins) of the ex-

trimities causing decreased blood flow to the feet and legs. Occasionally the hands are also affected, causing painful ulceration of the fingertips. The disease is seen most commonly in males 20 to 40 years of age who smoke cigarettes or chew tobacco. SYN: *thromboangiitis obliterans*.

**SYMPTOMS:** Symptoms include paresthesias of the foot, easy fatigability, and foot and leg cramps. In patients with severely limited blood flow to the legs, skin ulceration or moist gangrene of the extremities may develop. Amputation is sometimes needed to remove dead tissue.

**TREATMENT:** Absolute, permanent abstinence from tobacco in all forms is crucial. The patient should avoid excessive use of the affected limb, exposure to temperature extremes, use of drugs that diminish the blood supply to extremities, trauma, and fungus infections. Aspirin and vasodilators may be prescribed. If gangrene, pain, or ulceration is present, complete bedrest is advised with a padded foot-board or bed cradle to prevent pressure on the extremities; if these are absent, the patient should walk at a comfortable pace for 30 min twice daily. For arterial spasm, blocking of the sympathetic nervous system by injection of various drugs or by sympathectomy may be done.

**PATIENT CARE:** The history should document occurrences of painful, intermittent claudication of the instep, calf, or thigh, which exercise aggravates and rest relieves; the patient's walking ability (distance, time, and rest required); the patient's foot response to exposure to cold temperatures (initially cold, numb, and cyanotic; later reddened, hot, and tingling); and any involvement of the hands, such as digital ischemia, trophic nail changes, painful fingertip ulcerations, or gangrene. Peripheral pulses are palpated, and absent or diminished radial, ulnar, or tibial pulses documented. Feet and legs are inspected for superficial vein thrombophlebitis, muscle atrophy, peripheral ulcerations, and gangrene, which occur late in the disease. Soft padding is used to protect the feet, which are washed gently with a mild soap and tepid water, rinsed thoroughly, and patted dry with a soft towel. The patient is instructed in this daily care routine and advised to inspect tissues for injury such as cuts, abrasions, and signs of skin breakdown (redness or soreness) and to report all injuries to the health care provider for treatment. The patient is advised to avoid wearing tight or restrictive clothing, sitting or standing in one position for long periods, and walking barefoot; also, shoes and cotton or woolen stockings should be carefully fitted, but

stockings should not be tight enough to hinder venous return from the legs. He should obtain medical care following any local trauma. Extremities must be protected from temperature extremes, esp. cold. The patient is taught Buerger's postural exercises if prescribed and is cautioned to avoid use of over-the-counter drugs without the attending health care provider's approval. The patient who smokes is referred to a smoking cessation program, but nicotine patch therapy should not be prescribed given the patient's associated hypersensitivity to nicotine. For the patient with ulcers and gangrene, bedrest is prescribed; a padded footboard or cradle is used to prevent pressure from bed linens. If hospitalization is required for treatment of ulcers or gangrene, or if amputation is required, rehabilitative needs are considered, esp. regarding changes in body image, and the patient is referred for physical and occupational therapy and for social services as appropriate.

**B.'s postural exercise** An exercise used for circulatory disturbances of the extremities. SYN: *Buerger-Allen exercise*.

**B. test** A noninvasive bedside test used to assess the adequacy of arterial blood flow into the legs. While the patient is lying flat on his back, both legs are elevated to an angle of 45°. Loss of the normal perfused color of either leg suggests that its arterial blood flow is compromised since a normal artery can pump blood against gravity without difficulty.

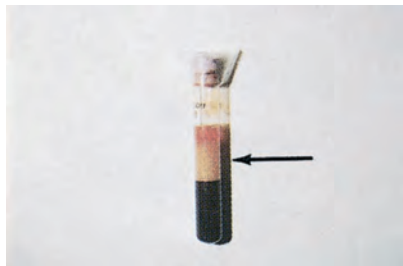
**buffalo hump** A deposit of fat in the lower midcervical and upper thoracic area of the back. It is usually caused by excessive adrenocortical hormone production or therapy.

**buffer** (büf'ēr) [ME. *buffe*, to deaden shock of] **1.** Any of several molecules that react with strong acids or bases to prevent large changes in the pH of body fluids. **2.** A substance tending to offset reaction of an agent administered in conjunction with it.

**blood b.** A chemical present in the blood that prevents rapid changes in pH. The principal buffers are carbonic acid, carbonates and bicarbonates, monobasic and dibasic phosphates, and proteins such as hemoglobin.

**buffy coat** A light stratum of blood seen when the blood is centrifuged or allowed to stand in a test tube. The red blood cells settle to the bottom and, between the plasma and the red blood cells, a light-colored layer contains mostly white blood cells. Platelets are at the top of this coat; the next layers, in order, are lymphocytes and monocytes; granulocytes; and reticulocytes. In normal blood, the buffy coat is barely visible; in

leukemia and leukemoid reactions, it is much larger. SEE: *illus.*



### BUFFY COAT

Buffy coat (arrow) in leukemia

**bufotoxin** (bü"fo-tōks'in) [L. *bufo*, toad, + Gr. *toxikon*, poison] A general term for any toxin present in the skin of a toad.

**bug** A term applied loosely to any small insect or arthropod, esp. of the order Hemiptera, that has sucking mouth parts, incomplete metamorphosis, and two pairs of wings, the fore pair being half membranous. SEE: *bedbug*; *chiggers*.

**assassin b.** A member of the family Reduviidae. Many are predaceous; others are blood-sucking. *Panstrongylus*, *Triatoma*, and *Rhodnius* are vectors of trypanosome diseases (Chagas' disease) in humans. SEE: *trypanosomiasts*.

**kissing b.** Several species of the family Reduviidae. *Melanolestes picipes* is the common kissing bug, or black corsair.

**red b.** Chiggers.

**bugleweed** (bü'g'l-wēd") A perennial herb of the genus *Lycopus*, principally found in moist habitats in Europe and North America. It is used mainly in homeopathic remedies for cardiac and thyroid disorders. It contains cardiac glycosides and iodine.

**built environment** The physical structure of cities, homes, and workplaces. How humans interact with the structures they design and construct influences a variety of health concerns, including accessibility, childhood and geriatric safety, the likelihood of injuries or illnesses, the mental health of the population, and the quality of shared environmental resources (such as air and water).

**bulb** (bülb) [L. *bulbus*, bulbous root; Gr. *bolbos*] Any rounded or globular structure.

**aortic b.** The dilated portion of the truncus arteriosus in the embryo that gives rise to the roots of the aorta and pulmonary arteries.

**duodenal b.** The upper duodenal area just beyond the pylorus.

**hair b.** The expanded portion at the

lower end of the hair root. The growth of a hair results from the proliferation of cells of the hair bulb.

**b. of the eye** Eyeball.

**b. of the urethra** The posterior portion of the corpus spongiosum found between the two crura of the penis.

**b. of the vestibule** Bulbus vestibuli.

**olfactory b.** An anterior enlargement of the olfactory tract.

**bulbar** (bül'bar) Pert. to or shaped like a bulb.

**bulbitis** (bül-bī'tis) [r + Gr. *itis*, inflammation] Inflammation of the urethra in its bulbous portion.

**bulbocavernosus** (bül'bō-kāv'ēr-nō'sūs) [r + *cavernosus*, hollow] A muscle ensheathing the bulb of the penis in the male or covering the bulbus vestibuli in the female. It is also called *ejaculator urinae* or *accelerator urinae* in males and *sphincter vaginae* in females.

**bulboid** (bül'boyd) [r + Gr. *eidōs*, form, shape] Shaped like a bulb.

**bulbonuclear** (bül'bō-nū'klē-ār) [r + *nucleus*, kernel] Pert. to the nuclei in the medulla oblongata.

**bulbospongiosus** (bül'bō-spōnjē-ō'sūs) One of the three voluntary muscles of the penis. It acts to empty the canal of the urethra after urination and to assist in erection of the corpus cavernosum urethrae. The anterior fibers contribute to penile erection by contracting to compress the deep dorsal vein of the penis.

**bulbous** (bül'būs) [L. *bulbus*] Bulb-shaped; swollen; terminating in an enlargement.

**bulbus** [L.; Gr. *bolbos*] Bulb.

**b. corpus spongiosum** Bulb of the urethra. A bulbous swelling of the corpus spongiosum penis at the base of the penis.

**b. vestibuli** Either of two oval masses of erectile tissue lying beneath the vestibule and resting on the urogenital diaphragm. In the female they are homologous to the bulbus spongiosum of the penis.

**bulimia** (bū-līm'ē-ā) [Gr. *boulimia*, ravenous hunger, fm. *bous*, ox + *limos*, hunger] Excessive and insatiable appetite. **bulimic** (-īk), *adj.*

**b. nervosa** A disorder marked by recurrent episodes of binge eating followed by feelings of humiliation, guilt and shame and self-deprecation, and resulting in self-induced vomiting and diarrhea, excessive exercise, strict dieting or fasting to reverse the effects of bingeing, and an exaggerated concern about body shape and weight. These behaviors must be present at least twice a week for 3 months to establish this diagnosis. SEE: *anorexia nervosa*.

**PATIENT CARE:** Early recognition and intervention may sometimes prevent this eating disorder from increas-

ing in severity and duration or producing harm.

Health history includes a weight history (frequency of weighing, premonitory weight, menstrual threshold, history of weight fluctuations). Changes are graphed to help identify stress-related patterns. The patient should be questioned regarding perceptions of ideal weight and total body appearance, as well as specific areas (e.g., hips, thighs, abdomen). Having the patient draw self-portraits may help to communicate this information. Any dieting behaviors are determined, including onset, type, frequency, and duration, what prompted them, and the presence of external influences, such as peer pressure. Characteristically, patients with bulimia demonstrate difficulty with impulse control, chronic depression, poor self esteem, low frustration tolerance, recurrent anxiety, alienation concerns, self-consciousness, difficulty expressing feelings of anger and impaired social or occupational adjustment.

Laboratory testing includes serum electrolyte studies and complete blood count to detect hypochlorhidria, hypokalemia, metabolic acidosis, or dehydration.

Assessments for psychologic, sexual, and physiologic manifestations of bulimia, including depression, suicidal ideation, and substance abuse, are important. Family history should include information concerning psychiatric problems, existence of physical or sexual abuse, communication patterns, and quality of relationships.

The patient with bulimia nervosa should be referred for counseling, cognitive behavioral therapy, or psychotherapy with emphasis placed on ways to break the binge/purge cycle and to regain control over eating behaviors. The patient and family must recognize and understand the need for inpatient or outpatient therapy, including behavior modification, cognitive behavioral therapy, structured group therapy, and family therapy. If antidepressants are used as adjunctive therapy, the dosing schedule and desired and adverse effects are explained.

**bulk 1.** In nutrition, a substance that absorbs water in the intestinal tract. The increased mass helps to stimulate peristalsis. Bulk materials include bran cereals, cellulose, lignins, and psyllium. They are used therapeutically to treat constipation and other bowel disorders. **2.** A mass; a large volume of cells, such as might be found in a tumor.

**bulla** (bül'lā) *pl.* **bullae** [L., a bubble] A large blister or skin vesicle filled with fluid; a bleb. SEE: *illius*; *pompholyx*.

**b. ethmoidalis** A rounded, thin-walled, bony projection into the middle



BULLAE OF IMPETIGO

meatus of the nose underneath the middle turbinate bone, formed by an anterior ethmoid sinus.

**b. ossea** The dilated portion of the bony external meatus of the ear.

**bullous** (bül'üs) [L. *bullā*, bubble] Like a blister or vesicle.

**bully** A person who uses physical or psychological means or force to get his or her way, esp. by intimidating or hurting others who may be smaller or weaker.

**BUN** *Blood urea nitrogen*.

**bundle** (bün'dël) A group of fibers. SYN: *fasciculus; fasciola*.

**Arnold's b.** The frontopontile tract. It passes from the cerebral cortex of the frontal lobe through the internal capsule and cerebral peduncle to the pons.

**atrioventricular b.** A bundle of fibers of the impulse-conducting system of the heart. From its origin in the atrioventricular node, it enters the interventricular septum, where it divides into two branches whose fibers pass to the right and left ventricles respectively, the fibers of each trunk becoming continuous with the Purkinje fibers of the ventricles. SYN: *A-V bundle*. SEE: *heart block*.

**A-V b.** Atrioventricular b.

**b. of His** SEE: under *His, Wilhelm Jr.*

**b. of Kent** Kent's bundles.

**bundle branch block** ABBR: BBB. Defect in the heart's electrical conduction system in which there is failure of conduction down one of the main branches of the bundle of His. On the surface electrocardiogram, the QRS complex is >0.12 sec. and its shape is altered. SYN: *bundle branch heart block; interventricular heart block*.

**left b.b.b.** ABBR: LBBB. Defect in the conduction system of the heart in which electrical conduction down the left bundle branch is delayed. On the 12-lead EKG, it gives the QRS complex a

widened QS complex in lead V<sub>1</sub> (0.12 sec.).

**right b.b.b.** ABBR: RBBB. Defect in the conductive system of the heart in which electrical conduction down the right bundle branch is delayed. On the 12-lead EKG, it gives the widened QRS complex an RSR appearance in leads V<sub>1</sub> and V<sub>2</sub>.

**bundling** (bün'dlĭng) A mandatory system of drug distribution involving monitoring and reporting side effects to the U.S. Food and Drug Administration.

**bung** (büng) [ME. *bunge*, stopper] A stopper or diaphragm that covers a vial and prevents fluids from escaping.

**bunion** (bün'yün) Inflammation and thickening of the first metatarsal joint of the great toe, usually associated with marked enlargement of the joint and lateral displacement of the toe.

**ETIOLOGY:** Bunions may be caused by heredity, degenerative bone or joint diseases such as arthritis, but most often are produced by tight-fitting shoes and high heels that force toes together and displace weight onto the forefoot.

**Bunnell block** (bün'něl) An orthotic device used after surgical repair of flexor tendon hand injuries. It prevents flexion at joints proximal to the one being exercised during the rehabilitation regimen.

**Bunsen burner** (bün'sĕn) [Robert W. E. von Bunsen, Ger. chemist, 1811–1899] A gas burner used primarily in laboratories, in which gas and air are mixed in variable concentrations to facilitate combustion.

**Bunyaviridae** (bün'yă-vĭr'ĭ-dē) A family of RNA viruses that are transmitted to people by insect bite and may cause fevers, rashes, central nervous system infections, and widespread bleeding.

**buphthalmia, buphthalmos** (büf-thäl'mĕ-ă, -mōs) [Gr. *bous*, ox, + *ophthalmos*, eye] Enlargement of the eye, usually, but not exclusively, as a result of pediatric glaucoma.

**bupropion** (bü-pröp'ĕ-ōn) An antidepressant medication that is also moderately effective in aiding smoking cessation, esp. when used along with cognitive and behavioral therapies.

**bur, burr** (bür) A rotating tool that is used to cut tissue, e.g. to shave fatty deposits from arteries or to cut or abrade tooth structure, bone, and other dental materials.

**Burch procedure, Burch colposuspension** (bürch) Surgery in which a sling is sutured around the urethra and neck of the bladder to the iliopectineal ligament. It is used to alleviate stress urinary incontinence in women.

**PATIENT CARE:** Vital signs, suprapubic catheter, and wound drainage are checked. The patient is helped to void as

needed. Fluid intake and output is measured and recorded.

**buret, burette** (bū-rét') [Fr.] 1. A special hollow glass tube usually with a stopcock at the lower end. It is used in chemical analysis to measure the amount of liquid reagent used. 2. A calibrated chamber used to ensure accurate measurement of small amounts of intravenous fluid and to prevent fluid infusion overload. The chamber is usually connected to a larger container of fluid. SYN: *volume controller*.

**Burkholderia** (bĕrk'hōl-dār'ē-ă) [NL.] A genus of aerobic gram-negative rod-shaped bacteria (family Pseudomonadaceae) that includes some species that are significant animal and plant pathogens and many other species that are environmentally active in biodegradation.

**B. cepacia** A species that causes nosocomial infections, esp. in intensive care units. Most susceptible are patients on mechanical ventilation and those with cystic fibrosis or chronic granulomatous disease. It is resistant to aminoglycosides and many cephalosporin antibiotics.

**B. gladioli** A species of multiply drug-resistant bacteria that may cause ocular infections, pneumonia (esp. in patients with cystic fibrosis), skin abscesses, and other infections.

**B. mallei** A species that causes glanders and farcy. It has been used as a biological weapon. It was formerly called *Pseudomonas mallei*.

**B. pseudomallei** A species that causes melioidosis.

**Burkitt's lymphoma** (bŭr'kĭts) [Denis P. Burkitt, Ugandan physician, 1911–1993] A rapidly growing, B-cell, non-Hodgkin's lymphoma. It is rare in the U.S. but common in equatorial Africa, where it often afflicts children aged 5 to 10 years. There is a strong association of this malignancy with Epstein-Barr virus.

**burn** [AS. *baernan*, to burn] Tissue injury resulting from excessive exposure to thermal, chemical, electrical, or radioactive agents. The effects may be local, resulting in cell injury or death, or both local and systemic, involving primary shock (which occurs immediately after the injury and is rarely fatal) or secondary shock (which develops insidiously following severe burns and is often fatal). In the U.S. about 1.25 million persons receive medical care for burns annually. More than 50,000 of these burn victims are hospitalized as a result of severe burn injury. Burns are usually classified as:

**First degree** A superficial burn in which damage is limited to the outer layer of the epidermis and is marked by redness, tenderness, and mild pain. Blisters do not form, and the burn heals

without scar formation. A common example is sunburn.

**Second degree** A burn that damages partial thickness of the epidermal and some dermal tissues but does not damage the lower-lying hair follicles, sweat, or sebaceous glands. The burn is painful and red; blisters form, and wounds may heal with a scar.

**Third degree** A burn that extends through the full thickness of the skin and subcutaneous tissues beneath the dermis. The burn leaves skin with a pale, brown, gray, or blackened appearance. The burn is painless because it destroys nerves in the skin. Scar formation and contractures are likely complications. SEE: *illius*.

**Fourth degree** A burn that extends through the full thickness of the skin and into underlying bone, fat, muscles, and tendons. Third- and fourth-degree burns are best managed at specialized burn centers.

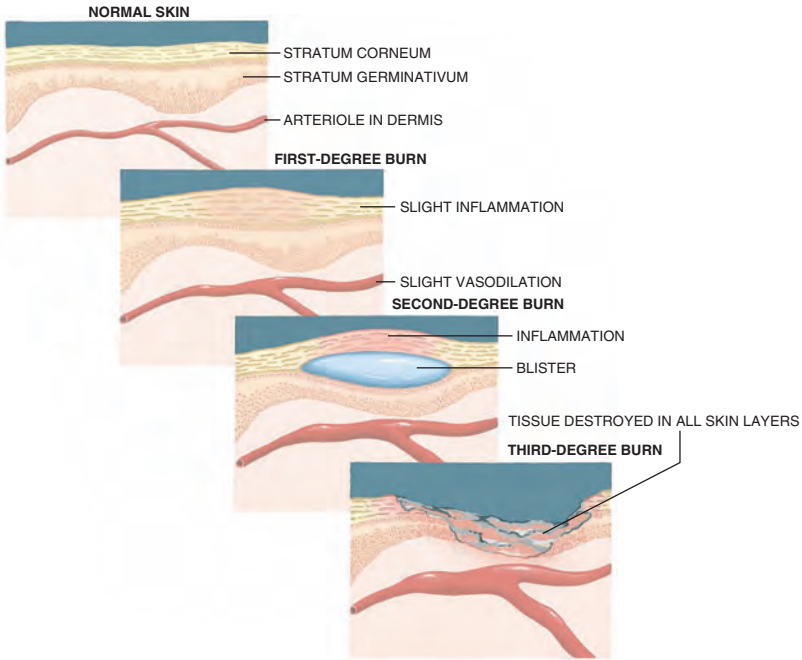
**COMPLICATIONS:** Sloughing of skin, gangrene, scarring, erysipelas, nephritis, pneumonia, immune system impairment, or intestinal disturbances are possible complications. Shock and infection must always be anticipated with higher-degree or larger burns. The risk of complication is greatest when more than 25% of the body surface is burned.

**ETIOLOGY:** Burns may result from ultraviolet radiation, bursts of steam, heated liquids and metals, chemical fires, electrocution, or direct contact with flame or flammable clothing.

**PRECAUTIONS:** A person in burning clothing should never be allowed to run. The individual should lie down and roll. A rug, blanket, or anything within reach can be used to smother the flames. Care must be taken so that the individual does not inhale the smoke. The clothing should be cut off carefully so that the skin is not pulled away. Synthetic fabrics that have melted into the burn wound are best removed later in the emergency department or burn center. Jewelry should be removed even if not near the burn wounds due to concerns for fluid shifts and swelling. Blisters should not be opened, as this increases the chance for infection. Patients with large burn areas or third- and fourth-degree burns must receive appropriate tetanus prophylaxis.

**NOTE:** In severe, widespread burns, the patient must be transferred to a burn center as soon as is practical.

**TREATMENT:** The first responsibility in the care of the burn patient is to assess the patency of the airway and to ensure that breathing is unimpaired. If smoke inhalation or airway injury is suspected, intubation should be performed before edema makes this impossible. Airway injury is most likely to occur



BURNS

after facial burns or smoke inhalation in closed spaces. A cough productive of soot or charred material increases the likelihood of inhalational injury.

The second task in burn care is to ensure cardiac output and tissue perfusion. Volume resuscitation with crystalloid is given per standard protocols; at the same time, urinary output, blood pressure and pulse, body weights, and renal function are closely monitored to ensure adequate hydration.

The immediate care of the burn itself involves the removal of any overlying clothing and jewelry and the irrigation of the affected tissues with cool water, taking care to avoid excessively cooling the body. To help prevent hypothermia and infection, cover the burn wounds with sterile dressings if available, or a clean sheet, separating burn wound surfaces. Gentle tissue débridement should be followed by application of nonadherent dressings, skin substitutes, topical antiseptics, or autografts, as dictated by circumstances. Tetanus prophylaxis is routinely given, usually with both tetanus toxoid and tetanus immune globulin.

In specific circumstances, additional interventions such as hyperbaric oxygen therapy for carbon monoxide intoxication, escharotomy for circumferential burns, antibiotic therapy for infections,

pressor support for hypotension, or nutritional support may be needed.

Patients with large or complex burn injuries should be transferred to regional burn centers or to the care of surgeons with special interest in burn management.

**PATIENT CARE:** During rehabilitation, individually fitted elastic garments are applied to prevent hypertrophic scar formation, and joints are exercised to promote a full range of motion. The patient is encouraged to increase activity tolerance, obtain adequate rest, strive for physical and emotional independence, and resume vocational and social functioning. Referrals for occupational therapy, psychological counseling, support groups, or social services are often necessary. Reconstructive and cosmetic surgery may be required. Support groups and services are available to assist the patient with life adjustments.

Patients' previous psychological states may predispose them to injury and may have an adverse effect on recovery. Patients with burn injuries demonstrate a wide range of emotional responses including anger, frustration, irritability, and psychological states (delirium, anxiety, depression, and grief). Posttraumatic stress disorder



(PTSD) may occur after a burn injury. Often, the PTSD patient will need help from primary or specialized care providers to recover psychologically. Explain patient needs and care concerns to family to help alleviate their cares and concerns (and varied psychological responses). Involve them with you in patient care as permissible. Family members should be encouraged to sit with the patient, and to touch, speak to, read to, and otherwise communicate with the patient. Providing patients with a sense of purpose will help to alleviate feelings of helplessness and will provide both patient and family with more comfortable and comforting memories. SEE: *Nursing Diagnoses Appendix*.

**acid b.** A burn caused by exposure to corrosive acids such as sulfuric, hydrochloric, and nitric.

**EMERGENCY CARE:** The burn area should be washed with large volumes of water. For further details of definitive treatment, see under *sulfuric acid poisoning*.

**actinic b.** Burns caused by ultraviolet or sun rays. Treatment is the same as for dry heat burns.

**b. of aerodigestive tract** Necrosis of the oral mucosa, trachea, or esophagus due to the ingestion of caustic substances. After an assessment of the patient's airway, breathing, and circulation, the medical team determines the severity of the exposure by physical examination or laryngoscopy. Some patients may require hospitalization for local care and the administration of intravenous steroids, histamine antagonists, and antibiotics. Late complications may include strictures of the affected internal organs.

**alkali b.** A burn caused by caustic alkalies such as lye, caustic potash (potassium hydroxide), and caustic soda (sodium hydroxide), and marked by a painful skin lesion, often associated with gelatinization of tissue.

**EMERGENCY CARE:** The burn is irrigated with large volumes of water and dressed.



Be careful to brush dry powder off the skin before applying water, as some chemicals, such as lye, react with water.

**brush b.** A combined burn and abrasion resulting from friction.

**TREATMENT:** Loose dirt is carefully brushed away and the area is cleansed with soap and water. An antiseptic solution or ointment is applied and covered with a dressing. Tetanus toxoid or antitoxin is given if required.

**chemical b.** Tissue destruction caused by corrosive or irritating chemicals such as strong acids or bases, phe-

nols, pesticides, disinfectants, fertilizers, or chemical warfare agents.

**TREATMENT:** Irrigate with large quantities of water.

**electric b.** Tissue destruction caused by the passage of electrical current through the body, usually as a result of industrial accidents or lightning exposures. Entry and exit wounds are usually present; significant internal organ damage may be found along the path of the current through the body.

**b. of eye** A burn of the eyeball due to contact with chemical, thermal, electrical, or radioactive agents.

**EMERGENCY CARE:** The eye should be washed immediately with the nearest available supply of water, even if it is not sterile. Irrigation may need to be continued for hours if burn is due to lye. Care must be taken to prevent runoff from draining into the uninjured eye.

**fireworks b.** Injury from explosives; usually a burn, often with embedded foreign bodies and a high incidence of infection and tetanus, which should be prevented by meticulous care of injury and use of antitetanus toxoid and immune globulin.

**flash b.** A burn resulting from an explosive blast such as occurs from ignition of highly inflammable fluids, or in war from a high-explosive shell or a nuclear blast.

**gunpowder b.** A burn resulting from exploding gunpowder, usually at very close range. It is often followed by tetanus, which should be prevented by administration of antitetanus toxoid and immune globulin and meticulous care of the injury area.

**inhalation b.** Inhalation injury.

**radiation b.** A burn resulting from overexposure to radiant energy as from x-rays, radium or other radioactive elements, sunlight, or nuclear blast.

**respiratory b.** A burn to the components of the respiratory system usually caused by inhaling superheated gases. SEE: *inhalation injury*.

**thermal b.** A burn resulting from contact with fire, hot objects, or fluids. SEE: *illness*.



**BLISTERED PARTIAL THICKNESS  
THERMAL BURN**

**x-ray b.** SEE: *radiation burn*.

**burn center** A hospital-based health care facility staffed with specialists essential to the comprehensive care of burn patients.

**burner** (bŭrn'ēr) Trauma to the brachial plexus, marked by a fiery sensation in the neck that radiates down the arm, esp. when the neck is deviated from the involved side and the contralateral shoulder is depressed. This condition, which is esp. prevalent in contact sports, causes the cervical nerve root to become compressed between two vertebrae. Weakness and numbness follow the burning sensation but are usually transient. Repeated brachial plexus trauma can result in permanent neuropathy. SYN: *stinger*.



The presence of a vertebral fracture should be ruled out (e.g., with x-rays) before testing for brachial plexus trauma.

**Burnett's syndrome** [Charles Hoyt Burnett, U.S. physician, 1913–1967] Milk-alkali syndrome.

**burning foot syndrome** A painful sensation in the sole of the foot, usually caused by a peripheral neuropathy or myopathy. It occurs in certain vitamin deficiencies and in patients with chronic renal failure, due to build-up of uremic waste products. SYN: *Grierson-Gopalan syndrome*.

**burning mouth syndrome** A burning sensation in one or several parts of the mouth. It occurs in older adults and is generally related to menopausal or psychological factors. Identified causes are denture irritation, yeast infection, decreased salivary production, systemic factors such as nutritional and estrogen deficiencies, and sensory neuropathies. It is also called *oral dysesthesia*. Treatment consists of therapy for the causative condition. SYN: *burning tongue*; *glossopyrosis*.

**burnish** (bēr'nish) To condense or polish a metal surface with a smooth metal instrument.

**burnisher** (bēr'nish-ēr) An instrument with a blade or nib for smoothing the margins of a dental restoration.

**burnout** (bŭrn'owt) **1.** Rendering unserviceable by excessive heat. **2.** Exhaustion due to chronic job stress. It is characterized by physical and emotional fatigue and sometimes physical illness. Frustration from a perceived inability to end the stresses and problems associated with powerlessness in one's job contribute to loss of concern for patients or good job performance. Health care professionals are esp. prone to burnout, particularly those working in highly stressful conditions.

**wax b.** Removal of an invested wax pattern from a mold by heating, thereby creating the mold space for casting metal.

**Burow's solution** (boo'rōz) [Karl August von Burow, Ger. surgeon, 1809–1874] A dilute solution of aluminum acetate; used in dermatology as a drying agent for weeping skin lesions.

**burp** **1.** To belch. **2.** To hold a baby against the chest and pat it on the back to induce belching.

**BURP maneuver** The application of backward, upward, and rightward pressure to the larynx as part of an effort to facilitate endotracheal intubation, e.g., during advanced cardiac life support.

**burr** SEE: *bur*.

**burrow** (bŭr'rō) A tunnel made in or under the skin (e.g., by an insect or a parasite). SEE: *cutaneous larva migrans*; *scabies*.

**burrowing** (bŭr'ō-ing) The formation of a subcutaneous tunnel made by a parasite or of a fistula or sinus containing pus.

**bursa** (bŭr'sā) *pl.* **bursae** [Gr., a leather sack] **1.** A padlike sac or cavity found in connective tissue usually in the vicinity of joints. It is lined with synovial membrane and contains a fluid (synovia) that reduces friction between tendon and bone, tendon and ligament, or between other structures where friction is likely to occur. **2.** A blind sac or cavity.

**Achilles b.** A bursa located between the Achilles tendon and the calcaneus.

**adventitious b.** A bursa not usually present but developing in response to friction or pressure.

**calcaneal b.** The bursa between the Achilles tendon and the heel bone.

**Calori's b.** SEE: *Calori's bursa*.

**olecranon b.** A bursa at the elbow joint lying between the olecranon process and the skin.

**omental b.** The lesser peritoneal cavity; the cavity of the great omentum. It communicates with the greater or true peritoneal cavity via the vestibule and epiploic foramen.

**patellar b.** Formed by several bursae located in the region of the patella; includes the suprapatellar, infrapatellar, and prepatellar bursae. Some communicate with the cavity of the knee joint.

**pharyngeal b.** A small, median, blind sac found in the lower portion of the pharyngeal tonsil.

**retrohyoid b.** A bursa anterior to the thyrohyoid membrane. It was formerly called Boyer's bursa.

**subacromial b.** The large bursa lying between the acromion and the coracoacromial ligament above and the insertion of the supraspinatus muscle below. It is also known as the subtendinous bursa.

**bursal** (bŭr'sāl) Pert. to a bursa.

**bursectomy** (bŭr-sĕk'tō-mē) [Gr. *bursa*,

a leather sack, + *ektome*, excision] Excision of a bursa.

**bursitis** (bŭr-sī'tis) [*r* + *itis*, inflammation] Inflammation of a bursa, esp. between bony prominences and muscle or tendon, as in the shoulder and knee. It is typically caused by repeated stresses placed on a joint during work or play, but sometimes results from sudden trauma, from inflammatory joint disease, or bacterial invasion of the joint ("septic bursitis"). Common forms include rotator cuff, miner's or tennis elbow, and prepatellar bursitis. Fluid accumulation in the bursa results in irritation, inflammation, and sudden or gradual pain, as well as symptoms such as impaired joint movement. SEE: *Nursing Diagnoses Appendix*.

**TREATMENT:** Therapy includes rest and immobilization of the affected part during the acute stage. Active mobilization as soon as acute symptoms subside will help to reduce the likelihood of adhesions. Nonsteroidal anti-inflammatory drugs, analgesics, local application of cold then heat, and diathermy are helpful. Fluid removal (aspiration of the bursa) and injection of local anesthetics and cortisone into bursae may be required to reduce inflammation and relieve pain. In chronic bursitis, surgery may be necessary.

**PATIENT CARE:** Rest is prescribed, and movement of the affected part is restricted during the acute phase if pain and limited range of joint motion are present. If pain and loss of function are severe and do not improve with rest, the patient is referred for medical evaluation; physical therapy may also be needed to maintain joint mobility and prevent neighboring muscle atrophy.

**anserine b.** Inflammation of the sartorius bursa located over the medial side of the tibia just below the knee.

**bursolith** (bŭr'sō-lith) [*r* + *lithos*, stone] A calculus formed in a bursa.

**bursopathy** (bŭr-sōp'ā-thē) [*r* + *pathos*, disease, suffering] Any pathological condition of a bursa.

**bursotomy** (bŭr-sōt'ō-mē) [*r* + *tome*, incision] Incision of a bursa.

**Burton's line** (bŭr'tōns) [Henry Burton, Brit. physician, 1799–1849] A blue line along the margin of the gingiva visible in chronic lead poisoning.

**Buruli ulcer** (bŭ-rool'ē) [Fm. the Buruli (now Nakasongola) District in Uganda] An infection of the skin and underlying tissues with *Mycobacterium ulcerans*. The infection, which is common in tropical and subtropical nations, develops slowly from a painless or minimally painful nodule on the skin into underlying bone, which it gradually destroys. The spread of the disease may be prevented with bacille Calmette-Guérin (BCG) vaccine.

**Buschke's scleredema** (boosh'kēz, kēz) [Abraham Buschke, Ger. dermatologist, 1868–1943] Generalized nonpitting edema that begins on the head or neck and spreads to the body. This lasts a year or less and leaves no sequelae. The cause is unknown. SYN: *scleredema ad-ultorum*.

**butane** (bŭ'tān) C<sub>4</sub>H<sub>10</sub>; a gaseous, inflammable hydrocarbon derived from petroleum.

**butt** [ME. *butte*, end] To join the ends of two objects together.

**butterbur** (bŭt'ēr-bŭr) An herb, *Petasites hybridus*, from which an herbal remedy is made for treatment of migraine headache and allergic rhinitis.

**butterfly** (bŭt'ēr-flī) An adhesive bandage used in place of sutures to hold wound edges together.

**buttermilk** (bŭt'ēr-milk") The liquid left after the separation of butter from milk or cream. It contains 2% fat. Cultured buttermilk is made by adding streptococci to milk to give it a sour flavor.

**buttocks** (bŭt'ŭks) [AS. *buttic*, end] The external prominences posterior to the hips; formed by the gluteal muscles and underlying structures. SYN: *nates*.

**button** (bŭt'n) An anatomical or pathological structure that resembles a button.

**buttonhole** (bŭt'ŏn-hŏl") An incision (sometimes inadvertent) into the wall of a cavity or membrane. This term may be applied to surgical procedures on hollow organ systems such as the gastrointestinal, urinary tract, and cardiovascular systems and to some of myocutaneous grafts.

**butylene** (bŭ'tī-lēn) A hydrocarbon gas, C<sub>4</sub>H<sub>8</sub>.

**butyraceous** (bŭ'tī-rā'shŭs) [L. *butyrum*, butter] Containing or resembling butter.

**butyrate** (bŭ'tī-rāt) A salt of butyric acid.

**butyrin** (bŭ'tīr-īn) A soft, yellow semiliquid fat that is present in butter.

**butyroid** (bŭ'tī-royd) [*r* + Gr. *eidōs*, form, shape] Having the appearance or consistency of butter.

**butyrometer** (bŭ'tī-rŏm'ē-tēr) [*r* + Gr. *metron*, measure] A device for estimating the amount of butterfat in milk.

**butyrophenone** (bŭ'tī-rŏ-fē'nŏn) A class of drugs, some of which are used to treat psychoses, acute agitation, Tourette's syndrome, and other disorders. Tardive dyskinesia may be a side effect of prolonged use.

**BV** *Bacterial vaginosis*.

**B virus** *Cercopithecine herpesvirus 1*

**Byler's disease** (bī'lēr's) An inherited disorder with a defect on chromosome 18 in which infants develop cholestatic jaundice and eventually cirrhosis. A high incidence of retinitis pigmentosa is associated with this disease, and mental re-

tardation is frequently seen in affected children. Death from liver disease occurs by adolescence. **SYN:** *progressive familial intrahepatic cholestasis*.

**bypass** (bī"pās") A means of circumvention; a shunt. It is used surgically to install an alternate route for the blood to flow past an obstruction if a main or vital artery such as the abdominal aorta or a coronary artery becomes obstructed. The various procedures are named according to the arteries involved (e.g., coronary artery, aortoiliac, or femoropopliteal bypasses). The circulation of the heart may be bypassed by providing an extracorporeal device to pump blood while a surgical procedure is being done on the coronary arteries or cardiac valves. **SEE:** *illius*.

**aortocoronary b.** Coronary artery bypass surgery.

**extra-anatomic vascular b.** Surgical revascularization for peripheral vascular disease of the limbs, using a prosthetic graft (e.g., axillofemorally or femorofemorally) to divert blood to a site distal to an arterial obstruction.

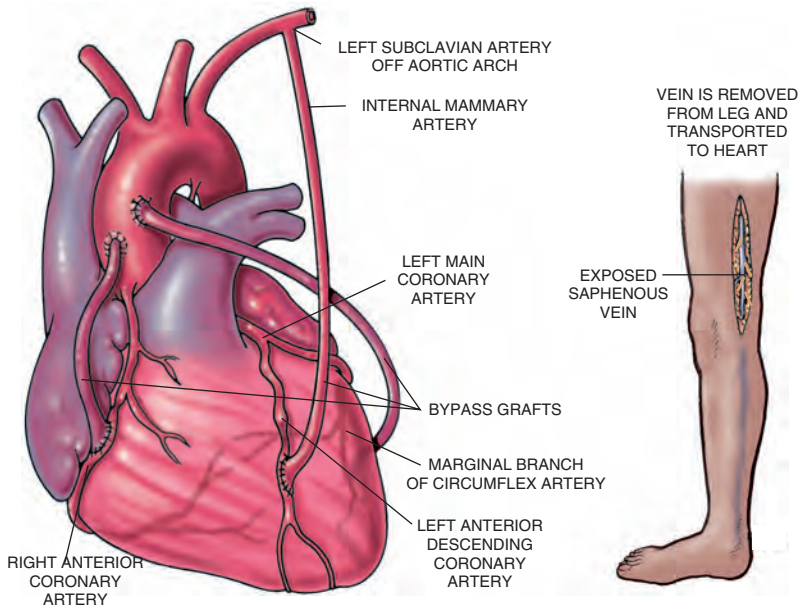
**PATIENT CARE:** Postoperatively, it is important to monitor the patient's vital signs for changes, esp. of pulse and rhythm, and to assess the patient for symptoms of angina pectoris or arrhythmias. Cardiac monitoring and frequent

ECGs are routine aspects of care. The surgical wound is checked for bleeding or hematoma formation, or signs of infection or dehiscence. Peripheral pulses are palpated using a doppler, if necessary, to determine peripheral perfusion.

**gastric b.** Any surgical procedure in which the stomach, or most of the stomach, is isolated and disconnected from the rest of the upper gastrointestinal tract. **SEE:** *Roux-en-y gastric bypass*.

**jejunoileal b.** A surgical procedure for decreasing absorption of nutrients from the small intestine by anastomosing the proximal jejunum to the distal ileum. Although it can be used to treat obesity, jejunoileal bypass has been replaced by gastric bypass procedures because of the significant complications of jejunoileal bypass surgery.

**byssinosis** (bīs"ī-nō'sis) [Gr. *byssos*, cotton, + *osis*, condition] Reactive airways disease of cotton, flax, and hemp workers. Byssinosis is caused by the inhalation of dust and foreign materials, including bacteria, mold, and fungi. The disease does not occur in textile workers who work with cotton after it is bleached. It is marked by symptomatic wheezing and tightness in the chest. Symptoms are usually more pronounced at the beginning of each work week than later on. **SEE:** *pneumoconiosis*.



### CORONARY ARTERY BYPASS

Anterior view of heart with sites of saphenous vein bypass grafts