



**L, l** *Lactobacillus*; Latin; left; left eye; length; lethal; light sense; liter.

**L-** In biochemistry, a symbol used as a prefix to indicate that the carbon atom is symmetrical (or achiral) and that only three dissimilar groups attach to it. SEE: *D-*.

**L1, L2, etc.** first lumbar nerve, second lumbar nerve, and so forth.

**LA** left atrium.

**La** Symbol for the element lanthanum.

**lab** Colloquial for laboratory.

**label** The attachment of a radioactive marker or other chemical to a biologically active substance such as a drug or body chemical (such as glucose, protein, or fat). The metabolic fate of the labeled material may be investigated by detecting the presence of the label in various body sites or in excretions. The labeling material is chosen so that it does not alter the metabolism or action of the substance being investigated. SEE: *tracer*.

**labeling** SEE: *tag, radioactive; tagging*.

**la belle indifference** (lä'bĕl-än-dif-ĕ-röns') [Fr., beautiful indifference] A disproportionate degree of indifference to, or complacency about, symptoms such as paralysis or loss of sensation in a part of the body. It is characteristic of conversion disorders.

**labia** (lä'bĕ-ä) [L.] Plural of labium.

**l. majora** The two folds of skin and adipose tissue on either side of the labia minora and vaginal opening; they form the lateral borders of the vulva. Their medial surfaces unite anteriorly above the clitoris to form the anterior commissure; posteriorly they are connected by a poorly defined posterior commissure. They are separated by a cleft, the rima pudendi, into which the urethra and vagina open. In young girls, their medial surfaces are in contact with each other, concealing the labia minora and vestibule. In older women, the labia minora may protrude between them.

**l. minora** The two thin folds of integument that lie between the labia majora. They enclose the vestibule. Anteriorly each divides into two smaller folds that unite with similar folds from the other side and enclose the clitoris, the more anterior one forming the prepuce (preputium clitoridis) of the clitoris and the posterior one the frenulum clitoridis. In young girls, they are hidden entirely by the labia majora.

**labial** (lä'bĕ-äl) [L. *labialis*] Pert. to the lips.

**labialism** (lä'bĕ-äl-izm) [L. *labium*, lip, + Gr. *-ismos*, state of] A kind of stam-

mering in which sounds made by the lips are prominent.

**labile** (lä'bĭl) [L. *labi*, to slip] Not fixed; unsteady; changeable.

**heat l.** Destroyed or changed easily by heat; unstable. Also called *thermolabile*.

**lability** (lä-bĭl'ĭ-tĕ) The state of being unstable or changeable.

**emotional l.** Excessive emotional reactivity associated with frequent changes or swings in emotions and mood.

**labioalveolar** (lä'bĕ-ö-äl-vĕ'ö-lär) [L. *labium*, lip, + *alveolus*, little hollow] Pert. to the lips and tooth sockets.

**labiocervical** (lä'bĕ-ö-sĕr'vĭ-kl) [l" + *cervix*, neck] Pert. to the buccal surface of the lips and the neck of a tooth.

**labioinclination** (lä'bĕ-ö-klĭ-nä'shün) [l" + Gr. *klīnein*, to slope] In dentistry, deviation of a tooth from the normal vertical toward the labial side.

**labiodental** (lä'bĕ-ö-dĕn'täl) [l" + *dens*, tooth] **1.** Concerning the lips and teeth, esp. the labial surface of a tooth. **2.** Referring to the pronunciation of certain letters that require interaction of the teeth and lips.

**labiogingival** (lä'bĕ-ö-jĭn'jĭ-väl) [l" + *gingiva*, gum] Concerning the lips and gums or referring to the labial and gingival surfaces of a tooth.

**labioglossolaryngeal** (lä'bĕ-ö-glös'ö-lär-in'jĕ-äl) [l" + Gr. *glossa*, tongue, + *larynx*, larynx] Pert. to the lips, tongue, and larynx.

**labioglossopharyngeal** (lä'bĕ-ö-glös'ö-fär-in'jĕ-äl) [l" + " + *pharynx*, throat] Pert. to the lips, tongue, and pharynx.

**labiamental** (lä'bĕ-ö-mĕn'täl) [l" + *mentum*, chin] Pert. to the lower lip and chin.

**labioplasty** (lä'bĕ-ö-pläs'tĕ) [l" + Gr. *plassein*, to form] Cheiloplasty.

**labioversion** (lä'bĕ-ö-vĕr'zhün) [l" + *versio*, a turning] The state of being twisted in a labial direction, esp. a tooth.

**labium** (lä'bĕ-üm) *pl. labia* [L.] A lip or a structure like one; an edge or fleshy border.

**l. majus** SEE: *Labia majora*.

**l. minus** SEE: *Labia minora*.

**l. uteri** The thickened margin of the cervix uteri.

**labor** [L., work] In pregnancy, the process that begins with the onset of repetitive and forceful uterine contractions sufficient to cause dilation of the cervix and ends with delivery of the products

of conception. SYN: *childbirth; parturition*. SEE: *illus.*

Traditionally, labor is divided into three stages. The *first stage of labor*, progressive cervical dilation and effacement, is completed when the cervix is fully dilated, usually 10 cm. This stage is subdivided into the latent phase and the active phase.

*First stage (stage of dilation):* This is the period from the onset of regular uterine contractions to full dilation and

effacement of the cervix. This stage averages 12 hr in primigravidas and 8 hr in multiparas.

The identification of this stage is particularly important to women having their first baby. Its diagnosis is complicated by the fact that many women experience false labor pains, which may begin as early as 3 to 4 weeks before the onset of true labor. False labor pains are quite irregular, are usually confined to the lower part of the abdomen and



1. LABOR BEGINS, MEMBRANES INTACT.



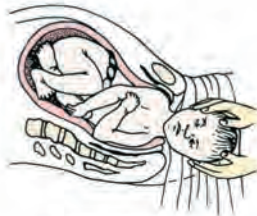
2. EFFACEMENT OF CERVIX, WHICH IS NOW PARTIALLY DILATED.



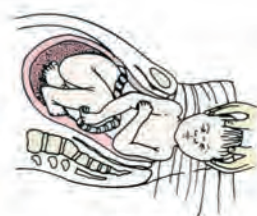
3. HEAD IS ROTATED, PARTIALLY EXTENDED, AND NOW PRESENTS. MEMBRANES ARE RUPTURED.



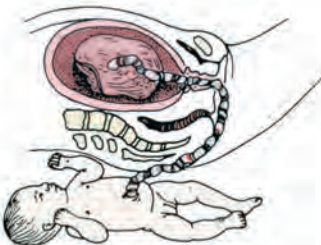
4. HEAD IS ALMOST DELIVERED.



5. DELIVERY OF HEAD.



6. DELIVERY OF SHOULDERS.



7. DELIVERY OF INFANT IS COMPLETE. UTERUS BEGINS TO CONTRACT.



8. UMBILICAL CORD HAS BEEN TIED AND CUT. PLACENTA HAS BEGUN TO SEPARATE FROM UTERUS.

#### SEQUENCE OF LABOR AND CHILDBIRTH

groin, and do not extend from the back around the abdomen as in true labor. False labor pains do not increase in frequency and duration with time and are not made more intense by walking. The conclusive distinction is made by determining the effect of the pains on the cervix. False labor pains do not cause effacement and dilation of the cervix as do true labor pains. SEE: *Braxton Hicks contractions*.

A reliable sign of impending labor is *show*. The appearance of a slight amount of vaginal blood-tinged mucus is a good indication that labor will begin within the next 24 hours. The loss of more than a few milliliters of blood at this time, however, must be regarded as being due to a pathological process. SEE: *placenta previa*.

**Second stage (stage of expulsion):** This period lasts from complete dilatation of the cervix through the birth of the fetus, averaging 50 min in primigravidas and 20 min in multiparas. Labor pains are severe, occur at 2- or 3-min intervals, and last from a little less than 1 min to a little more than 1½ min.

Rupture of the membranes (bag of water) usually occurs during the early part of this stage, accompanied by a gush of amniotic fluid from the vagina. The muscles of the abdomen contract involuntarily during this portion of labor. The patient directs all her strength to bearing down during the contractions. She may be quite flushed and perspire. As labor continues the perineum bulges and, in a head presentation, the scalp of the fetus appears through the vulvar opening. With cessation of each contraction, the fetus recedes from its position and then advances a little more when another contraction occurs. This continues until more of the head is visible and the vulvar ring encircles the head like a crown (therefore often called *crowning*).

At this time the decision is made concerning an incision in the perineum (i.e., episiotomy) to facilitate delivery. If done, it is most commonly a midline posterior episiotomy. When the head is completely removed out of the vagina it falls posteriorly; later the head rotates as the shoulders turn to come through the pelvis. There is usually a gush of amniotic fluid as the shoulders are delivered.

**Third stage (placental stage):** This is the period following the birth of the fetus through expulsion of the placenta and membranes. As soon as the fetus is delivered, the remainder of the amniotic fluid escapes. It will contain a small amount of blood. Uterine contractions return, and usually within 8 to 10 min the placenta and membranes are delivered. After this, there is some bleeding

from the uterus. The amount may vary from 100 to 500 ml.

The amount of blood loss will vary with the size of the fetus, but the average is 200 ml. The probability that blood loss will exceed 500 ml is increased with a large fetus or multiple fetuses, as the placental attachment area on the uterine wall is larger and the uterus is more distended, meaning it does not contract as well after delivery of the fetus, placenta, and membranes. The above probability is less than 5% if the fetus weighs 5 lb (2268 g) or less. Other factors such as episiotomy or perineal laceration will also affect the amount of blood loss. SEE: *birthing chair*; *Credé's method* for assisting with the expulsion of the placenta.

**PATIENT CARE:** Often pregnant women and their partners or a labor coach who will be with them attend prenatal classes taught by obstetrical nurses to prepare the patient and family for labor, delivery, and care of the newborn. Such classes include exercises; breathing techniques; supportive care measures for labor, delivery, and the postpartum period; and neonatal care and feeding techniques. Expectant couples (or the pregnant woman and a support person) should attend classes together. The goals of expectant parent education are the birth of a healthy infant and a positive experience for the woman/couple. Labor and delivery may take place in a hospital, birthing center, or at home. Hospitals offer care in traditional labor and delivery rooms and, increasingly, in birthing rooms that simulate a homelike environment. Prenatal records are made available in order to review medical, surgical, and gynecological history; blood type and Rh; and esp. any prenatal problems in the pregnancy. If the mother is Rh negative and if the Rh status of the fetus is unknown or positive, the nurse will administer Rh immune globulin to the mother within 72 hr after delivery.

As part of the admission workup of the laboring woman, the nurse assesses vital signs, height and weight, fetal heart tone and activity, and labor status (i.e., condition of membranes, show, onset time of regular contractions, contraction frequency and duration, and patient anxiety, pain, or discomfort). Initial laboratory studies are carried out according to protocol. The obstetrician, resident physician or other house staff, nurse-midwife, lay midwife, or obstetrical nurse examines the patient, depending on the site and policy. The abdomen is palpated to determine fetal position and presentation (Leopold's maneuvers), and a sterile vaginal examination determines cervical dilatation and effacement, fetal station, and

position of the presenting part. The attending nurse or midwife monitors and assesses fetal heart rate and the frequency and duration of contractions, using palpation and a fetoscope or electronic monitoring. The frequency of assessment and repetition of vaginal examination are determined by the patient's labor stage and activity and by fetal response. In the past, admission to a labor suite usually included a perineal shave and enema in preparation for delivery, but these procedures have been largely discontinued and are currently done only if prescribed for a particular patient. The patient should urinate and have a bowel movement, if possible. Bladder distention is to be avoided, but catheterization is carried out only if all other efforts to encourage voiding in a patient with a distended bladder fail. The perineum is cleansed (protecting the vaginal introitus from entry of cleansing solutions) and kept as clean as possible during labor. Special cleansing is performed before vaginal examination and delivery, as well as after expulsion of urine or feces.

*First stage:* The patient may be alert and ambulating, depending on membrane status, fetal position, and labor activity. Electrolyte-rich oral liquids may be prescribed, or intravenous therapy initiated. The nurse supports the patient and her partner or other support person and monitors the progress of the labor and the response of the fetus, notifying the obstetrician or midwife of any abnormal findings. When membranes rupture spontaneously or are ruptured artificially by the midwife or obstetrician, the color and volume of the fluid and the presence of meconium staining or unusual odor are noted. To distinguish it from a sudden spurt of urine having a slightly acid pH, the fluid may be tested for alkaline pH using nitrazine paper. The fetal heart rate, an indicator of fetal response to the membrane's rupture, is noted. Noninvasive pain relief measures are provided, prescribed analgesia is administered as required by the individual patient, and regional anesthetic use is monitored. Patient-controlled epidural anesthesia (PCEA) or continuous epidural anesthesia is frequently employed, based on patient satisfaction regarding its timeliness and effectiveness, and the patient's preference for having pain management under her control.

*Second stage:* The patient may deliver in any agreed-on position, including lithotomy or modified lithotomy, sitting, or side lying, in a birthing chair, in a birthing bed, or on a delivery table. The nurse, midwife, or physician continues to monitor the patient and fetus; prepares the patient for delivery (cleansing

and draping); sets up delivery equipment; and supports the father or support person (positioned near the patient's head), positioning the mirror or TV monitor to permit viewing of delivery by the couple. The nurse also notes and documents the time of delivery, determines the infant's Apgar score, and provides initial infant care after delivery, including further suctioning of the nasopharynx and oropharynx as necessary (initial suctioning is done by the deliverer before delivering the infant's shoulders), drying and warming the infant (head covering, blanket wrap, or thermal warmer), application of cord clamp (after the deliverer double-clamps the cord and cuts between the clamps), and positive identification (footprints of infant and thumb prints or fingerprints of mother, and application of numbered ankle and wrist band to the infant and wrist band to the mother). Eye prophylaxis for gonorrhea and chlamydia may be delayed up to 2 hr to facilitate eye contact and to enhance maternal-infant bonding, or may be refused by the parents, on signing of an informed consent. An Apgar score of the infant's overall condition is obtained at 1 min and 5 min after the birth. The infant in good condition is placed on the mother's chest or abdomen for skin to skin contact. This position enhances bonding and maintains infant warmth. Alternately, the infant is put to the breast, and the woman/couple is encouraged to inspect and interact with the infant. An infant in distress is hurried to the nursery, usually with the father or support person attending, so that specialized care can be provided by nursery and neonatal-nurse specialists, and a pediatrician. If the infant is critically ill, its birth may be attended by a chaplain, and photographs may be taken to assist the parents in dealing with the life, critical time, and possible death of the infant.

*Third stage:* The nurse continues to monitor the status of the patient and the fundus through delivery of the placenta and membranes (documenting the time), examination of the vagina and uterus for trauma or retained products, and repair of any laceration or surgical episiotomy. The placenta is examined to ascertain that no fragments remain in the uterus. The perineal area is cleansed and the mother is assisted to a comfortable position and covered with a warm blanket.

*Fourth stage:* The nurse continues to observe the patient closely and is alert for hemorrhage or other complications through frequent assessment, including monitoring vital signs, palpating the fundus for firmness and position in relation to the umbilicus at intervals (determined by agency policy or patient condition), and massaging the fundus

gently or administering prescribed oxytocic drugs to maintain or assist uterine contraction and to limit bleeding. The character (including presence, size, and number of clots) and volume of vaginal discharge or lochia are assessed periodically; the perineum is inspected and ice applied as prescribed, and the bladder is inspected, palpated, and percussed for distention. The patient is encouraged to void, and catheterization is performed only if absolutely necessary. The nurse notifies the obstetrician or midwife if any problems occur or persist. This period also is used for parent-infant bonding, because the infant is usually awake for the first hour or so after delivery. The mother can breastfeed if desired, and the immediate family couple can inspect the infant. The nurse supports the family's responses to the newborn, as well as to the labor and delivery experience. The infant is then taken to the nursery for initial infant care.

**Early postpartum period:** Once the infant's temperature has stabilized, measurements have been taken (length, head and chest circumference, weight), and other prescribed care carried out, the infant may be returned to the mother's side (in its crib carrier). The nurse continues to assess the mother's physical and psychological status after delivery, checking the fundus, vulva, and perineum according to policy; inspects the mother's breasts and assists her with feeding (whether by breast or bottle) and with measures to prevent lactation as desired; helps the mother to deal with other responsibilities of motherhood; and carries out the mandated maternal teaching program, including providing written information for later review by the patient. In hospitals or birthing centers, the nurse prepares the mother for early discharge to the home setting and arranges for follow-up care as needed and available. In many settings, the nurse makes follow-up calls or visits to the mother during the early postpartum period or encourages her to call in with concerns, or she may receive follow-up visits by a caregiver from her health maintenance organization. The mother may also be referred to support groups, such as the La Leche League, Nursing Mothers' Club, and others as available in the particular community.

**active I.** Regular uterine contractions that result in increasing cervical dilation and descent of the presenting part. This encompasses the active phase of stage 1, as well as stages 2 and 3 of labor.

**arrested I.** Failure of labor to proceed through the normal stages. This may be due to uterine inertia, obstruction of the pelvis, or systemic disease.

**artificial I.** Induction of labor.

**augmented I.** Induction of labor.

**back I.** Labor involving malposition of the fetal head with the occiput opposing the mother's sacrum. The laboring woman experiences severe back pain. SEE: *occiput posterior, persistent*.

**complicated I.** Labor occurring with an accompanying abnormal condition such as hemorrhage or inertia.

**dry I.** A colloquial and imprecise term for labor associated with extensive loss of amniotic fluid related to premature rupture of membranes.

**dysfunctional I.** Abnormal progress of dilation and/or descent of the presenting part.

**false I.** Uterine contractions that occur before the onset of labor (i.e., that do not result in dilation of the cervix). They may resolve spontaneously or continue until effective contractions occur and labor begins. SEE: *labor; Braxton Hicks contractions*.

**hypertonic I.** Condition in which frequent, painful, but poor-quality contractions fail to accomplish effective cervical effacement and dilation. Hypertonicity usually occurs in the latent phase of labor and most often is related to fetal malpresentation and cephalopelvic disproportion.

**hypotonic I.** Condition in which fewer than one to three contractions occur within 10 min. Hypotonicity usually occurs after the woman has entered the active phase of labor and most often is related to uterine overdistention, fetal macrosomia, multiple pregnancy, or grand multiparity.

**induction of I.** The use of pharmacological, mechanical, or operative interventions to initiate labor or to assist the progression of a previously dysfunctional labor. Induction may be considered when the risks of expectant management outweigh the benefits, placing the fetus and/or the mother in jeopardy. Among the more common indications are preeclampsia or eclampsia, premature rupture of membranes, fetal compromise, maternal medical diseases, chorioamnionitis, intrauterine fetal demise, postdate pregnancy, as well as some psychosocial factors. Contraindications include placenta previa, vasa previa, umbilical cord prolapse, history of classic uterine incision, and transverse fetal lie, as well as many relative contraindications. SYN: *artificial labor; augmented labor*. SEE: *Nursing Diagnoses Appendix*.



Oxytocin should be used only intravenously, using a device that permits precise control of flow rate. While oxytocin is being administered, the fetal heart rate and uterine contractions should be monitored electronically.



**instrumental I.** Labor completed by mechanical means, such as the use of forceps.

**missed I.** 1. False I. 2. Labor in which true labor pains begin but subside. This may be a sign of a dead fetus or extrauterine pregnancy.

**normal I.** Progressive dilation and effacement of the cervix with descent of the presenting part.

**obstructed I.** Interference with fetal descent related to malposition, malpresentation, and cephalopelvic disproportion.

**precipitate I.** Labor marked by sudden onset, rapid cervical effacement and dilation, and delivery within 3 hr of onset.

**premature I.** Preterm labor.

**preterm I.** Labor that begins before completion of 37 weeks from the last menstrual period. The condition affects 7% to 10% of all live births and is one of the most important risk factors for preterm birth, the primary cause of perinatal and neonatal mortality. Although associated risk factors do exist, in most cases the cause is unknown. SYN: *premature labor*. SEE: *premature rupture of membranes; prematurity; Nursing Diagnoses Appendix*.

Note: Treatment for active premature labor is best managed in a regional perinatal intensive care center, where staff members are prepared to handle the required care and treatment, and so that the neonate can remain in the same setting as the mother, rather than being transferred alone for neonatal intensive care after delivery.

**PATIENT CARE:** *In-hospital management:* The patient is prepared for the use of cardiac, uterine, and fetal monitors along with intravenous therapy. Maternal vital signs and fetal heart rate (FHR) are monitored. If prescribed a tocolytic agent (beta-adrenergic drug) is administered intravenously; the infusion rate is increased every 10 to 30 min, depending on uterine response, but never exceeds a rate of 125 ml/hr. Uterine activity is monitored continuously; vital signs and FHR are checked every 15 min. Maternal pulse should not exceed 140/min; FHR should not exceed 180 bpm. When counting respiratory rate, breath sounds are noted, and the lungs are auscultated at least every 8 hr. The patient is assessed for desired response and adverse effects to treatment and is taught about symptoms she may expect and should report. If signs of drug toxicity occur, the medication is stopped. The intravenous line is kept open with a maintenance solution, and the prescribed beta-blocker as an antidote is prepared and administered. The patient is placed in high Fowler's position, and oxygen is administered. Car-

diac rate and rhythm, blood pressure, respiratory rate, auscultatory sounds, and FHRs are closely monitored to evaluate the patient's response to the antidote. If no complications are present, absolute bed rest is maintained throughout the infusion, with the patient in a left-lateral position or supine with a wedge under the right hip to prevent hypotension. Antiembolism stockings are applied, and passive leg exercises are performed. A daily fluid intake of 2 to 3 L is encouraged to maintain adequate hydration, and fluid intake and output are measured. The patient is weighed daily to assess for overhydration. The patient is instructed in methods to deal with stress. Health care providers should respond to parental concern for the fetus with empathy, but never with false reassurance. Fetal fibronectin enzyme immunoassay may be carried out on a sample of vaginal secretions taken from the posterior vaginal fornix; the patient should understand that this test can help assess the risk of preterm delivery within 7 days from the sampling date. As prescribed, a glucocorticoid is administered to stimulate fetal pulmonary surfactant production.

Patients who undergo in-house therapy often receive magnesium sulfate, which helps restore the patient's beta-2 receptor sensitivity (thus improving the effectiveness of terbutaline) and decrease uterine contractions. The patient may be discharged on oral or subcutaneous tocolytic therapy. Intravenous therapy may be employed using a portable micropump that can deliver a basal rate or programmed intermittent bolus doses at predetermined times when the patient's circadian rhythms are known to increase uterine activity.

*Home management:* The plan for at-home care must target individuals whom the woman can call upon to help with home management. A social service referral can help the family access available community and financial assistance. Home health care nurses assist the patient to carry out the plan, provide ongoing emotional support, and evaluate fetal and patient response to therapy.

The treatment regimen is reviewed with the family, and written instructions are provided to help those involved to cooperate. The patient is maintained on bed rest (left-side, supine, with head on small pillow, feet flat or elevated) to increase uterine perfusion and to keep fetal pressure off the cervix. The patient usually is allowed out of bed only to go to the bathroom. The women's physical and psychological rest are the highest priority, as anxiety is known to compromise uterine blood flow. Paid or volun-

tary helpers must care for other children and all household chores. The patient's tocolytic therapy (most frequently using terbutaline) is scheduled around the clock (with food if desired), and the patient is taught about its action and adverse effects. The patient must be able to count her pulse, and is instructed to report a rate above 120/min. The patient also is taught about symptoms to report (palpations, tremors, agitation, nervousness) and how to palpate for contractions twice each day. Home uterine activity monitoring may be employed, with the patient or home health care provider recording uterine activity for an hour twice daily. The perinatal nurse analyzes the results. If contractions exceed a predetermined threshold, the patient is advised to drink 8 to 12 ounces of water, rest, then empty her bladder and monitor uterine activity for another hour. The process can reduce unnecessary visits to the medical setting, and increase the patient's peace of mind. The patient is encouraged to drink water throughout the day to prevent dehydration and reduce related uterine irritability. She also is warned not to take over the counter drugs without her obstetrician's approval. The patient is taught how to use sedation, if prescribed. Avoidance of activities that could stimulate labor is emphasized; these include sexual and nipple stimulation. Personal hygiene is reviewed, and the patient is made aware of signs of infection to report. A nonstress test may be performed weekly at home or in a medical setting, depending on the acuity of the situation and on maternal health factors (diabetes, pregnancy-induced hypertension [PIH]). The patient usually is provided with a 24-hr phone link to perinatal nurses in the health care system, who may contact her twice daily to discuss her situation. She is taught what to do in an emergency (bright red bleeding, membrane rupture, persisting contractions, decreased or absent fetal activity). If an incompetent cervix has been diagnosed based on the patient's history, insertion of a purse-string suture (cerclage) as reinforcement at 14 to 18 weeks gestation may prevent premature labor. If labor is inevitable, it is carried out as for a low-birth-weight, readily compromised fetus. During the postpartum period, care focuses on helping the family to understand their infant's special needs, and to participate as fully as possible in care, or, in a worst-case scenario, to come to terms with the baby's death. In such a case, the family is assisted in their grieving, with encouragement to hold the swaddled infant, and look at pictures of the child if they are able. Psychological counseling may be required.

**primary dysfunctional I.** Abnormally slow dilation of the cervix in the active phase of labor; defined as less than 1.2 cm/hr in a nullipara and 1.5 cm/hr in a multipara. SYN: *protraction disorder*. SEE: *arrested l.*; *precipitate l.*

**prodromal I.** The initial changes that precede actual labor, usually occurring 24 to 48 hr before the onset of labor. Some women report a surge of energy. Findings include lightening, excessive mucoid vaginal discharge, softening and beginning effacement of the ripe cervix, scant bloody show associated with expulsion of the mucus plug, and diarrhea.

**prolonged I.** Abnormally slow progress of labor, lasting more than 20 hr. SEE: *dystocia*.

**prolonged latent phase I.** Abnormally slow progress of the latent phase, lasting more than 20 hr in a nullipara or 14 hr in a multipara. SEE: *dystocia*.

**spontaneous I.** Labor that begins and progresses without pharmacological, mechanical, or operative intervention.

**stage I I.** SEE: *labor*; *Nursing Diagnoses Appendix*.

**stage II I.** SEE: *labor*; *Nursing Diagnoses Appendix*.

**trial of I.** Permitting labor to continue long enough to determine if normal vaginal birth appears to be possible (e.g., in vaginal birth after cesarean delivery).

**laboratorian** (lăb-rō-tōr'ē-īn) A person who works in a clinical or research laboratory (e.g., performing assays, preparing or analyzing specimens, designing protocols, or managing workflow).

**laboratory** (lăb'ră-tor'ē) [L. *laboratorium*] A room or building equipped for scientific experimentation, research, testing, or clinical studies of materials, fluids, or tissues obtained from patients.

**labret** (lă'brēt) [L. *labrum*, lip] A decorative piercing through the central bottom lip.

**labrocyte** (lăb'rō-sīt) [Gr. *labros*, greedy, + *kytos*, cell] A mast cell.

**labyrinth** (lăb'ī-rīnth) [Gr. *labyrinthos*, maze] **1.** A series of intricate communicating passages. **2.** The inner ear, the bony and vestibular labyrinths, which contain the receptors for hearing and equilibrium. SEE: *illus*.

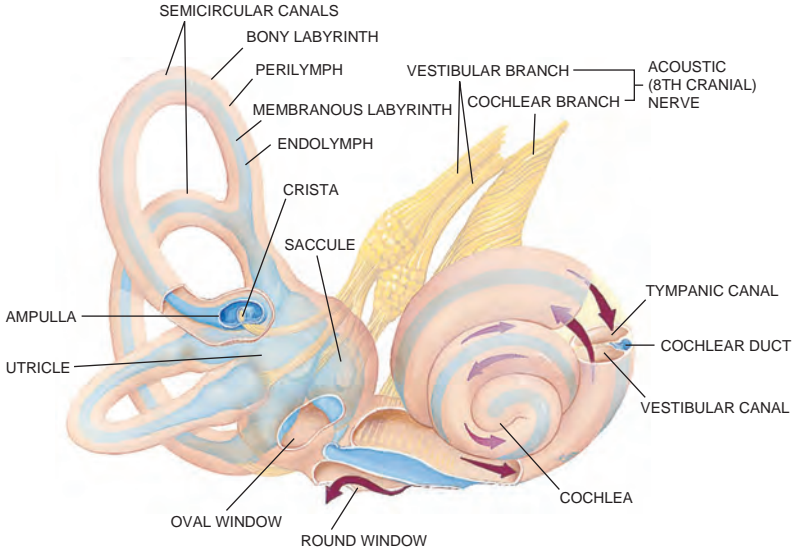
**bony I.** Osseous I.

**ethmoidal I.** The lateral mass of the ethmoid bone, which includes the superior and middle conchae and encloses the ethmoid sinuses.

**membranous I.** Vestibular I.

**osseous I.** The complex, hollow space in the temporal bone that consists of the vestibule, three semicircular canals, and cochlea, all filled with perilymph. SYN: *bony labyrinth*.

**vestibular I.** The vestibular (balance and equilibrium) portion of the mem-



LABYRINTHS OF INNER EAR

Arrows in cochlea indicate path of vibrations

braneous labyrinth of the internal ear. It has two divisions:

- 1 the utricle and saccule, and
- 2 the semicircular ducts.

The vestibular labyrinth is filled with endolymph and is suspended in the bony labyrinth, which is filled with perilymph. SYN: *membranous labyrinth*.

**labyrinthectomy** (lăb'î-rîn-thĕk'tô-mĕ) [*l* + *ektome*, excision] Excision of the labyrinth.

**labyrinthine** (lăb'î-rîn'thîn) **1.** Pert. to a labyrinth. **2.** Intricate or involved, as a labyrinth. **3.** Pert. to speech that wanders aimlessly and unconnectedly from subject to subject, as seen in schizophrenia.

**labyrinthitis** (lăb'î-rîn-thî'tis) [*l* + *itis*, inflammation] An inflammation (acute or chronic) of the labyrinth. Symptoms include vertigo, vomiting, and nystagmus. It may result from such conditions as viral infections, bacterial infections, or head trauma. SEE: *Ménière's disease*; *otitis interna*.

**labyrinthotomy** (lăb'î-rîn-thôt'ô-mĕ) [*l* + *tome*, incision] Surgical incision into the labyrinth.

**labyrinthus** (lăb'î-rîn'thŭs) [L., Gr. *labyrinthos*, maze] A labyrinth.

**lac** (lăk) [L.] **1.** Milk. **2.** Milky medicinal substance.

**Lacazia loboi** (lă-kôz'ĕ-ă lô'bô-î, -lô'bô', -ĕ) [NL.] A spherical yeast that causes cutaneous and subcutaneous infections known as *Lobomycosis*, *Lobo's disease*, or *keloidal blastomycosis*, typically in the tropical regions in South and Cen-

tral America. It is structurally similar to *Paracoccidioides brasiliensis*. The yeast, like the disease, has several scientific names, including *Loboa loboï* and *Paracoccidioides loboi*.

**lacerate** (lăs'er-ăt) [L. *lacerare*, to tear] To tear, as into irregular segments. **lacerated** (lăs'ĕ-răt'ĕd), *adj.*

**laceration** (lăs'ĕ-răt'shŭn) A wound or irregular tear of the flesh. **lacerable** (lăs'ĕ-răt'b'l), *adj.*

**l. of cervix** Bilateral, stellate, or unilateral tear of the cervix uteri caused by childbirth.

**l. of perineum** An injury of the perineum caused by childbirth. If it extends through the sphincter ani muscle, it is considered complete or fourth degree. SEE: *episiotomy*.

**stellate l.** A tear in the skin or in an internal organ caused by blunt trauma. Several lines emanate outward from the tear's center.

**lacetus** (lă-sĕr'tŭs) [L., lizard] **1.** The muscular part of the arm. **2.** A muscular or fibrous band.

**Lachesis muta** (lă-kĕ-sis moo'ta) Bushmaster

**Lachman test** (lăk'măn) A test used to evaluate the integrity of the anterior cruciate ligament of the knee. The examiner stands on the side being examined and grasps the tibia at the level of the tibial tubercle while stabilizing the femur with the other hand. The patient relaxes the leg while the examiner holds the knee flexed at 25° to 30° and pulls forward on the tibia while stabilizing



the femur. Excessive motion relative to the opposite knee or no discernible end point determine a positive result.

**laciniate** (lā-sin'ē-āt) [L. *lacinia*, fringe] Being jagged or fringed.

**lacrim-** Prefix indicating *tear*, *lacrimal apparatus*.

**lacrima** (lāk'rī-mā) [L.] Tear fluid from eye.

**lacrimal** (lāk'rīm-äl) [L. *lacrima*, tear] Pert. to the tears. SEE: *lacrimal apparatus*.

**lacrimal apparatus** Structures concerned with the secretion and conduction of tears. It includes the lacrimal gland and its secretory ducts, lacrimal canaliculi, lacrimal sac, and nasolacrimal duct, which empties into the nasal cavity. SEE: *illus*.

Patency of the lacrimal duct may be tested by placing a dilute solution of sugar in the conjunctival sac; if the duct is patent, the individual will report the sensation of sweetness in the mouth; if not, the sugar will not be perceived.

**lacrimation** (lāk'rī-mā'shūn) [L. *lacrima*, tear] The secretion and discharge of tears.

**test for I.** Schirmer's test.

**lacrimator** (lāk'rī-mā'tōr) A substance that increases the flow of tears.

**lacrimatory** (lāk'rī-mā-tō'rē) Causing the production of tears.

**lacrimotomy** (lāk'rī-mōt'ō-mē) [L. + Gr. *tome*, incision] Incision of lacrimal duct.

**lactacid** (lāk-'tās'īd) Lactic acid.

**lactacidemia** (lāk-tās'ī-dē'mē-ä) [L. + Gr. *haima*, blood] Excessive accumulation of lactic acid in the blood. It occurs normally following strenuous and prolonged exercise. SYN: *lactic acidemia*.

**lactaciduria** (lāk-tā-sīd-ū'rē-ä) [L. + Gr. *ouron*, urine] Lactic acid excreted in the urine.

**lactagogue** (lāk'tā-gōg) [L. + Gr. *agogos*, leading] Galactagogue.

**lactalbumin** (lāk-täl'bū-mīn) [L. + *albumen*, coagulated white of egg] The albumin found in milk and other dairy products.

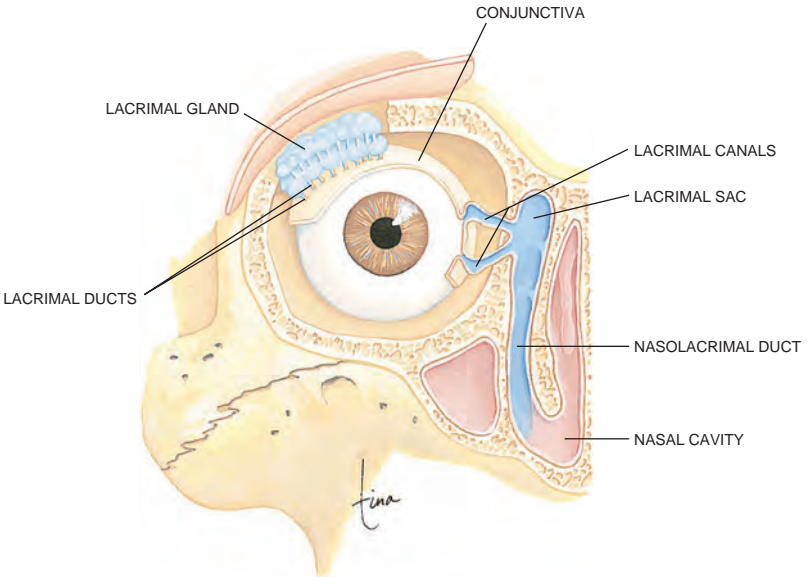
**lactam** (lāk'tām) An organic chemical that contains the —NH—CO group in a ring form. It is formed by the removal of a molecule of water from certain amino acids.

**$\beta$ -lactamase-resistant antibiotics** (bā'tā-lāk-tā-māz) SEE: under *beta-lactamase-resistant antibiotics*; *beta-lactamase resistant penicillin*.

**lactase** (lāk'tās) [L. + *-ase*, enzyme] An intestinal sugar-splitting enzyme converting lactose into dextrose and galactose; found in intestinal juice. SEE: *enzyme*; *maltase*; *sucrase*; *sugar*.

**lactate** (lāk'tāt) 1. Any salt derived from lactic acid. 2. To secrete milk.

**lactate dehydrogenase** An enzyme that catalyzes the oxidation of lactate. It is found in a variety of tissues (lung, kidney, heart, liver, blood) in slightly different forms called isoenzymes. Detection of these isoenzymes in the



**LACRIMAL APPARATUS**  
Anterior view of right eye

bloodstream is used in the diagnosis and management of a variety of illnesses. SYN: *lactic dehydrogenase*.

**lactation** (lāk-tā'shūn) [L. *lactatio*, a sucking] **1.** The production and release of milk by mammary glands. **2.** The period of breastfeeding after childbirth, beginning with the release of colostrum (the nutrient-rich substance that precedes milk production) and continuing until the infant is weaned. Many hormonal factors are involved in lactation. The process depends on secretion of the hormone prolactin by the pituitary gland, but it begins only after the marked decreases in estrogen and progesterone that follow childbirth. Nursing by the infant stimulates pulsatile increases in prolactin secretion. Oxytocin, secreted by the hypothalamus, also contributes to the release of milk by stimulating the contraction of muscular cells in the milk ducts and mammary glands.

DIET: The dietary needs of the mother are increased during lactation, usually by about 500 kcal daily. In addition, maternal needs for calcium, folate, and other vitamins increase while breastfeeding. SEE: *breastfeeding*; *colostrum*.

***I. amenorrhea method*** ABBR: LAM. The method of causing decreased fertility in a woman by nursing a child for a lengthy period (several years or more). In general, the longer a woman breastfeeds, the longer ovulation is delayed. For this method to work, a baby must be exclusively breastfed on demand, around the clock. Once other food and drinks are added to the infant's diet, this method is not considered reliable. In addition, most breastfeeding women ovulate before their first postpartum menses and within 4 to 18 months after delivery.

***I. suppression*** Inhibition of postpartum production of breast milk, either if the postpartum woman chooses not to breastfeed or when she elects to cease breastfeeding. Recommended actions include avoiding local stimulation of the breasts; wearing a tight-fitting brassiere; applying ice packs; and administering mild over-the-counter analgesics, such as acetaminophen or aspirin, to reduce discomfort. Manual expression of milk is discouraged; although this action may temporarily reduce the discomfort, it also stimulates further milk production. Breast engorgement usually resolves within a few days, and lactation ceases in 1 to 2 weeks.

**lacteal** (lāk'tē-āl) [L. *lacteus*, of milk] A lymphatic capillary in a villus of the small intestine. Lacteals absorb fatty acids and other fat-soluble end products of digestion. This fatty fluid is then called chyle, which travels through the larger intestinal lymphatic vessels and,

by way of the thoracic duct, to the left subclavian vein. SEE: *lymph*.

**lactic** (lāk'tik) [L. *lac*, milk] Pert. to milk or lactic acid.

**lactic dehydrogenase** Lactate dehydrogenase.

**lactiferous** (lāk-tif'ēr-ūs) [l' + *ferre*, to bear] Secreting and conveying milk.

**lactifuge** (lāk'ti-fūj) [l' + *fugare*, to expel] **1.** Stopping milk secretion. **2.** An agent that stops milk secretion.

**lactigenous** (lāk-tij'ēn-ūs) [l' + Gr. *gennan*, to produce] Producing milk.

**lactinated** (lāk'ti-nāt'ēd) Containing or prepared with lactose, or milk sugar.

**lactivorous** (lāk-tiv'or-ūs) [l' + *vorare*, to devour] Living on milk.

**lacto-** (lāk'tō) [L. *lac*, *lactis*, milk] Combining form meaning *milk* (incl. dairy products).

**Lactobacillus** (lāk-tō-bā-sil'ūs) [l' + *bacillus*, little rod] A genus of gram-positive, anaerobic, non-spore-forming bacilli of the family Lactobacillaceae. They produce lactic acid from carbohydrates and are responsible for the souring of milk. Some are part of normal flora.

***L. acidophilus*** A species that produces lactic acid by fermenting the sugars in milk. It is found in milk and in the feces of bottle-fed infants and adults whose diets include a high milk content. It is also part of oral and vaginal flora.

***L. bulgaricus*** A species found in fermented milk. Milk fermented with this organism is known as Bulgarian milk.

***L. casei*** A species found in milk and cheese.

***L. helveticus*** A species found in Swiss cheese.

**lactocoele** (lāk'tō-sēl) [l' + Gr. *kele*, tumor, swelling] Galactocele.

**Lactococcus** (lāk'tō-kōk'ūs) A genus of nonmotile, gram-positive cocci that grow in pairs or short chains. Most organisms in the genus were previously grouped with the enterococci, lactobacilli, and streptococci. They produce large quantities of the L-isomer of lactic acid. Members of the species are used in dairy industry, e.g., in the fermentation of cheeses. A few cause human disease.

**lactoferrin** (lāk'tō-fēr'rīn) An enzyme released in phagocytosis by neutrophils and macrophages that combines with iron in the blood. As a result, the iron is unavailable to invading pathogens that require iron for their reproduction.

**lactogen** (lāk'tō-jēn) [L. *lac*, milk, + Gr. *gennan*, to produce] Any substance that stimulates milk production. SEE: *prolactin*.

***human placental I.*** ABBR: HPL. A hormone produced by the placenta and released into maternal blood. It acts in the last stage of gestation to prepare the breasts for milk production.

**lactogenic** (lāk'tō-gēn'nik) [l' + Gr.

*gennan*, to produce] Inducing the secretion of milk.

**lactoglobulin** (lāk'tō-glōb'ū-līn) [*l'* + *globulus*, globule] A protein found in milk. Casein and lactoglobulin are the most common proteins in cow's milk.

**immune l.** Antibodies present in the colostrum.

**lactagogue** (lāk'tō-gōg'') Galactagogue.

**lactometer** (lāk-tōm'ē-tēr) [*l'* + Gr. *metron*, measure] A device for determining the specific gravity, and therefore the richness of milk.

**lacto-ovo-vegetarian** (lāk'tō-ō'vō-věj'ē-tā'rē-ān) A person consuming a vegetarian diet that includes eggs and dairy products.

**lactophosphate** (lāk'tō-fōs'fāt) [*l'* + *phosphas*, phosphate] A salt derived jointly from lactic and phosphoric acids.

**lactoprotein** (lāk'tō-prō'tē-in) [*l'* + Gr. *protos*, first] Any protein present in milk.

**lactorrhea** (lāk-tō-rē'ā) [*l'* + Gr. *rhoia*, flow] The discharge of milk between nursings and after weaning of offspring. SYN: *galactorrhea*.

**lactose** (lāk-tōs) **1.** A disaccharide that on hydrolysis yields glucose and galactose. Bacteria can convert it into lactic and butyric acids, as in the souring of milk. The milk of mammals contains 4% to 7% lactose. Its presence in the urine may be indicative of obstruction to flow of milk after cessation of nursing. Commercial lactose is a fine white powder that will not dissolve in cold water. **2.** A sugar, C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>, obtained from evaporation of cow's milk. It is used in manufacturing tablets and as a diluent.

**l. intolerance** An inability to digest milk and some dairy products, leading to abdominal bloating, cramping, and diarrhea. The intolerance may be congenital or may begin in childhood, adolescence, or young adulthood.

**ETIOLOGY:** A deficiency of the enzyme lactase, which digests lactose in the small intestine, causes this intolerance.

**TREATMENT:** Affected individuals should limit consumption of milk and other lactose-containing foods. Yogurt or milk from which lactose has been reduced or eliminated may be substituted.

**lactose tolerance test** A test for deficiency of lactase in the small intestine that consists of the administration of a weighed amount of lactose, followed by successive measurements of blood glucose at timed intervals. Low levels of glucose indicate a lactase deficiency.

**lactosuria** (lāk-tō-sū'rē-ā) [*l'* + Gr. *ouron*, urine] The presence of milk sugar (lactose) in the urine, a condition that occurs frequently during pregnancy and lactation.

**lactotherapy** (lāk-tō-thēr'ā-pē) [*l'* + Gr.

*therapeia*, treatment] Galactotherapy (2).

**lactotroph** (lāk'tō-trōf) A prolactin producer. The term is typically used to denote prolactin-secreting cells or adenomas in the pituitary gland.

**lactovegetarian** (lāk'tō-věj'ē-tār'ē-ān) **1.** Pert. to milk and vegetables. **2.** One who lives on a diet of milk, other dairy products, and vegetables.

**lactulose** (lāk'tū-lōs) A synthetic disaccharide, 4-O-β-D-galactopyranosyl-D-fructofuranose, that is not hydrolyzed or absorbed in humans. It is metabolized by bacteria in the colon with the production of organic acids and is used to treat constipation and the encephalopathy that develops in patients with advanced cirrhosis of the liver. The unabsorbed sugar produces diarrhea, and the acid pH helps to contain ammonia in the feces.

**lacuna** (lā-koo'nā, -kū') *pl.* **lacunae** [L., *lacuna*, pit, gap, deficiency] **1.** An empty space, gap, or hollow area. **2.** The space occupied by cells of calcified tissues (e.g., cementocytes, chondrocytes, and osteocytes). **3.** A focal loss of brain tissue due to a stroke involving a small penetrating artery in the brain. **lacunar** (-nār), *adj.*

**lacunae laterales** Irregular diverticula on either side of the superior sagittal sinus of the brain into which the arachnoid villi project.

**l. magna** The largest pitlike recess in the fossa navicularis of the distal end of the male urethra.

**l. pharyngis** A pit at the pharyngeal end of the eustachian tube.

**l. vasorum** A space for passage of femoral vessels to the thigh.

**venous l.** A lateral pouch or diverticulum of the superior sagittal sinus of the brain into which protrude arachnoid villi that return cerebrospinal fluid to the venous circulation.

**lacune** (lā-koon', -kūn') [L. *lacuna*, pit, gap, deficiency] Lacuna.

**absorption l.** Howship's lacune.

**Howship's l.** A pit or groove in bone where resorption or dissolution of bone is occurring; usually contains osteoclasts. SYN: *absorption l.*

**intervillous l.** A space in the placenta occupied by maternal blood and into which fetal placenta villi project.

**trophoblastic l.** An irregular cavity in the syntrophoblast that develops into intervillous spaces or lacunae. SEE: *intervillous lacuna*.

**l. of the urethra** Any of several recesses in the mucous membrane of the urethra, esp. along the floor and in the bulb. They are the openings of the urethral glands.

**lacunula, lacunule** (lā-kū'nū-lā, -nūl) [L., little pit] A small or minute lacuna.

**lacus** (lä'kü's) [L., lake] A collection of fluid in a small hollow or cavity.

**l. lacrimalis** Lacrimal lake.

**LAD** *left anterior descending* (branch of the left coronary artery).

**LADA** *left acromion-dorsal-anterior fetal position*.

**LADP** *left acromion-dorsal-posterior fetal position*.

**Laënnec's cirrhosis** (lä"ë-nëks') [René T. H. Laënnec, Fr. physician and the inventor of the stethoscope, 1781–1826] Cirrhosis of the liver associated with chronic excessive alcohol ingestion. SYN: *hobnail liver*. SEE: *liver, cirrhosis of*.

**Laënnec's pearls** Round gelatinous masses seen in asthmatic sputum.

**Laënnec's thrombus** Globular thrombus in the heart.

**Laetrile** (lä'ë-trīl) Amygdalin; a glycoside derived from pits or other seed parts of plants, including apricots and almonds. Amygdalin contains sufficient cyanide to be fatal when taken in large doses. It has no known therapeutic or nutritional value. There is no evidence that it is effective in treating cancer. It is also known as *vitamin B<sub>17</sub>*.



Complications of Laetrile treatment may include acute or chronic cyanide poisoning.

**Lafora, Gonzalo R** (lä-fō'rä) Spanish physician, 1887–1971.

**L.'s bodies** Cytoplasmic inclusion bodies made of acid mucopolysaccharides. They may be found in neuronal tissues taken from patients with familial myoclonic epilepsy.

**L.'s disease** Familial progressive epilepsy.

**lag** **1.** The period of time between the application of a stimulus and the resulting reaction. **2.** The early period following bacterial inoculation into a culture medium, characterized by slow growth. SYN: *lag phase; latent period*.

**lageniform** (lä-jën'ī-form) [L. *lagena*, flask, + *forma*, shape] Flask-shaped.

**Lagochilascaris** (lä"ögō-kī-läs'kä-rīs) [Gr. *lagōs*, hare, + *cheilos*, lip, + *askaris*, intestinal worm] A genus of parasitic worms that may infect the skin, esp. in residents of or travelers to the Caribbean.

**lagophthalmos, lagophthalmus** (läg"öf-thäl'mös, -müs) [Gr. *lagos*, hare, + *ophthalmos*, eye] An incomplete closure of the palpebral fissure when an attempt is made to shut the eyelids. This results in exposure and injury to the bulbar conjunctiva and cornea. This condition is caused by contraction of a scar of the eyelid, facial nerve injury, atony of the orbicularis palpebrarum, or exophthalmos.

**TREATMENT:** Artificial tears or other ocular lubricants are needed to prevent corneal ulceration.

**nocturnal l.** Failure of the eyelids to remain closed during sleep, which may be due to chronic keratitis.

**laity** (lä'ī-tē) [Gr. *laos*, the people] Individuals who are not members of a particular profession such as law, dentistry, medicine, or the ministry.

**LAIV** *live attenuated influenza vaccine*. SEE: *under vaccine*.

**LAK cell** *lymphokine-activated killer cell*. SEE: *under cell*.

**lake** [L. *lacus*] **1.** A small cavity of fluid. SEE: *lacus*. **2.** The appearance of plasma after blood cells in it have broken down, releasing their hemoglobin pigment.

**lacrimal l.** The small pouch formed by the junction of the conjunctiva at the medial canthus of the eye. Tears collect in this area before they drain through the lacrimal canaliculi into the nasolacrimal duct. The lacrimal lake can hold a normal amount of tears, but when excess tears are secreted (e.g., during crying), the tears overflow the lipid-coated edge of the lower lids and spill onto the cheeks. SYN: *lacus lacrimalis*.

**venous l.** **1.** A small subcutaneous bleb filled with blood. It may be present on the lips, mouth, or ears. **2.** A lateral pouch or diverticulum of the superior sagittal sinus of the brain into which protrude arachnoid villi that return cerebrospinal fluid to the venous circulation.

**LAL** *limulus ameobocyte lysate*.

**La Leche League** (lä-lē'chä lēg) An organization whose purpose is to promote breastfeeding. Street address: 1400 N Meacham Rd Schaumburg, IL 60173-4808. Website: [www.lalecheleague.org](http://www.lalecheleague.org)

**laliatry** (lä-lī'ä-trē) [Gr. *lalia*, talk, + *iatry*, therapy] The study and treatment of speech disorders and defects.

**lallation** (lä-lä'shūn) [L. *lallatio*] An infantile form of speech in which the letter "l" is incorrectly used or pronounced.

**lalophobia** (lä'lō-fō'bē-ä) [" + *phobos*, fear] Fear of speaking.

**laloplegia** (lä'lō-plē'jē-ä) [" + *plege*, a stroke] A paralysis of the speech muscles without affecting the action of the tongue.

**lalorrhea** (lä'lō-rē-ä) [" + *rhoia*, flow] An abnormal flow of speech.

**Lamaze technique, Lamaze method** (lä-mäz') [Fernand Lamaze, Fr. obstetrician, 1890–1957] A method of psychoprophylaxis for childbirth in which the mother is instructed in breathing techniques that permit her to facilitate delivery by relaxing at the proper time with respect to the involuntary contractions of abdominal and uterine musculature. Those who are able to use the

method require little if any anesthesia during delivery. SEE: *labor*.

**lambda**,  $\Lambda$ ,  $\lambda$  (lăm'dă) [Gr.] **1.** A letter in the Greek alphabet ( $\Lambda$ ,  $\lambda$ ); also signified by the letter L or l. **2.** The point or angle of junction of the lambdoid and sagittal sutures.

**lambdacism** (lăm'dă-sīzm) [Gr. *lambdakismos*] **1.** Stammering of the "l" sound. **2.** An inability to pronounce the "l" sound properly. **3.** Substitution of "l" for "r" in speaking.

**lambdoid, lambdoidal** (lăm'doyd, lăm-doyd'äl) [Gr. *lambda*, + *eidōs*, form, shape] Shaped like the Greek letter  $\Lambda$ .

**lambert** (lăm'bért) [Johann H. Lambert, Ger. physicist, 1728–1777] A unit of brightness equal to that seen when a perfectly diffusing surface radiates or reflects one lumen of light per square centimeter. SEE: *lumen* (2).

**Lambert-Eaton myasthenic syndrome** (lăm'bért-ē'tün) [Edward Howard Lambert, U.S. physiologist, 1915–2003; Lee McKendree Eaton, U.S. physician, 1905–1958] An autoimmune syndrome in which weakness of the proximal muscles (e.g., around the shoulder and the hip girdle), diminished reflexes, and autonomic dysfunction are found. The syndrome is often associated with small cell carcinoma of the lung or other malignancies. SYN: *Eaton-Lambert syndrome*.

**lame** [AS. *lama*] Disabled in one or more limbs, esp. in a leg or foot, impairing normal locomotion.

**lamella** (lä-měl'ä) *pl. lamellae* [L., a little plate] **1.** A thin layer, sheet, or plate. **2.** A medicated disk of gelatin inserted under the lower eyelid and against the eyeball; used as a local application to the eye.

**bone l.** Plates of collagen fibers, 3 to 7  $\mu$ m thick, found in secondary (mature, adult) bone and surrounded by cementing substance, the mineralized bone matrix. Some lamellae are parallel to each other. Other lamellae are aligned concentrically around a vascular canal — a structure known as a haversian system or osteon.

**circumferential l.** A layer of bone that underlies the periosteum.

**concentric l.** One of the cylindrical plates of bone surrounding a haversian canal. SYN: *haversian l.*

**enamel l.** Microscopic cracks or calcification imperfections in the enamel surface of a tooth. They may be shallow or extend into the underlying dentin and occur as a developmental defect or a microfracture caused by temperature change or shearing forces.

**ground l.** Interstitial lamella.

**haversian l.** Concentric lamella.

**interstitial l.** The bone lamella filling the irregular spaces within the haversian system. SYN: *ground l.*

**periosteal l.** The bone lamella next to and parallel with the periosteum, forming the external portion of bone.

**vitreous l.** Bruch's membrane.

**lamellar** (lä-měl'är) **1.** Arranged in thin layers, plates or scales. **2.** Pert. to the lamella.

**lameness** Limping, abnormal gait, or hobbling resulting from partial loss of function in a leg. The symptom may be due to maldevelopment, injury, or disease.

**lamin** (lä'mín) A filament, intermediate in size between microtubules and microfilaments, that makes up a part of the skeletal structure of the nucleus of a cell.

**lamina** (läm'ī-nä) *pl. laminae* [L.] **1.** A thin flat layer or membrane. **2.** The flattened part of either side of the arch of a vertebra.

**alar l.** The alar plate of the embryonic nervous system, which later develops into sensory portions of the brain and the dorsal horns of the gray matter of the spinal cord.

**alar l. of neural tube** Alar plate.

**anterior elastic l.** Bowman's membrane.

**basal l.** **1.** The basal plate of the embryonic nervous system, which later develops into the ventral horns of the gray matter of the spinal cord. **2.** A mucopolysaccharide layer on the basal surface of epithelial cells which separates them functionally from the underlying connective tissue of the body.

**l. basalis choroideae** Bruch's membrane.

**basement l.** The preferred term for a thin layer of delicate noncellular material of a fine filamentous texture underlying the epithelium. Its principal component is collagen. SYN: *basal lamina*; *basement membrane*; *hyaline membrane*.

**Bowman's l.** Bowman's membrane.

**l. cartilaginis cricoideae** The posterior portion of the cricoid cartilage.

**l. choriocapillaris** The middle layer of the choroid, containing a dense mesh of capillaries. SYN: *Ruysch's membrane*.

**l. cribrosa sclerae** The portion of the sclera forming a sievelike plate through which pass fibers of the optic nerve to the retina.

**dental l.** A U-shaped internal growth of the oral epithelium in the embryonic maxillary and mandibular regions that forms into enamel organs which produce the teeth. SEE: *enamel organ*.

**l. dura** A radiographical term describing the compact bone (alveolar bone proper) that surrounds the roots of teeth. In a state of health, it appears on a radiograph as a dense radiopaque line.

**epithelial l.** The epithelial layer covering the choroid layer of the eye.



***l. fusca sclerae*** The layer of thin pigmented connective tissue on the inner surface of the sclera of the eye.

***interpubic fibrocartilaginous l.*** Part of the articulation of the pubic bones, connecting the opposing surfaces of these bones.

***l. papyracea*** A thin, smooth plate of bone on the lateral surface of the ethmoid bone; it forms part of the orbital plate.

***perpendicular l.*** A thin sheet of bone forming the perpendicular plate of the ethmoid bone. It supports the upper portion of the nasal septum.

***l. propria mucosae*** The thin layer of areolar connective tissue, blood vessels, and nerves that lies immediately beneath the surface epithelium of mucous membranes.

***pterygoid l.*** One of the internal and external laminae that make up the pterygoid process of the sphenoid bone. They are areas of attachment for the muscles of mastication.

***rostral l.*** A continuation of the rostrum of the corpus callosum and the terminal lamina of the third ventricle of the brain.

***spiral l.*** A thin, bony plate projecting from the modiolus into the cochlear canal, dividing it into two portions, the upper scala vestibuli and lower scala tympani. Also called *lamina spiralis*.

***suprachoroid l.*** The superficial layer of the choroid consisting of thin transparent layers, the outermost adhering to the sclera. SEE: *lamina suprachoroidea*. SYN: *suprachoroidea*.

***l. suprachoroidea*** The outermost layer of the choroid.

***terminal l.*** The thin sheet of tissue forming the anterior border of the third ventricle.

***l. of vertebral arch*** One of the laminae extending from the pedicles of the vertebral arches and fusing together to form the dorsal portion of the arch. The spinous process extends from the center of these laminae.

***l. vitrea*** Bruch's membrane.

**laminae** (lām'ī-nē) Pl. of lamina.

**laminar** (lām'ī-nār) Made up of or pert. to laminae.

***l. air flow*** Filtered air moving along separate parallel flow planes to surgical theaters, patient rooms, nurseries, bacteriology work areas, or food preparation areas. This method of air flow helps to prevent bacterial contamination and collection of hazardous chemical fumes in areas where they would pollute the work environment.

**Laminaria digitata** (lām-ī-nār'ē-ā dij-ī-tā'tā) A genus of kelp or seaweed that, when dried, has the ability to absorb water and expand with considerable force. It has been used to dilate the uterine cervical canal in induced abortion

and to induce cervical ripening. Hazards associated with the use of seaweed include cervical lacerations, accidental rupture of membranes, and infection.

**laminarin** (lām'ī-nā'rīn) A polysaccharide obtained from *Laminaria* species of seaweed. It consists principally of glucose residues.

**laminated** (lām'in-āt'ēd) [L. *lamina*, thin plate] Arranged in layers or laminae.

**lamination** (lām'in-ā'shūn) Layer-like arrangement.

**laminectomy** (lām'ī-nēk'tō-mē) [" + Gr. *ektome*, excision] The excision of a vertebral posterior arch, usually to remove a lesion or herniated disk.

It is recommended only after conservative treatment (physical therapy, anti-inflammatory medication) has been exhausted. Minimally invasive spine surgery can be used to treat conditions such as herniated or ruptured lumbar discs, bone spurs, synovial cysts, and lumbar spinal stenosis. Patients with a history of open spine surgery may be poor candidates for minimal procedures because of scar tissue. SEE: *Nursing Diagnoses Appendix*.

**PATIENT CARE:** *Preoperative:* The patient's knowledge of the procedure is determined, misconceptions are corrected, additional information is provided as necessary, and a signed informed consent form is obtained. A baseline assessment of the patient's neurological function and of lower extremity circulation is documented. Health care providers discuss postoperative care concerns, demonstrate maneuvers such as log-rolling, assure the patient of the availability of pain medications on request, and prepare the patient for surgery according to the surgeon's or institutional protocol.

*Postoperative:* Vital signs and neurovascular status (motor, sensory, and circulatory) are monitored; antiembolism stockings or pneumatic dressings are applied, and anticoagulants are given if prescribed. The dressing is inspected for bleeding or cerebrospinal fluid leakage; either problem is documented and reported immediately, and the incision is redressed as necessary. The patient is maintained in a supine position, with the head flat or no higher than 45° according to the surgeon's preference, for the prescribed time (usually 1 to 2 hr), then repositioned side to side every 2 hr by log-rolling the patient with a pillow between the legs to prevent twisting and hip adduction and to maintain spinal alignment. Deep breathing (with use of an spirometer in most cases) is encouraged, and assistance is provided with range-of-motion, gluteal muscle setting, and quadriceps setting exer-

cises. Adequate assistance should be available when the patient is permitted to dangle his or her feet, stand, and walk in the early postoperative period. Prescribed anti-inflammatory, muscle-relaxant, and antibiotic agents are administered. Noninvasive measures to prevent and relieve incisional discomfort are provided in addition to prescribed analgesics. Fluid balance is monitored by administering prescribed intravenous fluids and by assessing urine output. The patient is encouraged to void within 8 to 12 hr postsurgery and is assessed for bladder distention, which may indicate urinary retention. Catheterization is used only after other measures to promote voiding have been attempted. The abdomen is auscultated for return of bowel sounds, and adequate oral nutrition is provided as prescribed. Patients who have undergone minimally invasive procedures are out of bed and resuming some normal activities (e.g., showering, engaging in activities around the house) within a day or two of surgery. Responses vary and may depend on the patient's personality, presurgical activity level, and overall health. Specific restrictions on postoperative activity should be outlined with the patient in detail at the time of discharge.

**Rehabilitative and home care:** Incisional care techniques are taught to the patient and family, and the importance is stressed of checking for signs of infection (increased local pain and tenderness, redness, swelling, and changes in the amount or character of any drainage) and of reporting these to the surgeon. A gradual increase in the patient's activity level is encouraged. Any prescribed exercises (pelvic tilts, leg raising, toe pointing) are reviewed, and prescribed activity restrictions are reinforced. Restrictions usually include sitting for prolonged periods, lifting heavy or moderately heavy objects, or bending over. Proper body mechanics are taught to lessen strain and pressure on the spine: these include maintaining proper body alignment and good posture and sleeping on a firm mattress. Involvement in an exercise program, beginning with gradual strengthening of abdominal muscles, is encouraged after 6 weeks. Walking is encouraged. The patient should schedule and keep a follow-up appointment with the surgeon and communicate any concerns to the surgeon (if necessary) before that visit.

**laminin** (lām'i-nīn) A glycoprotein found in all basement membranes that is involved in the binding of cells to the extracellular matrix, particularly to type intravenous collagen. It contributes to the growth and cellular organization of tissues and is involved in angiogenesis,

invasion, and metastasis of tumor cells, and cellular attachment. **SEE:** *glycoprotein; extracellular matrix.*

**laminitis** (lām-in-ī'tīs) [l' + Gr. *itis*, inflammation] The inflammation of a lamina.

**laminopathy** (lā-mīn-ōp'ā-thē) Any disease caused by defective construction of lamins within cells.

**laminotomy** (lām'ī-nōt'ō-mē) [l' + Gr. *tome*, incision] A division of one of the vertebral laminae.

**lamp** [Gr. *lampein*, to shine] A device for producing and applying light, heat, radiation, and various forms of radiant energy for the treatment of disease, resolution of impairments, or palliation of pain.

**infrared l.** A lamp that develops a high temperature, emitting infrared rays; a heat lamp. The rays penetrate only a short distance (5 to 10 mm) into the skin. Its principal effect is to cause heating of the skin.

**slit l.** A lamp so constructed that an intense light is emitted through a slit; used for examination of the eye. **SEE:** *illus.*



SLIT LAMP EXAMINATION

**sun l.** Ultraviolet lamp.

**ultraviolet l.** A lamp that produces light with a wavelength in the range of 180 to 400 nm. It is used to treat certain skin conditions such as psoriasis or T-cell lymphoma, to promote wound healing by destroying bacteria, and to tan the skin. Ultraviolet lamps produce light within specific ranges: ultraviolet-A (UV-A) lamps generate light having a wavelength of 320 to 400 nm; ultraviolet-B (UV-B) produces light in the range of 290 to 320 nm; ultraviolet-C (UV-C) has a wavelength of 180 to 290 nm. **SYN:** *sun lamp.*



Patients and operators must wear ultraviolet-resistant goggles during treatment. Overexposure to ultraviolet light produces burning and blistering of the skin and may predispose patients to skin cancers.

**Wood's I.** Wood's filter.

**lance** (läns) [L. *lancea*] **1.** A two-edged surgical knife. **2.** To incise with a lancet or other cutting instrument.

**Lance-Adams syndrome** (läns-äd'ämz) Myoclonus occurring after any disease or condition that limits the flow of blood and oxygen to the brain.

**Lancefield classification** (läns'fëld) [Rebecca Craighill Lancefield, U.S. bacteriologist, 1895–1981] A classification of hemolytic streptococci into various groups according to antigenic structure.

**lancet** (län'sët) [L. *lancea*, lance] **1.** A pointed surgical knife with two edges. **2.** A spring-loaded or manual blade used to make a limited skin incision as for collection of blood specimen.

**lancinating** (län'sī-nät'ing) [L. *lancinare*, to tear] Sharp or cutting, as pain.

**L and A** Abbreviation for the reaction of the pupils of the eye to *light* and *accommodation*.

**Landau-Kleffner syndrome** (klëf'nër) [William M. Landau, Frank R. Kleffner, American neurologists] A rare disease in which children (usually between the ages of 3 and 7) lose the ability to understand spoken language and to express themselves. Children with this disorder have seizures and sometimes hyperactivity or other behavioral or psychiatric disorders. Lost language skills are sometimes recovered by affected children in adolescence. SYN: *acquired epileptiform aphasia*; *infantile acquired aphasia*.

**Landau reflex** (län'dō, dow) An infantile reflex in which the body flexes when the head is passively flexed forward in a prone position. It appears normally at 3 months and is absent in children with cerebral palsy and gross motor retardation.

**landmark** A recognizable skeletal or soft tissue structure used as a reference point in measurements or in describing the location of other structures. SEE: *cephalometry*; *craniometry*.

**bony I.** A structure or spot on a bone used as a reference for measurement.

**cephalometric I.** A bony point that is used in living persons or radiographs for measurements of the head or face or orientation of the head in certain positions.

**craniometric I.** A bony point or area on the skull used for measurements or orientation of the skull.

**radiographic I.** A cephalometric, craniometric, or soft tissue landmark used for orientation or measurements.

**soft tissue I.** An area or point on a soft tissue used as a point of reference for measurements of the body or its parts.

**land mines** Explosive devices placed in or on the ground to injure, kill, or destroy humans, animals, or equipment passing over or near them. These are activated on contact. They remain active after armed conflict has ceased and, if they are not removed, can detonate years later, causing unexpected traumatic injury and death.

**Landry-Guillain-Barré syndrome** (lä'n'drë-gë-yä') Guillain-Barré syndrome.

**Landsteiner's classification** (länd'stë-nërz) [Karl L. Landsteiner, Austrian-born U.S. biologist, 1868–1943; Nobel prize winner in medicine in 1930] A classification of blood types designating O, A, B, and AB based on the presence of antigens on red blood cells.

**Lane's kinks** (Länz) [Sir William Arbuthnot Lane, Brit. surgeon, 1856–1943] Bending or twisting of the last few centimeters of the ileum with external adhesions between the folded loops of intestines. This may cause intestinal obstruction.

**Langerhans' islands** (läng'gër-hänz) Islets of Langerhans.

**Langer's lines** (läng'ërz) [Carl (Ritter von Edenberg) Langer, Austrian anatomist, 1819–1887] The structural orientation of the fibrous tissue of the skin, forming the natural cleavage lines that, though present in all body areas, are visible only in certain sites such as the creases of the palm. These lines are of particular importance in surgery. Incisions made parallel to them make a much smaller scar upon healing than those made at right angles to the lines. SEE: *illus.*

**Langhans' layer** (läng'häns) [Theodor Langhans, Ger. pathologist, 1839–1915] A cellular layer present in the chorionic villi of the placenta. SYN: *cytotrophoblast*.

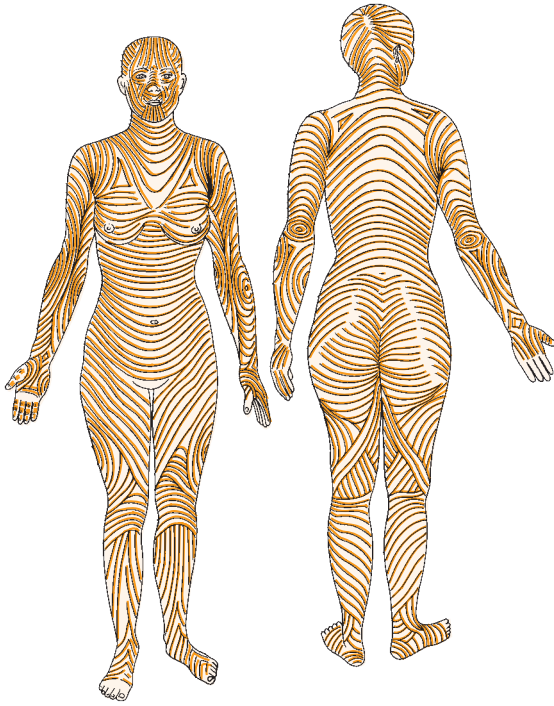
**language** The spoken or written words or symbols used by a population for communication.

**language bias** The tendency for editors and readers to pay greater attention to scientific studies reported in English than to those studies written in other languages.

**languor** (läng'gër) [L. *languere*, to languish] A feeling of weariness or exhaustion as from illness; lack of vigor or animation; lassitude.

**laniary** (lä'n'ë-ä-rë) [L. *laniare*, to tear to pieces] Adapted or designed for tearing, as the canine teeth.

**lanolin** (lä'n'ö-lin) [L. *lana*, wool] The purified, fatlike substance obtained from the wool of sheep; used as an ointment base.



LANGER'S LINES

**anhydrous l.** Wool fat containing not more than 0.25% water; used as an ointment base that has the ability to absorb water.

**Lanoxin** SEE: *digoxin*.

**lanthanum** (län'thā-nūm) SYMB: La. A metallic element; atomic weight 138.906; atomic number 57. It is one of a group of elements called lanthanides.

**lantibiotic** (lan'tī-bī-ōt-ik) Any peptide antibiotic whose chemical structure includes a bridge maintained by the rare amino acid lanthionine. Subtilin and nisin are examples of lantibiotics.

**lanuginous** (lä-nū'jīn-ūs) Covered with lanugo.

**lanugo** (lä-nū'gō) [L. *lana*, wool]

1. Downy hair covering the body. 2. Fine downy hairs that cover the body of the fetus, esp. when premature. The presence and amount of lanugo aids in estimating the gestational age of preterm infants. The fetus first exhibits lanugo between weeks 13 and 16. By gestational week 20, it covers the face and body. The amount of lanugo is greatest between weeks 28 and 30. As the third trimester progresses, lanugo disappears from the face, trunk, and extremities.

**LAO** *left anterior oblique* position.

**laparo-** [Gr. *lapara*, flank] Combining

form pert. to the flank and to operations through the abdominal wall.

**laparocele** (läp'ä-rō-sēl) [" + *kele*, tumor, swelling] An abdominal hernia.

**laparocholecystotomy** (läp'är-ō-kōl'e-sīs-tōt'ō-mē) [" + *chole*, bile, + *kystis*, bladder, + *tome*, incision] An incision into the gallbladder through the abdominal wall.

**laparocolecotomy** (läp'är-ō-kō-lēk'tō-mē) [" + *kolon*, colon, + *ektome*, excision] Colectomy.

**laparocolostomy** (läp'är-ō-kō-lōs'tō-mē) [" + " + *stoma*, mouth] The formation of a permanent opening into the colon through the abdominal wall.

**laparocolotomy** (läp'är-ō-kō-lōt'ō-mē) An incision into the colon via the abdominal wall.

**laparocystectomy** (läp'är-ō-sīs-tēk'tō-mē) [" + *kystis*, bladder, + *ektome*, excision] The removal of an extrauterine fetus or a cyst through an abdominal incision.

**laparocystotomy** (läp'är-ō-sīs-tōt'ō-mē) An incision of the abdomen to remove the contents of a cyst or an extrauterine fetus.

**laparoenterostomy** (läp'är-ō-rēn'tēr-ōs'tō-mē) [" + *enteron*, intestine, + *stoma*, mouth] The formation of an ar-

tificial opening into the intestine through the abdominal wall.

**laparotomy** (lăp"är-ō-ĕn"tēr-ōt'ō-mē) [" + " + *tome*, incision] An opening into the intestinal cavity by incision through the loins.

**laparogastroscopy** (lăp"är-rō-gās-trōs'kō-pē) [" + *gaster*, belly, + *skopein*, to examine] Inspection of the inside of the stomach through an abdominal incision.

**laparogastrostomy** (lăp"är-ō-gās-trōs'tō-mē) [" + " + *stoma*, mouth] The surgical formation of a permanent gastric fistula through the abdominal wall. SYN: *celiogastronomy*.

**laparogastrotomy** (lăp"är-rō-gās-trōt'ō-mē) [" + " + *tome*, incision] An incision into the stomach through the abdominal wall. SYN: *celiogastrotomy*.

**laparohepatotomy** (lăp"är-ō-hēp"ä-tōt'ō-mē) [" + *hepar*, liver, + *tome*, incision] An incision of the liver through the abdominal wall.

**laparohysterectomy** (lăp"är-ō-hīs"tēr-ō-ō"ōf-ō-rēk'tō-mē) [" + " + *oon*, ovum, + *phoros*, bearer, + *ektome*, excision] The removal of the uterus and ovaries through an abdominal incision.

**laparohysteropexy** (lăp"är-ō-hīs'tēr-ō-pēks-ē) [" + " + *pexis*, fixation] Abdominal fixation of the uterus.

**laparohysterosalpingo-oophorectomy** (lăp"är-ō-hīs'tēr-ō-sāl-pīn"gō-ō-fō-rēk'tō-mē) [" + *hystera*, womb, + *salpinx*, tube, + *oon*, ovum, + *phoros*, bearer, + *ektome*, excision] The removal of the uterus, fallopian tubes, and ovaries through an abdominal incision.

**laparohysterotomy** (lăp"är-ō-hīs'tēr-ōt'ō-mē) [" + " + *tome*, incision] Surgery of the uterus through an abdominal incision. SEE: *cesarean section*.

**laparointotomy** (lăp"är-ō-īl-ē-ōt'ō-mē) [" + L. *ileum*, ileum, + Gr. *tome*, incision] An abdominal incision into the ileum.

**laparomyomectomy** (lăp"är-ō-mī-ō-mēk'tō-mē) [" + " + *oma*, tumor, + *ektome*, excision] Abdominal excision of a muscular tumor.

**laparonephrectomy** (lăp"är-ō-nē-frēk'tō-mē) [" + *nephros*, kidney, + *ektome*, excision] Renal excision through the loin.

**laparorrhaphy** (lăp-ä-ror'ä-fē) [" + *rhaphe*, seam, ridge] Suture of a wound in the abdominal wall. SYN: *celiorrhaphy*.

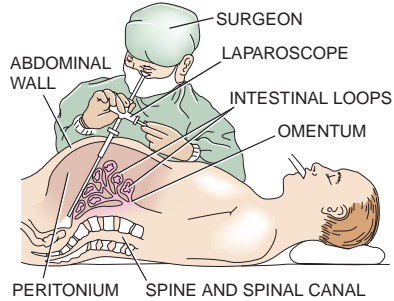
**laparosalingectomy** (lăp"är-ō-sāl-pīn-jēk'tō-mē) [" + *salpinx*, tube, + *ektome*, excision] Excision of a fallopian tube through an abdominal incision.

**laparosalingo-oophorectomy** (lăp"är-ō-sāl-pīn"gō-ō-ōf-ō-rēk'tō-mē) [" + " + *oon*, ovum, + *phoros*, bearer, + *ektome*, excision] The removal of the fal-

lopian tubes and ovaries through an abdominal incision.

**laparosalingotomy** (lăp"är-ō-sāl-pīn-gōt'ō-mē) [" + " + *tome*, incision] Incision of a fallopian tube through an abdominal incision. SYN: *celiosalpingectomy*.

**laparoscopy** (lăp"är-rō-skōp") [" + *skopein*, to examine] An endoscope designed to permit visual examination of the abdominal cavity. SEE: *illus*.



LAPAROSCOPE

**laparoscopic gastric banding** (lăp"är-ä-skōp'ik) A bariatric surgical treatment in which a tight band is placed around the upper stomach, restricting its volume and increasing the sense of satiety after a meal. Relative to other forms of bariatric surgery, gastric banding is less effective; patients who undergo gastric banding achieve less weight loss.

**laparoscopic vertical gastrectomy** A bariatric surgical treatment in which a large portion of the stomach is removed, leaving a 60- to 80-ml gastric tube. The greater curvature of the stomach is removed during the procedure. The small residual stomach tube prevents overeating by creating a feeling that the stomach is full after a small meal. (The operation may also affect serum levels of hormones like ghrelin, which influence hunger and satiety.) The operation is purely restrictive and does not produce malabsorption of nutrients. It is relatively easy to perform compared with other forms of bariatric surgery. Complications of the procedure include nausea, vomiting, and gastric leaks.

**laparoscopy** (lăp-är-ōs'kō-pē) [" + *skopein*, to examine] Abdominal exploration with an endoscope.

**laparosplenectomy** (lăp"är-ō-splēn-ēk'tō-mē) [" + *splen*, spleen, + *ektome*, excision] Abdominal excision of the spleen.

**laparosplenotomy** (lăp"är-ō-splēn-ōt'ō-mē) [" + " + *tome*, incision] Incision of the spleen through the abdominal wall.

**laparotomy** (lăp-är-ōt'ō-mē) [" + *tome*, incision] The surgical opening of the abdomen. SYN: *celiotomy*.



**PATIENT CARE:** *Preoperative:* The patient's knowledge of the surgery is determined, misconceptions are clarified, and a signed informed consent form is obtained. A baseline assessment of all body systems is conducted. The patient is encouraged to express feelings and concerns, and reassurance is offered. Preoperative teaching should focus on explaining the procedure, postoperative care, and expected sensations. Preoperative blood tests (including complete blood counts and serum chemistries), urinalysis, ECG, and chest X-ray usually are carried out, and consultations with appropriate specialists are conducted. Physical preparation of the patient is carried out according to institutional or surgeon's protocol regarding diet; removal of abdomen and pubic area hair; enemas, douches, administration of intravenous fluids, measurements of vital signs and intake and output. AntieMBOLIC measures are applied as prescribed.

*Postoperative:* Vital signs and dressing status are monitored; the latter includes checking any drains in place and for the presence of vaginal bleeding if applicable. Ventilatory status is assessed by auscultating for adventitious or decreased breath sounds, and respiratory toilet (deep breathing, coughing, incentive spirometry, oral hygiene, and repositioning) is provided as determined by the patient's response. The nurse assists the patient to use noninvasive pain relief measures and prescribed analgesia for pain relief or monitors patient-controlled analgesia for effectiveness. Fluid balance is monitored, and prescribed fluid and electrolyte replacement therapy is administered. The patient is encouraged to void after surgery; the bladder assessed for distention, which may indicate urinary retention; and catheterization is instituted only when nursing measures are unsuccessful. The abdomen is auscultated for the return of bowel sounds, and a high-protein, high vitamin C diet is initiated following clear to full liquids as prescribed. Leg mobilization, turning, and early ambulation are encouraged, to promote gastrointestinal activity and prevent venous thrombosis. The hospital staff initiates early discharge planning, which includes carrying out patient teaching focused on incisional care, obtaining adequate nutrition, complications to report (e.g., nausea, vomiting, fevers, chills, constipation or wound dehiscence), and activity resumption and restrictions; arranging referral for home care as appropriate; and ensuring that the patient has scheduled (and plans to keep) a follow-up appointment with the surgeon.

**lap board** A wheelchair attachment serv-

ing as a tray or platform over the lap to support the hands and arms or to permit manual activities.

**Laplace, law of** (lä-pläs') [Pierre-Simon Laplace, Fr. scientist, 1749-1827] A law stating that pressure within a tube is inversely proportional to the radius. The larger the diameter of a tubular structure, the less chance that it will rupture when subjected to an increase in pressure.

**lard** [L. *lardum*, fat] Purified fat from the hog. The sole nutrient is fat; a 100-g portion contains 902 kcal.

**benzoinated l.** Lard containing 1% benzoin, used as a vehicle for certain types of topically applied medicines.

**lardaceous** (lä-dä'shüs) [L. *lardum*, fat] Resembling lard; waxy, fatty.

**large for gestational age** ABBR: LGA. Term used of a newborn whose birth weight is above the 90th percentile on the intrauterine growth curve. Such babies should be monitored for signs of hypoglycemia during the first 24 hr after birth.

**large loop excision of the transformation zone** ABBR: LLETZ. Obtaining a biopsy of the uterine cervix in patients in whom the colposcopic examination or Pap smear indicates the area is abnormal. The tissue is obtained by use of an electrically heated wire loop. This procedure is used in treating noninvasive carcinoma of the cervix. SYN: *loop electrode excision procedure*.

**L-arginine** An amino acid promoted as a dietary supplement and sometimes employed by athletes to increase energy levels, human growth hormone levels, or performance in sports.

**Larmor frequency** In magnetic resonance imaging (MRI), the frequency of the radio wave that will resonate with all the protons in the nucleus of a given element. The Larmor radio frequency induces the magnetic resonance used to create MRI images.

**Laron syndrome** [Z. Laron, contemporary Israeli physician] Primary insensitivity or resistance to the effects of growth hormone. It is a common cause of dwarfism. Affected individuals have high levels of circulating growth hormone, but do not make insulin-like growth factor-1 (IGF-1). They can be treated with IGF-1. SYN: *growth hormone insensitivity syndrome*.

**Larsen syndrome** [Loren Joseph Larsen, Am. orthopedic surgeon, b. 1914] A rare autosomal disorder characterized by multiple joint dislocations and flattening of the face with widely spaced eyes, among other findings.

**larva** (lar'vä) [L., mask] **1.** General term applied to the developing form of an insect after it has emerged from the egg and before it transforms into a pupa, from which it emerges as an

adult. 2. The immature forms of other invertebrates such as worms. **larval** (lär'vål), *adj.*

**l. currens** A type of larva migrans. The organism, *Strongyloides stercoralis*, travels subcutaneously at the rate of about 10 cm an hour rather than at the slow rate of larva migrans.

**cutaneous l. migrans** A skin lesion characterized by a tortuous elevated red line that progresses at one end while fading out at the other. It is caused by the subcutaneous migration of the larvae of certain nematodes, esp. *Ancylostoma braziliense* and *A. caninum*, that occur as parasitic infections in humans.

**visceral l. migrans** Toxocariasis.

**larvate** (lär'våt) [L. *larva*, mask] Hidden, concealed, as a hidden symptom.

**larvicide** (lär'vi-sid) [l' + *caedere*, to kill] An agent that destroys insect larvae.

**larviphagic** (lär'vi-fä'jik) [l' + Gr. *phagein*, to eat] Consuming larva, as is done by certain fish.

**laryngalgia** (lär-in-gäl'jē-ä) [Gr. *larynx*, larynx, + *algos*, pain] Laryngeal pain.

**laryngeal** (lär-in'jē-äl) [Gr. *larynx*, larynx] Pert. to the larynx.

**laryngeal framework surgery** Thyroplasty.

**laryngeal tracheal airway** ABBR: LTA. An airway that can be blindly inserted into the hypopharynx to use when advanced airway control is needed during procedures that require brief anesthesia. It consists of an airway tube with a proximal cuff, which holds the middle of the tube in place at the base of the tongue, and a distal cuff to fix the end of the tube in the trachea.



It should not be used in patients at high risk of aspiration.

**laryngectomee** (lär'in-jèk'tō-mē) [l' + *ektome*, excision] An individual whose larynx has been removed.

**laryngectomy** (lär'in-jèk'tō-mē) [l' + *ektome*, excision] Removal of all or part of the larynx, to treat cancers or other diseases of the larynx. The procedure may cure the lesion if it is confined to the organ, or it may be used to palliate symptoms. Common side effects of the surgery are loss of voice, gastroesophageal reflux, and adjustment disorders or depression as a result of the changes in body image produced by the operation. SEE: *Nursing Diagnoses Appendix*.

**PATIENT CARE:** *Preoperative:* The patient is prepared for vocal and airway changes and for other functional losses after surgery. Explanations are supplemented with diagrams and samples of required equipment. Postsurgical communication methods most appropriate

for and agreeable to the particular patient (e.g., simple sign language, flash cards, magic slate, alphabet board) are explained. The postoperative setting and care are described to the patient, including assessment procedures and sensations; and equipment used (suctioning, nasogastric [NG] tube feeding, laryngectomy tube care, wound drainage). Other functional losses that may be expected are explored (loss of smell, nose-blowing, whistling, gargling, sipping, sucking on a straw). The patient is encouraged to discuss emotions, sensations, and thoughts; and the use of familial, psychological, or spiritual forms of support is presented. Informed consent is obtained.

*Postoperative:* If a partial laryngectomy is performed, a tracheostomy tube will be in place until edema subsides, and the patient should not use his voice until permitted to do so and then should whisper until healing is complete. If a total laryngectomy is performed, a laryngectomy tube (shorter and thicker than a tracheostomy tube) will be in place until the stoma heals (7 to 10 days). Vital signs are monitored, especially ventilatory rate and effort, as well as level of consciousness, arterial blood gas values, peripheral oxygen saturation levels, and the status of dressings and drains, including the posterior area. The airway is assessed for patency; the tracheostomy or laryngectomy tube is gently (but not deeply) suctioned to protect the suture line, as are the oral cavity and nose, as needed. Crust formation is prevented by increasing humidity and fluid intake, and frequent oral hygiene and assistance in managing saliva are provided. The patient usually is positioned on one side, with the head elevated to 30 to 45 degrees. Support is provided to the patient's neck posteriorly during movement. The patient is taught to provide support by interlocking fingers of both hands behind his neck when moving. Fluid balance is monitored, prescribed replacement therapy is provided, and urination is encouraged. The patient is assessed for early complications such as respiratory distress due to edema, infection, dehydration, and hemorrhage (remembering to check the posterior aspect of the neck, as well as dressings, drains, and vital signs); and for later ones such as fistula formation, tracheal stenosis, and carotid artery rupture. If the carotid artery ruptures, pressure is applied to the site immediately, assistance called for, and the patient quickly returned to the operating theater for carotid ligation. If a fistula occurs, continued tube feeding is necessary to prevent food leakage that would interfere with healing (over a period of weeks to months). Tracheal

stenosis requires fitting the patient with tracheal/laryngectomy tubes that are gradually increased in size until a tracheal opening of adequate size can be achieved. Protein-rich, high vitamin C nutrition is provided, via the prescribed route (usually NG tube feeding initially), to aid healing. Frequent oral hygiene is provided and encouraged as part of self-care. Noninvasive measures and prescribed analgesics to relieve pain are provided. When the wound drainage system is removed, dressings are checked for any further drainage, and the wound redressed according to protocol. The patient is allowed time for communication and is reassured that verbal communication ability will be reestablished through tracheoesophageal puncture, esophageal speech, or external mechanical or electronic voice boxes. Professional staff supports the patient and family through their grief over losses (including loss of voice, whistling, sucking ability, sense of smell and taste, nose blowing, activities such as swimming) and damage to self-image and self-esteem. The patient is prepared for possible follow-up therapies, such as radiation and chemotherapy and adverse effect as well as their management are discussed. Patient education also should include stoma care activities (including the need to limit exposures to dusts, fumes, and vapors). Information is also provided about the management of colds and respiratory illnesses, the removal of crust or mucus from the stoma, the need for warming and humidification of inhaled air, and the risk of postoperative tracheal stenosis. A list of the resources in the community should be provided for support, counseling, and further education. Patients are encouraged to join local branches of groups such as the American Speech-Learning-Hearing Association, American Cancer Society, National Association of Laryngectomee Clubs, or Lost Chord Club. A rapid return to employment is encouraged. Tobacco smokers and alcohol users are encouraged to seek help in quitting.

**laryngismal** (lär'in-jis'mäl) [' + *-ismos*, condition] Concerning or resembling laryngeal spasm.

**laryngismus** (lär'in-jis'müs) [' + *-ismos*, condition] Spasm of the larynx.

**laryngitic** (lär-in-jit'ik) [Gr. *larynx*, larynx] 1. Resulting from laryngitis. 2. Rel. to laryngitis.

**laryngitis** (lär-in-jit'is) [' + *itis*, inflammation] Inflammation of the larynx. SEE: *croup*; *Nursing Diagnoses Appendix*.

**acute l.** Acute congestive laryngitis; inflammation of laryngeal mucosa and the vocal cords. It is characterized by hoarseness and aphonia and occasion-

ally pain on phonation and deglutition. It may be caused by improper use or overuse of the voice, exposure to cold and wet, extension from infections in nose and throat, inhalation of irritating vapors and dust, or systemic diseases such as whooping cough or measles.

**TREATMENT:** Treatment includes vocal rest, liquid or soft diet, steam inhalations, and codeine or nonnarcotic cough suppressants for pain and cough. If the laryngitis is viral, no specific therapy exists; if bacterial, appropriate antibiotics should be given.

**atrophic l.** Laryngitis leading to diminished secretion and atrophy of the mucous membrane. Symptoms are a tickling sensation in the throat, hoarseness, cough, and dyspnea when the crusts are thick and accumulate on the vocal cords, narrowing the breathing aperture. Inhalants and medicated sprays should be used to loosen the crusts, along with strict attention to associated nose and throat pathology.

**chronic l.** A type of laryngitis caused by a recurrent irritation, or following the acute form. It is often secondary to sinus or nasal pathology, improper use of the voice, excessive smoking or drinking, or neoplasms. The patient experiences a tickling in the throat, huskiness of the voice, and dysphonia. The treatment involves correcting the preexisting nose and throat pathology, discontinuing alcohol and tobacco use, and avoiding excessive use of the voice.

**croupous l.** Laryngitis occurring mainly in infants and young children and characterized by a barking cough, hoarseness, and stridor.

**diphtheritic l.** Invasion of the larynx by diphtheria, usually with formation of a membrane.

**membranous l.** Laryngitis characterized by inflammation of the larynx, with the formation of a false, nondiphtheritic membrane.

**posterior l.** Reflux laryngitis.

**reflux l.** Hoarseness, throat clearing, and alterations in voice quality thought to be the result of injury to the posterior vocal folds from reflux of acids from the stomach through the esophagus. SYN: *posterior laryngitis*.

**syphilitic l.** A rare, chronic form of laryngitis produced by secondary or tertiary involvement of the larynx by syphilis.

**tuberculous l.** Laryngitis secondary to infection with *Mycobacterium tuberculosis*. Infectious granuloma may be present in the interarytenoid area, vocal cords, epiglottis, or false cords.

**laryngo-** [Gr. *larynx*, larynx] Combining form pert. to the larynx.

**laryngocele** (lär-in'gō-sél) [' + *kele*, tumor, swelling] A congenital air sac connected to the larynx. Its presence is nor-

mal in some animals but abnormal in humans.

**laryngocentesis** (lär-ín'gō-sēn-tē'sīs) [" + *kentesis*, puncture] Incision or puncture of the larynx.

**laryngofissure** (lär-íng'gō-fish'ūr) [" + *L. fissura*, a cleft] The operation of opening the larynx by a median line incision through the thyroid cartilage.

**laryngogram** (lä-ríng'gō-grām) [" + *gramma*, something written] A radiograph of the larynx.

**laryngograph** (lär-íng'ō-gräf) [" + *graphein*, to write] A device for making a record of laryngeal movements.

**laryngography** (lär'ín-gōg'rā-fē) **1.** A description of the larynx. **2.** Radiography of the larynx using a radiopaque contrast medium.

**laryngologist** (lär'ín-gōl'ō-jíst) [" + *logos*, word, reason] A specialist in laryngology.

**laryngology** (lär'íng-gōl'ō-jē) The specialty of medicine concerned with the pharynx, throat, larynx, nasopharynx, and tracheobronchial tree.

**laryngomalacia** (lär-íng'gō-mā-lā'shē-ā) [" + *malakia*, softness] A softening of the tissues of the larynx.

**laryngometry** (lär'ín-góm'ē-trē) [" + *metron*, measure] The systematic measurement of the larynx.

**laryngoparalysis** (lär-ín'gō-pār-äl'y-sīs) [" + *paralyein*, to disable at one side] Paralysis of the muscles of the larynx.

**laryngopathy** (lär'ín-gōp'ā-thē) [" + *pathos*, disease] Any disease of the larynx.

**laryngopharyngeal** (lär-ín'gō-fär-ín'jē-äl) [" + *pharynx*, throat] Rel. jointly to the larynx and pharynx.

**laryngopharyngeal reflux** The backward flow of gastric contents into the voice box and throat. It may cause vocal cord damage, hoarseness, and habitual throat clearing.

**laryngopharyngectomy** (lär-ín'gō-fär-ín-jēk'tō-mē) [" + " + *ektome*, excision] Surgical removal of the larynx and pharynx. It is usually only performed for cancers of the head and neck.

**laryngopharyngeus** (lä-ríng'gō-fär-rín'jē-ūs) The muscle that constricts the inferior pharynx.

**laryngopharyngitis** (lär-ín'gō-fär-ín-jī'tis) [" + " + *itis*, inflammation] Inflammation of the larynx and pharynx.

**laryngopharynx** (lär-ín'gō-fär'ínks) [Gr. *larynx*, larynx, + *pharynx*, throat] Hypopharynx.

**laryngophony** (lär'ín-gōf'ō-nē) [" + *phone*, voice] Voice sounds heard in auscultating the pharynx.

**laryngophtthisis** (lär'íng-gōf'thī-sīs) [" + *phthisis*, a wasting] Tuberculosis of the larynx.

**laryngoplasty** (lär-ín'gō-plās'tē) [" +

*plassein*, to form] Plastic surgery of the larynx.

**laryngoplegia** (lä-ríng'gō-plē'jē-ä) [" + *plege*, stroke] Paralysis of the laryngeal muscles.

**laryngorhinology** (lär-ín'gō-rín-öl'ō-jē) [" + *rhis*, nose, + *logos*, word, reason] The branch of medical science concerned with diseases of the larynx and nose.

**laryngorrhagia** (lär'ín-gō-rā'jē-ä) [" + *rhegnynai*, to flow forth] Laryngeal hemorrhage.

**laryngorrhea** (lär'ín-gō-rē'ä) [" + *rhoia*, flow] Excessive discharge of laryngeal mucus.

**laryngoscleroma** (lär-ín'gō-sklē-rō'mä) [" + *skleros*, hard, + *oma*, tumor] Scleroma affecting the larynx.

**laryngoscope** (lär-ín'gō-skōp) [" + *skopein*, to examine] An instrument consisting of a blade and a fiberoptic light source, used to examine the larynx (e.g., during endotracheal intubation).

**laryngoscopic** (lär'ín-gō-skōp'ik) [" + *skopein*, to examine] Pert. to observation of the interior of the larynx with the aid of a small long-handled mirror. SEE: *laryngoscopy*.

**laryngoscopist** (lär'íng-gōs'kō-píst) [" + *skopein*, to examine] An individual trained in laryngoscopy.

**laryngoscopy** (lär'ín-gōs'kō-pē) Visual examination of the interior of the voice box (the larynx) to determine the cause of hoarseness, obtain cultures, remove a foreign body, manage the upper airway, or take biopsies of potentially malignant lesions.

**PATIENT CARE:** Short-acting intravenous sedation or anesthesia is administered along with oxygen. Vital signs and cardiac status are monitored throughout the procedure. After the procedure, the patient is placed in the semi-Fowler position, and vital signs are monitored until stable. Oral intake is withheld until the patient's swallowing reflex has returned, usually within 2 to 8 hr. An emesis basin is provided for saliva. Sputum is inspected for blood. Excessive bleeding is reported. Application of an ice collar helps to minimize edema; subcutaneous crepitus around the face or neck should be reported immediately because it may indicate tracheal perforation. The patient should not cough or clear the throat for at least 24 hr to minimize irritation. Smokers who undergo laryngoscopy should be encouraged to quit; preparation for the procedure and after-procedure care provide "teachable moments."



**1.** Visualization of the larynx is associated with aerosolization of upper airway secretions. Standard precautions and droplet precautions are required during the procedure to limit the

spread of infectious diseases such as severe acute respiratory distress syndrome (SARS) or tuberculosis.

2. Laser safety precautions must be employed when lasers are used.

**direct I.** Laryngoscopy with a laryngeal speculum or laryngoscope.

**indirect I.** Laryngoscopy with a mirror.

**laryngospasm** (lăr-în-gō-spăzm) [l" + *spasmos*, a convulsion] Spasm of the laryngeal muscles.

**laryngostenosis** (lăr-îng'gō-stě-nō'sis) [l" + *stenosis*, a narrowing] Stricture of the larynx.

**compression I.** Stricture of the larynx owing to outside causes such as abscess, tumor, or goiter.

**occlusion I.** Stricture of the larynx owing to congenital bands or membranes, foreign bodies, tumors, scarring following ulceration as in diphtheria and tertiary syphilis, penetrating wounds, or corrosive fluid. Patients experience dyspnea, esp. on inspiration and exertion, often accompanied by stridor. Treatment depends on the cause. Tracheotomy is often necessary.

**laryngostomy** (lăr-în-gōs'tō-mē) [l" + *stoma*, mouth] Establishing a permanent opening through the neck into the larynx.

**laryngostroboscope** (lăr'în-gō-strō'bō-skōp) [l" + *strobos*, whirl, + *skopein*, to view] An instrument for inspecting vibration of the vocal cords.

**laryngotomy** (lăr-în-gōt'ō-mē) [l" + *tome*, incision] Incision of the larynx.

**inferior I.** Surgical incision of the larynx through the cricoid cartilage.

**median I.** Surgical incision of the larynx through the thyroid cartilage.

**subhyoid I.** Surgical incision of the larynx through the thyroid membrane. SYN: *superior I.*

**superior I.** Subhyoid laryngotomy.

**laryngotracheal** (lăr-rîng'gō-tră-kē-ăl) [l" + *tracheia*, trachea] Concerning the larynx and trachea.

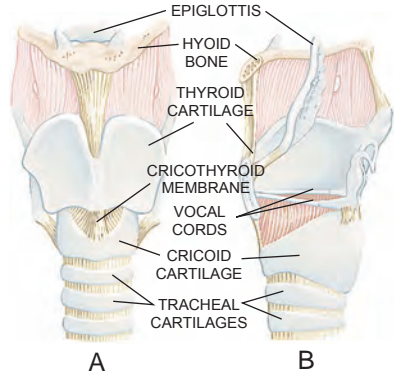
**laryngotracheitis** (lăr-în'gō-tră-kē-î'tis) [l" + " + *itis*, inflammation] Inflammation of the larynx and trachea.

**laryngotracheobronchitis** (lăr-rîng'gō-tră-kē-ō-brōng-kî'tis) [l" + " + *bronch*, windpipe, + *itis*, inflammation] Inflammation of the larynx, trachea, and bronchi. SEE: *croup*.

**laryngotracheotomy** (lăr-în'gō-tră-kē-ōt'ō-mē) [l" + " + *tome*, incision] Incision of the larynx with section of upper tracheal rings.

**larynx** (lăr'înk) *pl.* **larynges** [Gr.] A musclicartilaginous organ at the upper end of the trachea, below the root of the tongue, lined with ciliated mucous membrane, that is part of the airway and the vocal apparatus. SEE: *illus.*

**ANATOMY:** The larynx consists of nine cartilages bound together by an elastic



LARYNX

(A) anterior view, (B) midsagittal section

membrane and moved by muscles. The cartilages include three single (cricoid, thyroid, and epiglottic) and three paired (arytenoid, corniculate, and cuneiform). The thyroid cartilage pushes soft tissue forward, forming the Adam's apple. The extrinsic muscles include the omohyoid, sternohyoid, sternothyroid, and several others; intrinsic muscles include the cricothyroid, external and internal thyroarytenoid, and transverse and oblique arytenoid. The cavity of the larynx contains two pairs of folds—the ventricular folds (false vocal cords) and the vocal folds (true vocal cords)—and is divided into three regions: the vestibule, ventricle, and inferior entrance to the glottis. An opening between the true vocal folds forms a narrow slit, the rima glottidis or glottis.

**NERVES:** The larynx is innervated from the inferior and external branches of the superior laryngeal nerve.

**BLOOD SUPPLY:** The larynx is supplied by the inferior thyroid, a branch of the thyroid axis, and by the superior thyroid, a branch of the external carotid.

**foreign bodies in I.** An inhaled or aspirated solid object, such as a piece of meat, hard candy, safety pin, or coin, in the larynx. Any aspirated object poses an imminent risk of airway obstruction.

**SYMPTOMS:** Symptoms may include coughing, choking, dyspnea, fixed pain, or loss of voice.

**PATIENT CARE:** If the patient is able to speak or cough, the rescuer should not interfere with the patient's attempts to expel the object. If the patient is unable to speak, cough, or breathe, the rescuer should apply the Heimlich maneuver 6 to 10 times rapidly in succession. Using air already in the lungs, the thrusts create an artificial cough to propel the obstructing object out of the airway. If the patient loses consciousness, carefully assist him or her to the ground



in a supine (face up) position. Next the rescuer should begin CPR since compressions have been shown to be effective in clearing an obstruction. With each time attempt to ventilate, the rescuer should first look in the mouth to see if there is an object that can be pulled out of the airway with gloved fingers. Previously chest thrusts were taught for an obese or pregnant patient or a child with a foreign body airway obstruction. To simplify this procedure the Emergency Cardiac Care Guidelines 2005 recommend all patients receive chest compressions following CPR. For an infant, the rescuer uses back slaps before chest thrusts. Direct laryngoscopy and the use of Magill forceps may be required to remove a foreign object. If the object cannot be readily removed with these measures, an emergency cricothyrotomy, or emergency tracheotomy may be required. SEE: *Heimlich maneuver*.

**laser** (lā'zēr) Acronym for *light amplification by stimulated emission of radiation*. It is a device that emits intense heat and power at close range. The instrument converts various frequencies of light into one small, extremely intense unified beam of a single frequency or wavelength radiation. The laser can be focused on a very small target. Lasers can be used surgically in a wide variety of ways. They influence cellular chemistry (the "photochemical" effects of lasers). They damage tissues by generating heat (e.g., producing coagulation, the "photothermal" effects). They can drill into, cavitate, or explode tissues ("photomechanical" effects). They can ablate tissues after transforming them into plasma. In addition to their surgical uses, lasers can be used for diagnosis (e.g., by illuminating cells or tissues, as in fluorescence); and they have a vast number of laboratory applications. Lasers have many treatment applications. In ophthalmology, they are used in treating cataracts, diabetic retinopathy, macular degeneration, and retinal detachment; in cardiology, to vaporize arterial obstructions; in dermatology, to obliterate blood vessels and to remove warts, skin cancers, nevi, excess tissue, and tattoos; in gynecology, to remove vulval lesions, including genital warts; in gastroenterology, to control bleeding in the gastrointestinal tract; and in oral surgery and dentistry, to remove tumors. Many kinds of lasers are used depending upon the wavelength and power required, including argon, carbon dioxide, copper vapor, dye, excimer, helium-neon, ion, krypton, neodymium:yttrium-aluminum garnet, and ruby lasers.

signs should be posted indicating that a laser is being used; equipment must be checked before the procedure; conventional endotracheal tubes must be wrapped with aluminum foil tape or flexible metallic endotracheal tubes insulated with silicone may be used; skin preparation solution may not contain combustible agents; and towels draped around the site must be kept wet. The laser equipment must be moved carefully, to avoid jarring the mirrors out of alignment. Alcohol-based skin preparations should not be used.

**argon I.** A gas-produced light (in the blue and green visible light spectrum) with a wavelength spectrum of 488 nm to 633 nm, which coagulates tissues, is used in photodynamic therapy, and can be absorbed by oxyhemoglobin in blood vessels. Argon lasers have been used to treat skin lesions, bleeding ulcers, hemangiomas, periodontal disease, glaucoma, retinal diseases, and other conditions.

**carbon dioxide I.** ABBR: CO<sub>2</sub> laser. A gas-produced colorless light with a wavelength of 10,600 nm (infrared), used, for example, in dermatological surgeries to remove scars, wrinkles, and solar skin damage. It can also be used as a scalpel in stereotactic neurosurgeries, gynecological surgeries, and many other applications.

**PATIENT CARE:** Laser precautions must be observed. The patient is given support by answering questions and explaining the need for eye covering during the procedure. The procedure is documented in a laser log.

**cutaneous I.** Any of several lasers (e.g., argon, CO<sub>2</sub>, etc.) employed for cosmetic and plastic surgery, including the treatment of pigmented lesions, wrinkles, vascular malformations, and other cosmetic skin surface irregularities.

**diode I.** A compact laser designed with semiconductors, which has many medical applications, including use in skin, eye, urological, and other surgeries. Wavelengths are from 800 to 1000 nm.

**PATIENT CARE:** Care involves general support, giving explanations, and answering questions. Equipment must be checked and regulations followed, esp. those that involve fire safety. The surgeon is given assistance, as needed.

**dye I.** A laser whose energy is applied in pulses, primarily to manage skin lesions. Wavelengths are 510 nm for green, and 577 nm to 600 nm for yellow.

**PATIENT CARE:** Care involves giving general emotional support, explanations, and answering questions regarding the procedure. The equipment is checked, and all rules are observed. The needs of the surgeon are anticipated,



Laser safety precautions must be observed. For example, warning

and the procedure is recorded in the laser log.

**excimer l.** An ultraviolet laser used clinically to remove tissue from the cornea (e.g., in LASIK surgery) or to remove plaque from arteries. This rare gas (halide) energy source laser breaks chemical bonds instead of destroying tissue with heat; it penetrates less than 1 mm into tissue. Halide combines with an active medium (an excited dimer), from which it derives its name. The dimeric media are excited, emitting laser energy. The chemical composition of the medium determines the ultraviolet wavelength. The four most popularly used are: the argon fluoride (ArF) laser at 193 nm, the krypton fluoride (KrF) at 248 nm, the xenon chloride (XeCl) at 308 nm, and the xenon fluoride (XeF) at 351 nm.

**grid l.** A laser that scatters light energy across the macula; used to treat many eye diseases, including diabetic retinopathy.

**surface-enhanced l. desorption-ionization** ABBR: SELDI. A technique used to separate and image molecules (e.g., DNA or proteins) in biological samples. Molecules are captured on a protein chip, then ionized and imaged. This technique can be used to map the molecules in samples of blood or other body fluids.

**yttrium-aluminum-garnet l.** ABBR: YAG laser. A laser with a crystal made of yttrium, aluminum, and garnet that can be used for skin resurfacing, or tissue penetration in oral, urological, ophthalmic, cardiac, orthopedic, or other applications. The depth of the penetration of the laser energy, its tissue absorption, and tissue-sparing characteristics vary with the materials used as additives to the crystal, such as erbium, holmium, or neodymium.

**PATIENT CARE:** Care involves general support, giving explanations, and answering questions. All equipment must be checked and all rules observed. The nurse assists the surgeon as necessary.

**laser tissue welding** (weld'ing) To bring the edges of a wound together with heat generated by a laser.

**Lasègue's sign** (lă-ségz') [Ernest C. Lasègue, Fr. physician, 1816–1883] In lumbar disk disease, pain that radiates into the leg after the hips and knees are flexed and the knee is extended. SYN: *Bragard test*.

**LASIK** *Laser assisted in situ keratomileusis*.

**Lasix** (lă'siks) SEE: *furosemide*.

**Lassa fever** (lăs'să) [Lassa, city in Africa] A potentially lethal viral illness marked by hemorrhage, extreme muscle pain, and in some cases shock. It is contracted solely in Africa. The respon-

sible agent, an arenavirus, is spread to people after contact with infected rodents or their excretions. Each year, approx. 300,000 people are infected.

**SYMPTOMS:** Patients have abrupt onset of high fever that is continuous or intermittent and spiking, with generalized myalgia, chest and abdominal pain, headache, sore throat, cough, dizziness with flushing of the face, conjunctival injection, nausea, diarrhea, and vomiting. Hemorrhagic areas of the skin and mucous membranes may appear on the fourth day. Mortality of those in Africa with this disease varies from 16% to 45%.

**TREATMENT:** Ribavirin given in the first week of illness and continued for 10 days has been very effective in reducing the death rate. This medicine should also be given orally for 10 days prophylactically to those who have been percutaneously exposed to the virus. Patients are isolated in special isolation units that filter the air leaving the room and maintain negative pressure. All sputum, blood, excreta, and objects that the patient has contacted are disinfected. SEE: *Standard Precautions Appendix*.

**lassitude** (lăs'î-tūd) [L. *lassitudo*, weariness] Weariness; exhaustion.

**last menstrual period** ABBR: LMP. The date of the first day of menstruation before a presenting illness or the advent of pregnancy-related amenorrhea; used in estimating the expected date of delivery. SEE: *Naegeli's rule*.

**LAT** *licensed athletic trainer*.

**latah** (lă'tă) A behavior identified in Southeast Asian women marked by imitation, swearing, repetitive speech, and obedient gestures. It may be provoked by startling, tickling, or frightening affected persons. Some researchers believe it is a social convention rather than a psychiatric or neurological illness.

**latanoprost** (lă-tăn'ō-pröst) A prostaglandin agonist used as an ocular hypotensive and an antiglaucoma agent. It is administered as eye drops to manage glaucoma or to lower intraocular pressure.

**latch, latch-on** The attachment of the baby's mouth to the mother's nipple. Effective and comfortable latch-on is a crucial element in successful breastfeeding.

**latchkey children** Children who have a key to their home, needed for when they return home when no adult is present to supervise them. These children are at a higher risk of accidents, abusing drugs, and smoking cigarettes.

**LATCH score** An assessment tool to evaluate the effectiveness of early breastfeeding. A numerical score of 0, 1, or 2 is assigned to the five letters of the ac-

ronym: L-latching of infant onto the breast, A-amount of audible swallowing, T-type of nipple, C-comfort of mother, H-help needed by mother to hold baby to breast. Lower scores (<5) can indicate the need for assistance for better success at breastfeeding.

**late luteal phase dysphoric disorder** SEE: *premenstrual dysphoric disorder*.

**latency** (lā'tēn-sē) [L. *latens*, lying hidden] State of being concealed, delayed, dormant, inactive, or inapparent.

**sleep 1.** The amount of time between reclining in bed and the onset of sleep.

**latency period** The time from the stimulus to the response of the tissue stimulated.

**latent 1.** Lying hidden. **2.** Quiet; not active.

**1. content** In psychoanalysis, that part of a dream or unconscious mental content that cannot be brought into the objective consciousness through any effort of will to remember.

**latent heat** The caloric or heat energy absorbed by matter changing from solid to liquid or from liquid to vapor with no change in temperature.

**1.h. of fusion** The heat required to convert 1 g of a solid to a liquid at the same temperature. For example, the process of converting 1 g of ice at 0°C to water at 0°C requires 80 cal, and until it is completed there will be no rise in the temperature.

**1.h. of vaporization** The heat required to change 1 g of a liquid at its boiling point to vapor at the same temperature. The latent heat of steam is 540 cal; therefore, when steam cools to liquid, each gram gives out 540 cal. This explains why a scald from steam is much more severe than one caused by boiling water.

**latent period 1.** The time between stimulation and the resulting response. SYN: *lag*. **2.** The time during which a disease is supposed to be existent without manifesting itself; period of incubation. **3.** The time from exposure to ionizing radiation to the first visible sign of the effects.

**late-phase reaction** Inflammation of any part of the body caused by the release of cytokines; leukotrienes B<sub>4</sub>, C<sub>4</sub>, and D<sub>4</sub>; and prostaglandin D<sub>2</sub>, occurring approx. 6 hr after the body's initial response to an antigen, during a type I hypersensitivity response. Late-phase reactions play a significant role in prolonging illnesses such as asthma after the initial, immediate histamine-based response has subsided. These are treated with and prevented by the use of corticosteroids, such as prednisone, and other drugs.

**laterad** (lăt'ēr-ād) [L. *latus*, side, + *ad*, toward] Toward a side or lateral aspect.

**lateral** (lăt'ēr-āl) [L. *lateralis*] Pert. to the side.

**lateral geniculate body** One of two bodies forming elevations on the lateral portion of the posterior part of the thalamus. Each is the termination of afferent fibers from the retina, which it receives through the optic nerves and tracts.

**lateralis** (lăt'ēr-ā'lis) [L.] Located away from the mid-plane of the body.

**laterality** (lăt'ēr-āl'i-tē) Rel. to one side of the body, i.e., the left or right; used, e.g., to specify which side of the body or brain is dominant.

**crossed 1.** Mixed dominance of body parts, e.g., preferring to use the left arm for throwing a ball but the right leg for kicking it.

**dominant 1.** Preferential dominance and use of the parts of one side of the body such as the eye, arm, leg, or hand.

**laterodeviation** (lăt'ēr-ō-dē've-ā'shūn) [" + *deviare*, to turn aside] Deviation or displacement to one side.

**lateroduction** (lăt'ēr-ō-dūk'shūn) [" + *ducere*, to lead] Movement to one side, esp. of the eye.

**lateroflexion** (lăt'ēr-ō-flēk'shūn) [" + *flexis*, bending] Bending or curvature toward one side.

**lateroposition** (lăt'ēr-ō-pō-zīsh'ūn) [" + *positio*, position] Displacement to one side.

**lateropulsion** (lăt'ēr-ō-pūl'shūn) [L. *lateralis*, pert. to side, + *pulsus*, driving] In cerebellar and labyrinthine disease, the involuntary tendency to fall to one side.

**laterotorsion** (lăt'ēr-ō-tor'shūn) [" + *torsio*, a twisting] Twisting to one side.

**lateroversion** (lăt'ēr-ō-vēr'shūn) [" + *versio*, a turning] A tendency or a turning toward one side.

**latex** (lā'tēks) A viscous, aqueous solution of hydrocarbons, adsorbed proteins, ash, and resin produced mostly by tropical trees and used in the manufacture of rubber products, e.g., surgical gloves.

**lathyrism** (lāth'i-rīzīm) [Gr. *lathyros*, vetch] A neurotoxic disorder caused by eating the grass pea, *Lathyrus sativus*. Its hallmarks are irreversible muscular paralysis and spasticity.

**lathyrigen** (lāth'i-rō-jēn) [" + *gennan*, to produce] Something that produces lathyrism.

**Latino** (lah-tēn'ō) **1.** Pert. to Latin-American language, culture, or ethnicity. **2.** A person of Latin-American or Spanish-speaking ancestry.

**latitude** (lăt'i-tood', -tūd") In radiology, a range of exposure that would produce a technically correct radiograph.

**latrine** (lā-trēn') [L. *latrina*] A toilet, particularly one in a military camp.

**pit 1.** A type of latrine installed outdoors and used where it is impractical to provide a standard, flushing-type toilet. The structure may be manufactured

and installed so that odors and flies are minimized.

**Latrodectus** (lăt'rō-dĕk'tūs) [L. *latro*, robber, + Gr. *daknein*, biting] A genus of black spiders belonging to the family Theridiidae.

**L. mactans** Black widow spider.

**LATS** long-acting thyroid stimulator.

**lattice** (lăt'is) 1. A network or framework formed by structures intertwined usually at right angles with each other. 2. In physics, the arrangement of atoms in a crystal.

**lattice degeneration** Atrophy or thinning of the retina at its margins, a common condition that affects about 10% of the population. The condition is usually bilateral and is often asymptomatic, although affected persons may complain of seeing sudden flashes of light. It is an occasional cause of retinal detachment.

**laudable** (lawd'ă-bil) [L. *laudabilis*, praiseworthy] Commendable; healthy; normal; formerly said erroneously of pus.

**laugh** (läf) [ME. *laughen*, to laugh] 1. The sound produced by laughing. SYN: *risus*. 2. To express emotion, usually happiness or mirth, by a series of inarticulate sounds. Typically the mouth is open and a wide smile is present.

**sardonic l.** Risus sardonius.

**laughing gas** Nitrous oxide.

**laughter** (läf'tēr) A series of inarticulate sounds produced as an expression of emotion, usually happiness or mirth. The role of humor and laughter in promoting a positive attitude and health and in preventing the progress of some diseases has been documented esp. when it is combined with proven medical therapies.

**compulsive l.** Laughter without cause, occurring in certain psychoses, esp. schizophrenia.

**pathological l.** Uncontrolled laughter (occasionally accompanied by, or alternating with, uncontrolled crying), caused by pseudobulbar lesions of the brain. These lesions may result from lacunar strokes, multiple sclerosis, anoxic brain injury, and other forms of brain injury.

**l. reflex** Uncontrollable laughter resulting from tickling or the fear of tickling.

**laughter therapy** Humor therapy.

**launch** The release of a new drug or medical device into broad clinical use, that is, into the marketplace.

**Laurence-Moon-Biedl syndrome** (law'rĕns-moon'bĕ'dĕl) [John Zachariah Laurence, Brit. ophthalmologist, 1829–1870; Robert C. Moon, U.S. ophthalmologist, 1844–1914; Arthur Biedl, Prague endocrinologist, 1869–1933] The combination of girdle-type obesity, sexual underdevelopment, mental retardation,

retinal degeneration, polydactyly, and deformity of the skull. The condition is inherited as an autosomal recessive trait.

**lavage** (lä-văzh') [Fr. *lavage*, a washing] Washing out of a cavity. SYN: *irrigation*.

**bronchoalveolar l.** The removal of secretions, cells, and protein from the lower respiratory tract by insertion of sterile saline solution into the airways through a fiberoptic bronchoscope or a blindly inserted catheter. The fluid may be used to treat cystic fibrosis, pulmonary alveolar proteinosis, or bronchial obstruction due to mucus plugging, or to obtain specimens for diagnostic purposes. SYN: *bronchopulmonary l.*

**bronchopulmonary l.** Bronchoalveolar lavage.

**ductal l.** The injection of a small amount of saline into the ducts of the breast through a miniature catheter, followed by collection of the fluid and the cells that wash out with it. The cells are analyzed for evidence of early changes that may suggest an increased risk of future cancers. Occasionally they may reveal an already established cancer.

**gastric l.** Rinsing or irrigating the stomach to remove or dilute irritants or poisons or to cleanse the organ before or after surgery. Gastric lavage is used most often to manage patients who have ingested potentially toxic medications, street drugs, hydrocarbons, or other noncorrosive poisons. Its use in overdose is controversial. Effectiveness depends on absorption speed and the time between ingestion and removal. It has not been shown to improve clinical outcomes, except perhaps in those instances in which the patient presents for care within an hour of a toxic ingestion and the patient has consumed a life-threatening amount of poison. The procedure has some risks: the trachea, instead of the stomach, may be intubated; gastric contents may be aspirated; and the mouth, teeth, pharynx, or esophagus may be injured. "Stomach pumping" is the colloquial term for gastric lavage.

**PATIENT CARE:** The following equipment is assembled: plastic large-lumen nasogastric tube; water-soluble lubricant; disposable irrigation set with bulb syringe; adhesive tape or other device; clamp, safety pins, and rubber band; gloves and stethoscope; tissues; glass of water with straw; emesis basin; container for aspirant; at least 500 to 1000 ml of prescribed irrigating solution; and any specified antidote.

Physical restraints are applied only if prescribed and required. The patient's clothing is removed and a hospital gown put on. If conscious and cooperative, the

patient is placed in the high Fowler's position (head elevated 80 to 90 degrees), and the chest is covered with a water-impermeable bib or drape. If unconscious, the patient is positioned to prevent aspiration of stomach contents; suction equipment is provided, and the airway is protected.

The distance for tube insertion is measured by placing the tip of the tube at the tip of the patient's nose and extending the tube to the ear lobe and then to the xiphoid process. The length of tubing that will remain outside the patient after insertion is marked on the tube. Nostril patency is checked and the nostril with the least obstruction is selected. While the patient or an assistant holds the emesis basin, the nurse lubricates the tip of the tube and inserts it. A downward and backward motion aids passage through the back of the nose and down into the nasopharynx, thus avoiding producing a gag reflex. The patient is instructed to dry-swallow during this phase of passage. The tube should not be forced. If obstruction is met, the tube is removed, the patient permitted to rest briefly, the tube relubricated, and the procedure attempted again. If the tube cannot be passed without traumatizing the mucosa, the physician is notified.

When the tube is in the nasopharynx, the patient is instructed to flex the neck slightly to bring the head forward. The sip of water (if permitted) is given to the patient, and the patient is encouraged to swallow the tube. Rotating the tube toward the opposite nostril often helps direct toward the esophagus and away from the trachea. Placing the nondominant hand on the nose to secure the tube, the practitioner advances it with the dominant hand as the patient swallows.

The back of the throat is periodically inspected for any evidence of coiled tubing, esp. if the patient is gagging or uncomfortable, or unconscious. When the tube has been passed, placement is verified by aspirating gastric contents with the bulb syringe. The tube is then secured to the nostrils with adhesive tape or another securing device according to protocol.



Gastric lavage should never be performed on a patient who has ingested corrosive acids or alkalis. It also should never be performed on patients who cannot protect their own airways, unless they are already intubated.

The irrigation fluid is instilled, and care is taken to prevent the entrance of air. A Y connector can be attached to the nasogastric tube, with one tubing exit-

ing to the bulb syringe or irrigant container and the other to a drainage set. The return line is clamped, and the solution, usually 500 ml or more, instilled to distend the stomach and expose all areas to the solution. The large volume also dilutes harmful liquids and thins or dissolves other materials.

The patient is monitored throughout for retching. If retching occurs, the flow is stopped, suction is applied to the bulb syringe, or the drainage line is opened to remove some of the instilled fluid. The stomach is then drained, and the procedure repeated as necessary to cleanse and empty the stomach of harmful materials and irrigant. Alternately, 150 to 200 ml may be removed and the same amount added on an alternating basis. The process is repeated until a total of 1000 ml has been employed and drained. An activated charcoal slurry is then instilled as appropriate and prescribed.

A specimen of the aspirant is sent to the laboratory for analysis as directed. The tube may remain in place, attached to intermittent low suction, or be removed immediately after the procedure.

For removal, the tube is clamped securely. Any securing devices are removed, and the tube is rotated gently to ensure that it is freely moveable and then gently but steadily pulled out of the nose and coiled. The patient is handed tissues to wipe the eyes and blow the nose and is assisted with oral hygiene. A fresh gown or linens are provided as necessary.

After the procedure, the tube and prescribed suction are maintained as necessary, drainage is documented, comfort measures (oral misting, anesthetic throat sprays) are provided, and the patient is assessed and treated for any complications of lavage or of the toxic exposure.

**peritoneal l.** Irrigation of the peritoneal cavity (e.g., to diagnose blunt abdominal trauma; to diagnose, by obtaining cytologic specimens, or treat tumors of the peritoneum with chemotherapeutic agents; and to treat peritonitis, assist in evacuation of blood, fecal soilage, and/or purulent secretions as in hemorrhage or peritonitis).

**law** [AS. *laga*, law] **1.** A scientific statement that is found to apply to a class of natural occurrences. **2.** A body of rules, regulations, and legal opinions of conduct and action that are made by controlling authority and are legally binding.

**administrative l.** Body of law in the form of decisions, rules, regulations, and orders created by administrative agencies under the direction of the executive branch of the government used to carry out the duties of such agencies.



Regulations of nursing practice, for example, are considered administrative laws.

**all-or-none l.** The weakest stimulus capable of producing a response produces the maximum contraction of cardiac and skeletal muscle cells, and the maximal impulse transmission rate in neurons.

**Avogadro's l.** SEE: *Avogadro's law*.

**Baruch's l.** SEE: *Baruch's law*.

**Beer's l.** SEE: *Beer's law*.

**Bell's l.** SEE: under *Bell, Sir Charles*.

**biogenetic l.** Ontogeny recapitulates phylogeny (i.e., an individual in its development recapitulates stages in its evolutionary development). SYN: *Haeckel's l.*

**Boyle's l.** SEE: *Boyle's law*.

**case l.** Opinions or decisions made by the courts.

**Charles' l.** SEE: *Charles' law*.

**cosine l.** 1. A physical law that describes the relationship between the sides and angles of any triangle. 2. When applied to physical treatment of the body, it describes the effectiveness of radiant energy and the angle at which it strikes tissue. The maximum amount of energy transfer occurs when the energy strikes tissue at a 90° angle. As the angle changes, the effectiveness of the energy is reduced by the multiple of the cosine of the angle: Effective energy = applied energy × cosine of the angle.

**l. of contiguity** 1. A law stating that if two ideas occur together, then the recollection of one will likely stimulate recall of the other. 2. A law stating that if combined stimuli precede contraction of a muscle, then, when those stimuli are repeated, the muscle will contract again.

**Courvoisier's l.** SEE: *Courvoisier's law*.

**criminal l.** Area of the law rel. to violations of statutes that pertain to public offenses or acts committed against the public. A health care provider e.g., can be prosecuted for criminal acts such as assault and battery, fraud, and abuse.

**Dalton's l.** [John Dalton, Brit. chemist, 1766–1844] SEE: *Dalton's law*.

**l. of definite proportions** Two or more elements when united to form a new substance do so in a constant and fixed proportion by weight. SEE: *Dalton's law*.

**Fick's l.** SEE: under *Fick, Adolf Eugen*.

**Frank-Starling l.** SEE: under *Starling's law*.

**fraud and abuse l.** A statute that regulates the appropriateness of health care provider behavior in billing practices, receipt of payments, and provision of medically necessary services.

**Gay-Lussac's l.** Charles' law.

**Good Samaritan l.** SEE: *Good Samaritan law*.

**Graham's l.** SEE: *Graham's law*.

**l. of Grothius-Draper** SEE: *Grothius-Draper, law of*.

**Gudden's l.** SEE: *Gudden's law*.

**Haeckel's l.** Biogenetic law.

**Hellin's l.** [Dyonizy Hellin, Polish pathologist, 1867–1935] SEE: *Hellin's law*.

**Henry's l.** [William Henry, Brit. chemist, 1774–1836] SEE: *Henry's law*.

**Hilton's l.** SEE: *Hilton's law*.

**Hooke's l.** SEE: *Hooke's law*.

**inverse-square l.** A law stating that the intensity of radiation or light at any distance is inversely proportional to the square of the distance between the irradiated surface and a point source. Thus, a light with a certain intensity at a 4-ft distance will have only one-fourth that intensity at 8 ft and would be four times as intense at a 2-ft distance.

**l. of Laplace** [Pierre-Simon Laplace, Fr. scientist, 1749–1827] SEE: *Laplace, law of*.

**l. of Magendie** Bell's law.

**Marey's l.** SEE: *Marey's law*.

**l. of mass action** In any chemical reaction, the law that states that the ratio of the mathematical products of the concentrations of the products to the mathematical products of the concentrations of the reactants is constant at a given temperature.

**Mendel's l.'s** SEE: *Mendel's laws*.

**l. of multiple proportions** When two substances unite to form a series of chemical compounds, the proportions in which they unite are simple multiples of one another or of one common proportion. SEE: *Dalton's law*.

**Nysten's l.** SEE: *Nysten's law*.

**Ohm's l.** [Georg S. Ohm, Ger. physicist, 1789–1854] SEE: *Ohm's law*.

**periodic l.** The physical and chemical properties of chemical elements are periodic functions of atomic weight. A natural classification of elements is made according to their atomic weight. When arranged in order of their atomic weight or atomic number, elements show regular variations in most of their physical and chemical properties.

**Poiseuille's l.** [Jean Marie Poiseuille, Fr. physiologist, 1799–1869] SEE: *Poiseuille's law*.

**QI.** As temperature decreases, chemical activity decreases.

**l. of reciprocal proportions** In chemistry, the proportions in which two elementary bodies unite with a third one are simple multiples or simple fractions of the proportions in which these two bodies unite with each other.

**reciprocity l.** Any milliamperage multiplied by an exposure time setting that gives the same milliamperage-

second outcome should give the same relative density to an image. However, this law is dramatically affected by the image receptor response curve, esp. when it is not a 45° linear curve. In radiographic intensifying film and screen technologies, the reciprocity law does not hold at long exposure times because of the reversal of the D log E response curve.

**right-to-know l.** A law that dictates that employers must inform their employees of the health effects and chemical hazards of the toxic substances used in each workplace. The employer must provide information concerning the generic and chemical names of the substances used; the level at which the exposure is hazardous; the effects of exposure at hazardous levels; the symptoms of such effects; the potential for flammability, explosion, and reactivity of the substances; the appropriate emergency treatment; proper conditions for safe use and exposure to the substances; and procedures for cleanup of leaks and spills. The law provides that an employee may refuse to work with a toxic substance until he or she has received information concerning its potential for hazard. SEE: *hazardous material; health hazard; material safety data sheet; permissible exposure limits.*

**Rubner's l.'s** SEE: *Rubner's laws.*

**Starling's l.** [Ernest Henry Starling, Brit. physiologist, 1866–1927] SEE: *Starling's law.*

**Stoke's l.** [William Stokes] SEE: *Stoke's law.*

**Sutton's l.** SEE: *Sutton's law.*

**Waller's l. of degeneration** SEE: *Waller's law of degeneration.*

**Weber's l.** SEE: *Weber's law.*

**Weigert's l.** [Carl Weigert, Ger. pathologist, 1845–1904] SEE: *Weigert's law.*

**Wolff's l.** SEE: *Wolff's law.*

**law of effect** The psychological principle that positively reinforced behaviors will be repeated and negatively reinforced behaviors will diminish or be extinguished.

**lawn** A layer of microorganisms growing on a culture medium.

**lawrencium** (lā-rĕn'sĕ-ŭm) [Ernest O. Lawrence, U.S. physicist, 1901–1958] SYMB: Lr. A synthetic transuranic chemical element; atomic weight of the most stable isotope is 260; atomic number is 103.

**lax** (lāks) [L. *laxus*, slack] **1.** Without tension. **2.** Loose and not easily controlled; said of bowel movements.

**laxative** (lāk'sā-tĭv) [L. *laxare*, to loosen] A food or chemical substance that acts to loosen the bowels and prevent or treat constipation. Laxatives may act by increasing peristalsis by irritating the intestinal mucosa, lubricating the intes-

tinal walls, softening the bowel contents by increasing the amount of water in the intestines, and increasing the bulk of the bowel contents. Many people feel that it is essential to have one or more bowel movements a day, and, if they do not, they may develop the habit of taking some form of laxative daily. They should be instructed that missing a bowel movement is not harmful and that bowel movements do not necessarily occur at regular intervals. SYN: *aperient; cathartic; purgative.* SEE: *constipation; enema.*

**l. regimen** A diet modified to avoid chronic constipation by eating high-bulk foods that contain a high fiber content, eating foods that tend to stimulate bowel activity (e.g., stewed fruits and vegetables), maintaining adequate fluid intake, and participating in regular exercise.

**laxity** (lāk'sī-tē) [L. *laxitas*, openness] The amount a joint or ligament deviates from its initial position when a force is applied to it.

**layer** (lā'ēr) [ME. *leyer*] A stratum; a thin sheetlike structure of more or less uniform thickness.

**ameloblastic l.** The enamel layer of the tooth. SYN: *enamel l.*

**bacillary l.** The rod and cone layer of the retina of the eye.

**basal l.** The outermost layer of the uterine endometrium lying next to the myometrium. SYN: *basilar l.*

**basilar l.** Basal layer.

**Bernard's glandular L.** SEE: *Bernard's glandular layer.*

**choriocapillary l.** Lamina choriocapillaris.

**clear l.** The stratum lucidum of the epidermis.

**columnar l.** A layer of tall, narrow epithelial cells forming a covering or lining.

**compact l.** The compact surface layer of the uterine endometrium.

**cuticular l. of epithelium** A layer of dense cytoplasm at the luminal end of some epithelial cells, esp. that at the surface of columnar epithelium of the intestine.

**enamel l.** Ameloblastic layer.

**ependymal l.** The inner layer of cells of the embryonic neural tube.

**epitrichial l.** Epitrichium.

**functional l.** The portion of the endometrium adjacent to the uterine cavity; after it is shed in menstruation it is regenerated by the basilar layer.

**ganglionic l.** **1.** The fifth layer of the cerebral cortex. **2.** The inner layer of ganglion cells in the retina whose axons form the fibers of the optic nerve.

**germ l.** One of the three primary layers of the developing embryo from which the various organ systems develop. SEE: *ectoderm; endoderm; mesoderm.*

**germinative I.** The innermost layer of the epidermis, consisting of a basal layer of cells and a layer of prickle cells (*stratum spinosum*). SYN: *malpighian layer*; *stratum germinativum*.

**granular exterior I.** The second layer of the cerebral cortex, consisting of pyramidal cells.

**granular interior I.** The fourth layer of the cerebral cortex, consisting principally of closely packed stellate cells.

**half-value I.** ABBR: HVL. The amount of lead, copper, cement, or other material that would dissipate a beam of radiation by 50%. The number of half-value layers required for safety in blocking the area on a patient is five, because that represents 50% of 50% and 50% of that, and so forth. For example,  $50\% + 25\% + 12.5\% + 6.23\% + 3.12\% = 96.9\%$ . Thus the patient would be shielded from all but about 3% of the radiation. (Examples of the thickness of material required to protect from radiation are 2 in [5 cm] of lead or 2 ft [61 cm] of cement.)

**Henle's I.** SEE: *Henle's layer*.

**horny I.** Outermost layer of the skin, consisting of clear, dead, scalelike cells, those of the surface layer being constantly desquamated. SYN: *stratum corneum*.

**Huxley's I.** SEE: *Huxley's layer*.

**mantle I.** The middle layer of the neural tube of the developing embryo.

**molecular I.** 1. The outermost layer of the cerebral or cerebellar cortex. 2. The inner or outer plexiform layer of the retina.

**odontoblastic I.** The layer of connective tissue cells at the outer edge of the pulp where they produce the dentin of the tooth.

**osteogenic I.** The inner layer of the periosteum; it contains osteoblasts that become active during repair of fractures. SYN: *Ollier layer*.

**papillary I.** The superficial layer of the corium lying immediately under the epidermis into which it extends, forming dermal papillae.

**pigment I.** The outermost layer of the retina. Cells contain a pigment called fuscine.

**prickle cell I.** *Stratum spinosum* epidermidis; the layer between the granular and basal layers of the skin. Prickle cells are present in this layer. SYN: *spinous I.*

**Purkinje I.** SEE: *Purkinje layer*.

**reticular I.** The inner layer of the corium lying beneath the papillary layer.

**I. of rods and cones** The layer of the retina of the eye next to the pigment layer. It contains the rods and cones.

**spinous I.** Prickle cell layer.

**spongy I.** Middle layer of the uterine endometrium; contains dilated portions

of uterine glands. SYN: *stratum spongiosum*.

**subendocardial I.** The layer of loose connective tissue between the endocardium and the myocardium.

**subendothelial I.** The layer of fine fibers and fibroblasts lying immediately under the endothelium of the tunica intima of larger arteries and veins.

**Tomes' granular I.** The layer of interglobular dentin beneath the dentinocemental junction in the root of a tooth.

**Weil's basal I.** A relatively cell-free zone just below the odontoblastic layer in the dental pulp. It is also called *subodontoblastic layer*; *cell-free zone of Weil*; *cell-poor zone*.

**Lazarus sign** (láz'är-üs sîn) [Biblical figure in the New Testament] Dramatic movements of the arms across the torso, which are occasionally observed in brain-dead patients after they have been disconnected from mechanical life support. These movements may be misinterpreted as signs of life, when in fact they are merely involuntary reflexes.

**lb** *pound*.

**LBBB** *left bundle branch block*.

**LC50** [Fm. *lethal concentration*] An abbreviation for the concentration of a toxin that will kill 50% of organisms exposed to it.

**LD** *lethal dose*.

**LD<sub>50</sub>** The median lethal dose of a substance, which will kill 50% of the animals receiving that dose. Dose is usually calculated on amount of material given per gram or kilogram of body weight or amount per unit of body surface area.

**LDB-CPR** *load-distributing band cardiopulmonary resuscitation*.

**LDH** *lactic dehydrogenase*.

**LDL** *low-density lipoprotein*.

**L-dopa** L-3,4-dihydroxyphenylalanine; a drug used in the treatment of Parkinson's disease. SYN: *levodopa*.

**LRDP** An acronym for Labor, Delivery, Recovery, Postpartum that describes a maternity unit designed for family-centered care. Women in labor and their families complete normal childbearing experiences in one homelike room. The newborn may remain at the bedside throughout the stay.

**LE** *lupus erythematosus*.

**leachate** (lēch'ät) 1. A contaminated liquid that leaves soil after water percolates through earth (e.g., in waste disposal sites), farmlots, or landfills. 2. Any product of percolation.

**leaching** (lēch'ing) [AS. *leccan*, to wet] Extraction of a substance from a mixture by washing the mixture with a solvent in which only the desired substance is soluble. SYN: *lixiviation*.

**lead** (lēd) [AS. *laedan*, to guide] 1. Insulated wires connecting a monitoring device to a patient. 2. A conductor at-

tached to an electrocardiograph. The three limb leads are lead I, right arm to left arm; lead II, right arm to left leg; lead III, left arm to left leg. These are also known as standard leads, bipolar limb leads, or indirect leads. SEE: *electrocardiogram* for illus.

**bipolar I.** In electrocardiography, any lead that consists of one electrode at one body site and another at a different site. A standard limb lead, I, II, or III, is a bipolar lead.

**esophageal I.** A lead that is placed in the esophagus.

**limb I.** Any lead, unipolar or bipolar, in which a limb is the location of one of the electrodes.

**precordial I.** A lead having one electrode placed over the precordium, the other over an indifferent region.

**unipolar I.** In electrocardiography, any lead that consists of one electrode placed on the chest wall overlying the heart, where potential changes are of considerable magnitude, and the other (distant or indifferent electrode) placed in a site where potential changes are of small magnitude.

**lead** (lĕd) [L. *plumbum*] SYMB: Pb. A metallic element whose compounds are poisonous; atomic weight 207.2, atomic number 82, specific gravity 11.35. Accumulation and toxicity occur if more than 0.5 mg/day is absorbed. Any level of lead in the blood is abnormal. Most cases of lead poisoning occur in children who live in homes in which the paint contains lead. Children who eat the paint develop signs of lead toxicity. SEE: *acute I. encephalopathy*; *lead poisoning*, *acute*; *lead poisoning*, *chronic*; *pica*.

**I. acetate** A lead compound that is used in solution as an astringent.

**acute I. encephalopathy** A syndrome seen mostly in children, following the rapid absorption of a large amount of lead. Initially there is clumsiness, vertigo, ataxia, headache, insomnia, restlessness, and irritability. As the syndrome progresses, vomiting, agitation, confusion, convulsions, and coma will occur. A sudden and marked increase in intracranial pressure accompanies these symptoms. Sequelae include permanent damage to the central nervous system, causing mental retardation, electroencephalogram abnormalities, cerebral palsy, and optic atrophy.

**TREATMENT:** Lead exposure should be discontinued. Corticosteroids and intravenous mannitol, 20% solution, will relieve increased intracranial pressure. Lead can be removed from the body by giving dimercaprol (BAL) and calcium disodium edetate in a carefully administered dose schedule. Convulsions may be controlled with phenobarbital, hy-

dantoin, or diazepam. Hydration should be maintained with intravenous administration of fluids, while avoiding sodium-containing materials. Oral fluids or food should not be given for at least 3 days.

**I. line** SEE: *line*, *lead*.

**I. monoxide** A reddish-brown compound used to prepare lead subacetate.

**I. pipe contraction** Cataleptic condition during which limbs remain in any position in which placed.

**leading zero** A zero that precedes a decimal point, e.g., as in "levothyroxine 0.5 mg p.o. daily." Leading zeros should always be employed when writing prescriptions for doses of drugs that are fractions of a unit. In the example above an alternative method of writing the drug dose without decimals is "levothyroxine 50  $\mu$ g p.o. daily."

**lead molecule** (lĕd) A chemical compound thought to be useful, safe, and distinctive enough that it might prove to be a good candidate for drug development.

**lead optimization** (lĕd) The synthetic refinement of a candidate drug from its crude or original state into an agent that is safer, more useful, or more marketable.

**lead poisoning** SEE: under *poisoning*.

**leaflet** The part of a valve designed to open in the direction of flow and close to prevent backflow. Its base is typically attached to a larger structure by a fixed stalk and its unattached end moves.

**leakage current** In electrosurgery current that flows toward a ground along a path that the surgeon did not intend.

**lean** (lĕn) [AS. *hlaene*, without flesh] Without excess fat; as applied by the USDA it indicates that a meat or poultry product contains less than 10 g of fat, 4.5 g of saturated fat and 95 mg of cholesterol per serving.

**I. body mass** The weight of the body minus the fat content. It includes bones, muscles, and internal organs.

**Leapfrog Group** An initiative driven by Fortune 500 companies and other large private and public health care purchasers working to initiate breakthrough improvements in the safety, quality, and affordability of health care through technology.

**learned nonuse** Behavior sometimes observed in patients with hemiparesis in whom functional use of the paralyzed arm is avoided after unsuccessful attempts to use it. This phenomenon may represent a special application of learned helplessness.

**learning** A change in behavior or skill acquired by experience and practice.

**asynchronous I.** A method of instruction in which students access course material and engage with instructors

and other students from geographically disparate locations or at different times. Techniques in asynchronous learning include on-line chats, threaded discussions, or self-directed learning modules. Before the world wide web, asynchronous learning was called correspondence education.

**explicit l.** Learning that results from clearly stated directions or instructions.

**implicit l.** Learning that takes place without directions or deliberate instruction.

**interactive l.** Learning in which students receive feedback for their educational efforts, usually from other students, teachers, mentors, or electronic educational resources.

**latent l.** Learning that is inapparent to the individual at the time it occurs, only to become evident later.

**lifelong l.** Learning that continues after formal education ends and fosters professional, intellectual, aesthetic, social, and leadership skills.

**motor l.** The processes related to the acquisition and retention of skills associated with movement. They are influenced by practice, experience, and memory.

**programmed l.** An interactive system of education in which information is presented in small increments. As each new fact or concept is introduced, the student is required to use what he has learned by responding to a prescribed series of questions. Mastery of each topic must be demonstrated before the student can proceed to more advanced subject matter. SEE: *Skinner box*.

**synchronous l.** Multi-site learning (distance education) in which learners are linked to their instructor(s) by chat and audio conferencing software so that they can ask questions and receive feedback in real time.

**learning disorder** One of a variety of disorders characterized by difficulty reading, writing, or using mathematical symbols that is two standard deviations below the norm for one's age and otherwise normal intelligence. The condition may become apparent at an early age but usually is not recognized until the child begins formal education in school. The frequency of this condition in boys is five times that in girls. About 5% of children in school use special educational services because of learning disorders.

**LEAS** *lower extremity arterial studies*. SEE: *ankle-brachial index*.

**least squares analysis** A technique for statistical assessment of data that minimizes the sum of the squares of the distances from each data point to a line or plane. As part of the process, the slope,

intercept, and correlation coefficient are also usually calculated. Once this is done, various statistical and analytical inferences can be made, so that the quality of the analytical process can be assessed.

**leave, leave day, therapeutic leave day** A planned and supervised furlough from care, esp. from a residential care facility. Leaves are often granted so that residents of a care facility can spend time with their family. Leave days may also be required from time to time when residents need specialized services or inpatient medical care.

**Leber's disease, Leber's hereditary optic neuropathy** (lä'bërz) [Theodor Leber, Ger. ophthalmologist, 1840–1917] Bilateral blindness inherited from maternal mitochondria. It primarily affects males.

**Leber's plexus** A plexus of venules in the eye between Schlemm's canal and Fontana's spaces.

**Leboyer method** (lē-boy-yā') [Frederick Leboyer, Fr. obstetrician, b. 1918] An approach to childbirth that employs a darkened, quiet, and peaceful environment. Central to this method is the physical contact between the mother and the child immediately after delivery. The newborn is supported in a warm bath at this time. Cressing and massaging the infant begins immediately and is continued daily for several months. The method is believed to facilitate the child's mental and physical development.

**lecithal** (lēs'ī-thāl) [Gr. *lekithos*, egg yolk] Concerning the yolk of an egg.

**lecithin** (lēs'īth-in) [Gr. *lekithos*, egg yolk] A phospholipid (phosphoglyceride) that is part of cell membranes; also found in blood, egg yolk, and soybeans. On hydrolysis, it yields stearic acid, glycerol, phosphoric acid, and choline on hydrolysis. SYN: *phosphatidycholine*.

**lecithinase** (lēs'ī-thīn-ās) An enzyme that catalyzes the decomposition of lecithin.

**cobra l.** An enzyme present in certain snake venoms.

**lecithin : sphingomyelin ratio** (lēs'ī-thīn sfīng'gō-mī'ā-līn rā'shē-ō) ABBR: L : S ratio. The ratio of lecithin to sphingomyelin in the amniotic fluid. It is used to assess maturity of the fetal lung. Until about the 34th week of gestation, the lungs produce less lecithin than sphingomyelin. As the fetal lungs begin to mature, they produce more lecithin than sphingomyelin. Delivery before the reversal of the ratio is associated with an increased risk of hyaline membrane disease in the infant. The use of this test enables the obstetrician to determine the best time for elective termination of pregnancy. Other tests commonly used



for this purpose include the amniotic lamellar body count, phosphatidylglycerol presence, and the shake test. SEE: *amniocentesis*.

**lecithoblast** (lēs'ī-thō-blāst') [" + *blastos*, germ] One of the cells that proliferates to form the yolk sac.

**lecithoprotein** (lēs'ī-thō-prō'tē-īn) [" + *protos*, first] A protein in which lecithin is part of the conjugate.

**lectin** (lēk'tīn) [L. *legere*, to pick and choose] One of several plant proteins that stimulate lymphocytes to proliferate. Phytohemagglutinin and concanavalin A are lectins. SEE: *mitogen*.

**lectual** (lēkt'ū-āl) [L. *lectus*, bed] Confining to a bed or couch, said of certain diseases.

**LED** *light-emitting diode*.

**leech** (lēch) [AS. *laece*] A bloodsucking water worm, belonging to the phylum Annelida, class Hirudinea. It is parasitic on humans and other animals. Leeches were used as a means of blood-letting, a practice common up to the middle of the 19<sup>th</sup> century but now almost completely abandoned. The worms are a source of hirudin, an anticoagulant secreted by their buccal glands. In modern medicine leeches are used to evacuate periorbital hemorrhage (black eye) and to remove congested venous blood from the suture lines of reimplanted fingers. In addition to hirudin, leech saliva contains several active substances including inhibitors of platelet aggregation, that have been synthesized for use as anticoagulants in clotting disorders. SEE: *Hirudinea*; *hirudiniasis*.

**artificial I.** Cup and suction pump or syringe for drawing blood.

**Lee's ganglion** (lēz) [Robert Lee, Brit. gynecologist and obstetrician, 1793–1877] Cervical uterine ganglion formed from the third and fourth sacral nerves and the hypogastric and ovarian plexuses.

**LEEP** *loop electrosurgical excision procedure*.

**Leeuwenhoek's disease** (lū'ēn-hōks) [Antoni van Leeuwenhoek, Dutch microscopist, 1632–1723] Repetitive involuntary contractions ("fluttering") of the diaphragm and accessory muscles of respiration. The patient may experience shortness of breath and epigastric pulsations. The disease is caused by an abnormality of the respiratory control system of the brainstem. SYN: *diaphragmatic flutter*; *respiratory myoclonus*.

**left** The opposite of right. SYN: *sinistral*.

**left-handedness** Using the left hand as the dominant hand, e.g., for writing, work, or sports. SYN: *sinistrality*.

**leg** (lēg) [ME.] In common usage, the entire lower limb, or from hip to ankle; anatomically, only the lower leg, from

knee to ankle, the tibia and fibula. SEE: *illius*.

**bandy I.** Bowleg.

**bayonet I.** An uncorrected posterior displacement of the knee bones, followed by ankylosis at the joint.

**milk I.** Phlegmasia alba dolens.

**restless I.** SEE: *restless legs syndrome*.

**scissor I.** Crossed-leg deformity, a result of double hip disease, in which the patient walks with the legs swinging across the midline with each step.

**white I.** Phlegmasia alba dolens.

**legal** Pert. to or according to the law.

**legally mandated treatment** Compulsory treatment; i.e., treatment that is demanded by the courts. Usually, patients who are commanded to receive particular forms of treatment are prisoners, probationers, mentally ill individuals, people with certain communicable diseases (e.g., tuberculosis), or persons with a history of substance abuse.

**Legg-Calvé-Perthes disease, Legg's disease** (lēg'kāl-vā'pēr'tēz) [Arthur T. Legg, U.S. surgeon, 1874–1939; Jacques Calvé, Fr. orthopedist, 1875–1954; Georg C. Perthes, Ger. surgeon, 1869–1927] Osteochondritis (disintegration) of the proximal femoral epiphysis, a condition usually found in boys between 5 and 10. SYN: *coxa plana*.

**leggings** (lēg'gīngs) [ME. *leg*, leg] Stockings or dressings applied to the lower extremities, e.g., to provide compression or support.

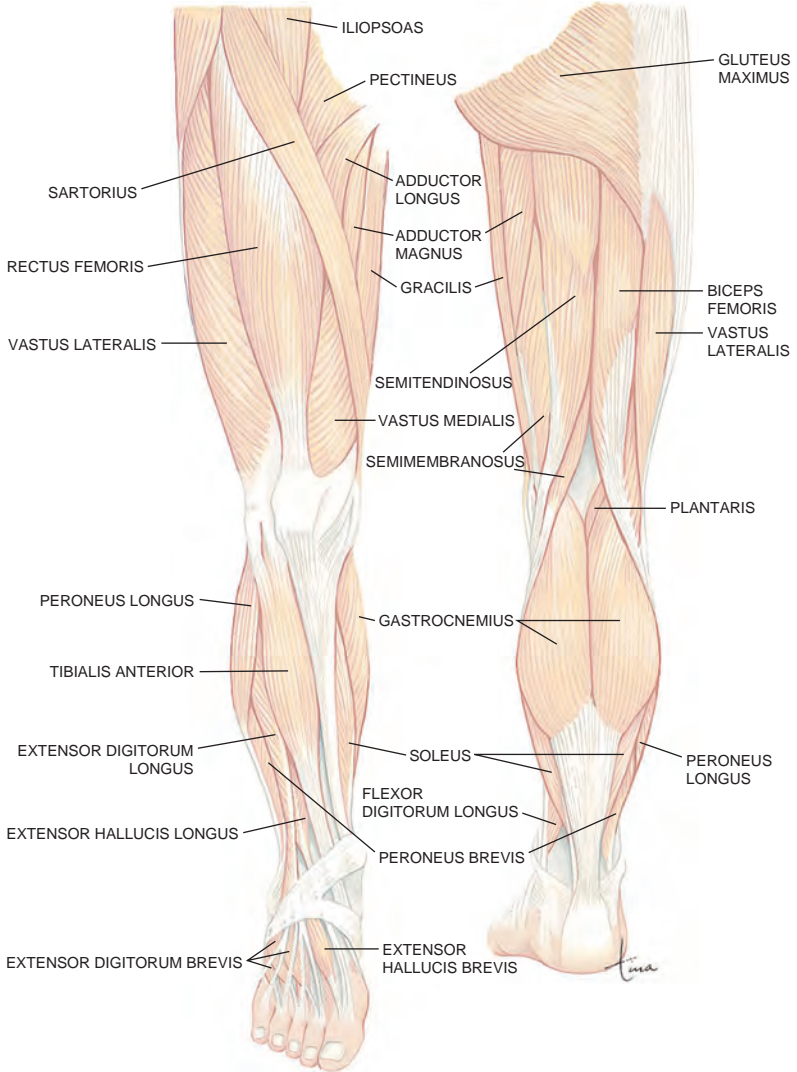
**Legionella** (lē'jī-nē'l'ā) [NL., from "Legionnaire's disease"] A genus of gram-negative, motile, aerobic bacilli of the family Legionellaceae. They are found in natural water and may contaminate water used for human consumption, air-conditioning, or waste disposal.

**L. longbeachae** A species that causes sporadic cases of pneumonia and infections in immunocompromised hosts.

**L. pneumophila** (lē-jūn-'ēl-lā) The species that is the usual cause of Legionnaires' disease and Pontiac fever. SEE: *Legionnaires' disease*.

**legionellosis** (lē'jū-nē-lō'sis) Legionnaires' disease.

**Legionnaires' disease** (lē-jū-nēr'z') [after Legionnaires stricken while attending an American Legion convention in Philadelphia, PA, in 1976] A severe, sometimes fatal disease characterized by pneumonia, dry cough, myalgia, and sometimes gastrointestinal symptoms. It may occur in epidemics or sporadically and is an important cause of nosocomial pneumonia because health-care associated legionellosis, while rare, is more likely to be fatal than legionellosis acquired in the community at large. Approx. 8,000 – 18,000 people are infected each year in the U.S. Persons at risk include middle-aged or older adults who



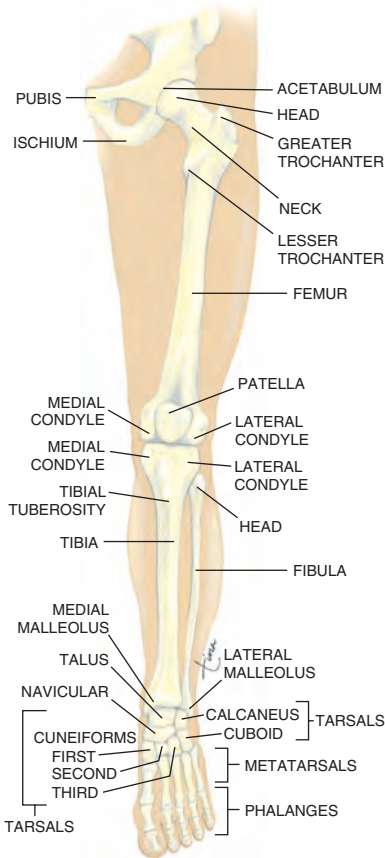
MUSCLES OF THE LEG

smoke cigarettes or have chronic lung disease and those whose immune systems are compromised by diabetes, renal failure, organ transplantation, cancer, or AIDS. The disease is responsible for about 5% of all pneumonias. SYN: *legionellosis*.

**ETIOLOGY:** The infection is caused by bacteria of the genus *Legionella*. The bacteria may be inhaled or aspirated from contaminated water supplies (e.g., water cooling towers, humidifiers, air conditioning vents, hot water tanks, whirlpools, spas, showers, hydrotherapy tanks, public water fountains, and

indoor waterfalls) or contaminated respiratory therapy equipment or nasogastric tubes. It thrives at temperatures about 90°–105°F (32°–41°C). Two distinct diseases occur from the various *Legionella* species: Legionnaires' disease or a milder influenza-like illness known as Pontiac fever.

**SYMPTOMS:** The signs and symptoms of Legionnaire's disease are similar to those of other pneumonias. Fatigue, anorexia, headache, malaise, myalgia, and diarrhea also may be present. The incubation period is 2 to 10 days.



### BONES OF THE LEG AND FOOT

Anterior view

**DIAGNOSIS:** It is diagnosed by culturing sputum or bronchial washings and growing the bacteria on a special medium and silver staining; the bacteria can also be identified by blood serology for antibody titer or by antigen testing of urine.

**TREATMENT:** Erythromycin given early in the course of the disease and for a prolonged period is the treatment of choice. Rifampin may also be given as an adjunct but should not be used alone. Other macrolides (e.g., clarithromycin and azithromycin) and fluoroquinolones are effective therapeutic options. Penicillin, cephalosporins, and aminoglycosides are ineffective.

**PATIENT CARE:** Respiratory status is monitored, including chest wall expansion, depth and pattern of ventilations, cough and chest pain, and restlessness, which may indicate hypoxemia. Vital signs, arterial blood gas levels,

pulse oximetry readings, hydration, and color of lips and mucous membranes are also monitored. The health care provider should be alert for signs of shock and monitor for complications such as respiratory failure. Level of consciousness is monitored for signs of neurological deterioration, and seizure precautions are instituted as needed. Prescribed antibiotic therapy is administered and evaluated for desired effects and adverse reactions. Respiratory care is provided, including prescribed oxygen therapy, repositioning, postural drainage, chest physiotherapy, and suctioning as prescribed and warranted by the patient's condition. If it is required, the respiratory therapist assists with endotracheal intubation and the provision and management of mechanical ventilation or other prescribed respiratory therapies. Antipyretics are administered and tepid sponge baths given. A cooling blanket may be used as prescribed to control fever. Frequent oral hygiene is provided, and a soothing cream is applied to irritated nostrils if necessary. Fluid and electrolyte balance is monitored, and replacement therapy initiated as needed and prescribed. Prescribed antiemetics are administered if needed. The respiratory therapist or nurse teaches the patient about pulmonary hygiene, including the use of incentive spirometry. The patient is also taught methods to prevent disease transmission.

The use of sterile water only (not distilled or tap water) in respiratory therapy equipment and other aerosolizing and misting devices helps prevent nosocomial *Legionella* infections. *Legionella* can survive for long periods in plumbing systems by developing a biofilm, which forms on the inner surfaces of pipes and water tanks, provides a safe environment for the bacteria that is difficult to eradicate, and resists water disinfectants. Disruption of the biofilm then disperses the bacteria throughout the system. If *Legionella* is found in a facility's water supply, the system can be cleansed by hyperchlorination or superheating though recolonization may eventually occur. The Centers for Disease Control and Prevention encourage but do not require water testing, but high-risk care centers should have a testing strategy in place and should consider testing all patients with hospital-acquired pneumonia for *Legionella* infections. Legionnaires' infections may need to be reported to the health department, depending on state regulations. SEE: *pneumonia*.

**legitimate medical practice** Any form of treatment that is accepted under the Medical Practice Acts enacted by each of the fifty U.S. states.

**leg lifter** An assistive device used to move the lower extremities from one place or surface to another; it typically consists of a large loop attached to a manually operated handle that encircles and lifts the foot or thigh. It is used by people who have difficulty moving their legs as a result of edema, joint disease, obesity, stroke, or other disabilities.

**legume** (lē'gūm) [L. *legumen*, pulse, bean] Fruit or pod of beans, peas, or lentils.

**COMPOSITION:** Legumes are a rich source of protein and essential amino acids. They contain legumin, a globulin, and significant quantities of dietary fiber, iron, and calcium.

**VITAMINS:** Sprouted beans are a good source of vitamin B complex. Vitamin A and ascorbic acid are present in small amounts.

**CARBOHYDRATES:** Carbohydrate is present in the form of starch in about the same proportion as in the cereals but with more cellulose.

**legumin** (lē-gū'min) [L. *legumen*, pulse, bean] An albumin present in many leguminous seeds. SEE: *legume*.

**Leiner's disease** (lē'nērz) [Karl Leiner, Austrian pediatrician, 1871–1930] Exfoliative dermatitis.

**Leininger, Madeleine** (lē'nīng-ēr) The founder and leader of transcultural nursing who developed the Theory of Cultural Care Diversity and Universality. SEE: *Nursing Theory Appendix*.

**leio-** [L. *leios*, smooth] Combining form meaning *smooth*.

**leioderma** (lē'ō-dēr'mē-ā) [Gr. *leios*, smooth, + *derma*, skin] Dermatitis characterized by abnormal glossiness and smoothness of the skin.

**leiomyofibroma** (lē'ō-mī'ō-fi-brō'mā) [" + *mys*, muscle, + L. *fibra*, fiber, + Gr. *oma*, tumor] A benign tumor composed principally of smooth muscle and fibrous connective tissue.

**leiomyoma** (lē'ō-mī-ō'mā) [" + " + *oma*, tumor] A benign tumor consisting principally of smooth muscle.

**epithelioid I.** A smooth muscle tumor, usually of the stomach.

**uterine I.** A benign tumor of the uterus of smooth muscle origin. Also called myoma, fibroid, or fibromyoma, it is the most common tumor of the female reproductive tract.

**SYMPTOMS:** Many women with leiomyomas have no symptoms, but these growths may sometimes cause abdominal or pelvic heaviness, abnormal uterine bleeding, frequent urination, dyspareunia, or pain.

Leiomyomas are classified according to their location. Subserous leiomyomas: arise from the peritoneal covering of the uterus. They may be large or small firm protuberances from the outer surface of the uterus or be attached by

pedicles. Intraligamentous leiomyomas: grow in the broad ligament, with or without uterine attachment. Intramural leiomyomas: found within the muscle wall of the uterus, if large, can give the uterus a nodular, irregular shape. Submucosal leiomyomas: excessive, often abnormal bleeding, abdominal cramping, or pain are the most common symptoms. Cervical Leiomyomas: may cause stress incontinence, polyuria, dyspareunia, or increased vaginal discharge. Many leiomyomas are asymptomatic.

**TREATMENT:** These tumors grow only during the reproductive years, often regressing after menopause. Surgical treatment (myomectomy or hysterectomy) may be necessary if tumors are more than 20 weeks, gestational size. Some tumors may be removed laparoscopically, although submucosal tumors are removed by dilatation and curettage (D&C) or by hysteroscopy. Gonadotrophin-releasing hormones (GnRH) cause suppression of ovarian hormones and may cause tumors to shrink. SYN: *fibroid tumor; fibroids of uterus; myoma uteri; uterine fibroma*.

**leiomyosarcoma** (lē'ō-mī'ō-sār-kō'mā) [" + " + *sarx*, flesh, + *oma*, tumor] A combined leiomyoma and sarcoma.

**leiotrichous** (lē-ōt'rī-kūs) [" + *thrix*, hair] Possessing smooth or straight hair.

**Leishman-Donovan bodies** (lēsh'mān-dōn-ā-vān) [Sir William Boog Leishman, Brit. medical officer, 1865–1926; Charles Donovan, Brit. bacteriologist, 1863–1951] Nonflagellated trypanosomes found within the cytoplasm of cells infected by *Leishmania donovani*, the pathogen that causes visceral Leishmaniasis. SYN: *amastigote*.

**Leishmania** (lēsh-mā'nē-ā) A genus of parasitic, flagellated protozoa that cause a variety of infectious diseases in humans. These tropical organisms are usually transmitted to people by the bite of the female sandflies, although they may occasionally be transferred from person-to-person by transfusion.

**L. braziliensis** The causative agent of American leishmaniasis.

**L. donovani** The causative agent of kala azar (visceral leishmaniasis).

**L. major** A species of *Leishmania* transmissible by rodents and causing skin infections in humans. Infection with *L. major* is found principally in the Middle East, East Africa, and the Mediterranean.

**L. tropica** The causative agent of Oriental sore (cutaneous leishmaniasis).

**leishmaniasis** (lēsh'mā-nī'ā-sīs) A group of related chronic parasitic diseases of the skin, viscera, or mucous membranes, caused by species of the genus *Leishmania*, which are transmitted to

humans by the bite of tiny, infected female sandflies, 30 different species of which thrive in both tropical and temperate regions and carry *Leishmania*. Leishmaniasis has been known to occur in epidemics but occurs mostly as an endemic disease in Asia, Africa, Latin America, and the Middle East; U.S. military personnel may be infected during overseas operations. One type of leishmaniasis, kala azar, causes visceral infection and involves the mononuclear phagocytic system, causing inflammation and fibrosis of the spleen and liver. It can be fatal if untreated. Mucosal leishmaniasis infection produces mutilating lesions that destroy the mucosa, esp. in the larynx, anus, and vulva. In the two cutaneous forms of leishmaniasis, multiple skin ulcers form on exposed areas of the face, hands, arms, and legs. While these are not painful or contagious, if left untreated they can leave permanent, disfiguring scars. *Leishmania* organisms infect and reproduce inside macrophages and are controlled by T-cell-mediated response. The strength of the patient's immune system determines the severity of the disease. SEE: *kala azar*.

**PATIENT CARE:** There is no vaccine against *Leishmania*. To prevent infection during exposure to sandfly vectors, topical repellants containing 30% to 35% N,N-diethyl-3-methylbenzamide (DEET) should be applied to the skin, and permethrin should be used to impregnate clothing, uniforms, bed netting, and screened enclosures. These measures also protect tourists, travelers, and military personnel from infections caused by other biting insects (e.g., malaria).

**TREATMENT:** Drugs used to treat leishmaniasis include amphotericin B, miltefosine, paromomycin, and sodium stibogluconate.

**American l.** Mucocutaneous l.

**cutaneous l.** An ulcerating, chronic, nodular skin lesion prevalent in Asia and the tropics and due to infection with *Leishmania tropica*. SYN: *Aleppo boil*; *Oriental sore*.

**mucocutaneous l.** A form of cutaneous leishmaniasis, involving principally the nasopharynx and mucocutaneous membranes, found in parts of Central and South America. The causative organism is *Leishmania braziliensis* transmitted by sandflies, usually of the genus *Lutzomyia*. SYN: *American leishmaniasis*. SEE: *illius*.

**tegumentary l.** Leishmaniasis that involves the skin or mucous membranes.

**visceral l.** Kala azar.

**lemmocyte** (lēm'ō-sīt) [Gr. *lemma*, husk, + *kytos*, cell] A cell that be-



### MUCOCUTANEOUS LEISHMANIASIS

Cutaneous lesion caused by *L. Braziliensis*

comes a neurilemma cell. SEE: *nerve fiber*.

**lemniscus** (lēm-nīs'kūs) *pl.* **lemnisci** [Gr. *lemniskos*, a ribbon] A bundle of sensory fibers (lateral or exterior and median or interior) in the medulla and pons.

**lemon** [Persian *limun*, lemon] Fruit of the tree *Citrus limon*, containing citric acid. Lemons contain enough vitamin C to prevent or treat scurvy. Lemon may be used in place of vinegar, spices, and aromatic substances by those who cannot use such items.



Food faddists who drink large quantities of lemon juice by sucking directly from the raw fruit may develop erosion of the enamel of their teeth.

**Lenègre's disease** (Le-neh'gres) [Jean Lenègre, 20th century Fr. cardiologist, 1904–1972] Atrioventricular or intraventricular conduction abnormalities resulting from fibrosis of the His-Purkinje fibers of the heart.

**length** The measurement of the distance between two points.

**basinatal l.** The distance from the basion of the foramen magnum of the skull to the center of the suture between the frontal and nasal bones.

**crown-heel l.** In the embryo, fetus, or newborn, the distance from the crown of the head to the heel.

**crown-rump l.** In the embryo, fetus, or newborn, the distance from the crown of the head to the apex of the buttocks. The measurement can be used to estimate gestational age.

**focal l.** In optics, the distance from the lens to the point of focus of light rays passing through the lens.

**l. of stay** The number of days between admission and discharge from an inpatient care facility.

**wave l.** In the line of progression of a wave, the distance from one point on the wave to the same point on the next wave. The length of a wave determines



whether or not the wave is a visible light, x-ray, gamma, or radio wave.

**Lennox-Gastaut syndrome** (lĕn'nōks-gās-tō') [Henri Gastaut, Fr. neuroscientist, 1915–1995; W.G. Lennox, Am. neurologist, 1884–1960] A form of early childhood epilepsy marked by atypical absence and tonic-clonic seizures, slow-spike electroencephalographic waves, and a high incidence of mental retardation.

**lens** (lĕnz) [L. *lens*, lentil] **1.** A transparent refracting medium; usually made of glass. **2.** The crystalline lens of the eye.

**achromatic l.** Lens that transmits light without separating it into the colors of the visual spectrum.

**anterior chamber intraocular l.** ABBR: ACIOL. SEE: *intraocular l.*

**aplanatic l.** A lens that corrects spherical aberrations.

**apochromatic l.** A lens that corrects both spherical and chromatic aberrations.

**biconcave l.** A lens that has a concave surface on each side. SEE: *biconcave* for *illus.*

**biconvex l.** A lens that has a convex surface on each side. SEE: *biconcave* for *illus.*

**bifocal l.** SEE: *bifocal eyeglasses.*

**bifocal contact l.** A contact lens that contains two corrections in the same lens.

**concave spherical l.** A lens formed of prisms with their apices together, which is, therefore, thin at the center and thick at the edge. This type of lens is used in myopia.

**contact l.** A device made of various materials, either rigid or flexible, that fits over the cornea or part of the cornea to supplement or alter the refractive ability of the cornea or the lens of the eye. Contact lenses of any type require special care with respect to storage when they are not being worn, directions for insertion and removal, and the length of time they can be worn. The manufacturer's or dispensing health care worker's instructions should be read and followed. Failure to do this could result in serious eye diseases. Wearing contact lenses while swimming is inadvisable.

**convexo-concave l.** A lens with a convex surface on one side and a concave surface on the opposite side.

**convex spherical l.** A lens formed of prisms with their bases together, which is, therefore, thick at the center and thin at the edge. This type of lens is used in hyperopia.

**corneal contact l.** A type of contact lens that adheres to and covers only the cornea.

**crystalline l.** A transparent colorless biconvex structure in the eye, enclosed

in a capsule, and held in place just behind the pupil by the suspensory ligament. It consists principally of lens fibers that at the periphery are soft, forming the cortex lentis, and in the center of harder consistency, forming the nucleus lentis. Beneath the capsule on the anterior surface is a thin layer of cells, the lens epithelium. The shape is changed by the ciliary muscle to focus light rays on the retina.

**cylindrical l.** A segment of a cylinder parallel to its axis, used in correcting astigmatism.

**disposable contact l.** A soft contact lens worn for a week or two and then discarded.

**extended wear contact l.** A contact lens made of materials that permit permeation of gas (i.e., oxygen) so that there is less chance for corneal irritation.

**gas permeable l.** ABBR: GP lens. A contact lens that allows oxygen to pass through it—enhancing eye health, lens durability, and comfort. Gas permeability derives from the incorporation of silicone in lens plastic. GP lenses are used to manage visual conditions such as astigmatism, keratoconus, and presbyopia. SYN: *rigid gas permeable l.*

**hard contact l.** A contact lens made of rigid translucent materials.

**implanted l.** Intraocular lens.

**intraocular l.** ABBR: IOL. An artificial lens made of acrylic or silicone; the lens may be placed posterior to the iris (PCIOL) or anterior to the iris (ACIOL). Posterior chamber lens may be monofocal or multifocal and can also correct an astigmatic error. A lens is removed because of abnormalities such as cataracts. If the original lens capsule is present and an IOL is placed inside it, the surgical procedure is called *posterior chamber IOL implantation*. If the capsule has been removed in a previous surgical procedure, the IOL may be placed in front of the iris, directly adjacent to the cornea. This is called *anterior chamber IOL implantation*. In another procedure, the IOL is implanted behind the iris. Which method of IOL implantation produces the best results is being investigated. SYN: *implanted l.* SEE: *cataract.*

**multifocal l.** An eyeglass lens whose power to alter light rays varies from the top to the bottom of the lens, permitting a smooth transition from one power lens to the other as one moves the eyes. This is in contrast to an eyeglass lens with the usual two-component bifocal lens.

**oil immersion l.** A special lens with oil placed between the lens and the object being visualized. This eliminates a layer of air between the microscope slide and the lens, producing a clearer image

than would be the case if the oil were not used.

**orthoscopic l.** A lens that produces no distortion of the periphery of the image.

**rigid gas permeable l.** Gas permeable lens.

**posterior chamber intraocular l.** ABBR: PCIOL. SEE: *intraocular l.*

**soft contact l.** A contact lens made of flexible, translucent materials. These lenses are more comfortable, can be worn longer, and are harder to displace than hard lenses, but there are disadvantages. They may not provide the same degree of visual acuity as hard lenses and they require more cleaning and disinfection. Tear production may be decreased, esp. in older patients. The soft lenses may need to be replaced every 6 to 18 months. Corneal infections can prevent further use of soft lenses, as well as causing permanent loss of vision.

**spherical l.** A lens in which all surfaces are spherical.

**toric contact l.** A contact lens with two separate curvatures. It can be used, for example, to correct simultaneously astigmatism and distance vision.

**trial l.** Any lens used in testing the vision.

**trifocal l.** A corrective eyeglass lens containing three segments: for near, intermediate, and distant vision.

**zoom l.** A type of lens that can be adjusted to focus on near or distant objects.

**lensectomy** (lĕn-zĕk'tō-mĕ) [L. *lens*, *lenticil*, + Gr. *ektome*, excision] The surgical removal of the lens of the eye. SYN: *lensectomy*.

**lentectomy** (lĕn-tĕk'tō-mĕ) [L. *lens*, *lenticil*, + Gr. *ektome*, excision] Lensectomy.

**lenticonus** (lĕn'ti-kō'nūs) [l' + *conus*, cone] Conical protrusion of the anterior or posterior surface of the lens.

**lenticular** (lĕn-tik'ū-lār) [L. *lenticularis*, *lenticil*] 1. Lens shaped. SYN: *lenticiform*. 2. Pert. to a lens.

**lenticulostriate** (lĕn-tik'ū-lō-strī'āt) [l' + *striatus*, streaked] Rel. to the lenticular nucleus and corpus striatum of the basal ganglia.

**lenticulothalamic** (lĕn-tik'ū-lō-thālām'ik) Pert. to the lenticular nucleus and the thalamus.

**lenticiform** (lĕnt'ī-form) [L. *lens*, *lenticil*, + *forma*, shape] Lenticular (1).

**lentiginosis** (lĕn-tij'ī-nō'sis) [L. *lentigo*, freckle, + Gr. *osis*, condition] The presence of multiple lentiginos. SEE: *lentigo*.

**lentiginous** (lĕn-tij'in-ūs) [L. *lentigo*, freckle] 1. Affected by lentigo. 2. Covered with very small dots.

**lentiglobus** (lĕn'ti-glō'būs) [L. *lens*, *lenticil*, + *globus*, sphere] A lens of the eye

that has extreme anterior spherical bulging.

**lentigo** (lĕn-tī'gō) *pl.* **lentiginos** [L., freckle] Freckle.

**l. maligna** A pigmented lesion of the skin in which a large number of superficial, atypical melanocytes are found. SYN: *Hutchinson's freckle*.

**l. senilis** Solar lentigo.

**solar l.** A flat brown spot usually appearing on sun-exposed skin, such as the face or the back of the hands. They are commonly found on the skin of elderly individuals. Although they are popularly referred to as "liver spots," they are not caused by diseases of the liver. SYN: *lentigo senilis*. SEE: *illius*.



LENTIGO OF SUN-EXPOSED SKIN

**lentivirus** (lĕn'ti-vī'rūs) [L. *lentus*, slow] A group of retroviruses that cause slowly developing diseases as a result of the gradual killing of lymphoid cells. Human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), is included in this group of viruses.

**leontiasis** (lē'on-ti'ā-sīs) [Gr. *leon*, lion, + *-iasis*, condition] Lionlike appearance of the face seen in certain diseases, esp. lepromatous leprosy. SYN: *facies leontina*.

**l. ossea** Enlargement and distortion of facial bones, giving one the appearance of a lion. It can occur as a complication of hyperparathyroidism, Paget's disease, uremia, and other conditions.

**Leopold's maneuver** (lē'ō-pōldz) [Christian Gerhard Leopold, Ger. physician, 1846–1911] In obstetrics, the use of four steps in palpating the uterus in order to determine the position and presentation of the fetus. SEE: *illius*.

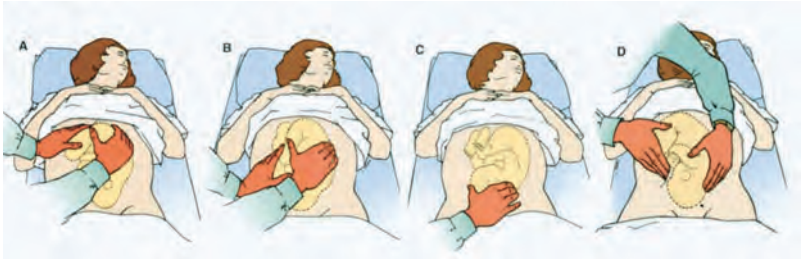
**leper** (lēp'ēr) [Gr. *lepros*, scaly] A person afflicted with leprosy.

**lepidic** (lē-pīd'ik) [Gr. *lepis*, scale] Concerning scales, or a scaly covering.

**lepido-** [Gr. *lepis*, scale] Combining form meaning *flakes* or *scales*.

**Lepidoptera** (lēp'tī-dōp'tĕr-ā) [l' + *pteron*, feather, wing] An order of the class Insecta that includes the butterflies, moths, and skippers; characterized by scaly wings, sucking mouth parts, and complete metamorphosis.

**lepidosis** (lēp'tī-dō'sis) [l' + *osis*, condi-



LEOPOLD'S MANEUVERS

tion] Any scaly or desquamating eruption such as pityriasis.

**lepothrix** (lěp'ō-thrīks) [l' + *thrix*, hair] A condition in which the shaft of the hair is encased in hardened, scaly, sebaceous matter.

**lepra** (lěp'rā) [Gr. *lepra*, leprosy] A term formerly used for leprosy. It is now used to indicate a reaction that occurs in leprosy patients consisting of aggravation of lesions accompanied by fever and malaise. It can occur in any form of leprosy and may be prolonged.

***I. alba*** A form of lepra in which the skin is anesthetic and white, associated with different forms of paralysis.

***I. Arabum*** True or nodular leprosy.

***I. maculosa*** A form of lepra with pigmented cutaneous areas.

**leprechaunism** (lěp'rě-kōn'izm) An autosomal recessive disease in which elfin features of the face are accompanied by retardation of physical and mental development, a variety of endocrine disorders, emaciation, and susceptibility to infections. SYN: *Donohue's syndrome*.

**leprid** (lěp'rīd) [Gr. *lepra*, leprosy, + *eidos*, form, shape] A leprosy cutaneous lesion.

**leprology** (lěp-rōl'ō-jē) [l' + *logos*, word, reason] The study of leprosy and methods of treating it.

**leproma** (lěp-rō'mā) [l' + *oma*, tumor] A cutaneous nodule or tubercle characteristic of leprosy.

**lepromatous** (lěp-rō'mā-tūs) Concerning lepromas. SEE: *leprosy*.

**lepromin** An extract derived from *Mycobacterium leprae*, the organism that causes leprosy. It is injected under the skin, in a fashion similar to the injection of purified protein derivative (PPD), to determine the degree of a patient's immune response to leprosy. PPD testing is used to gauge the immune response of patients to tuberculosis.

**leprostactic** (lěp'rō-stāt'ik) [l' + *stati-kos*, standing] **1.** Inhibiting the growth of *Mycobacterium leprae*. **2.** An agent that inhibits the growth of *M. leprae*.

**leprosy** (lěp'rō-sē) [Gr. *lepros*, scaly] A chronic infectious disease of the skin and peripheral nerves, caused by *Mycobacterium leprae*. In chronically in-

fectured persons, it may produce characteristic ring-shaped, nodular, or erosive skin changes, esp. on or near the face, and sensory and motor dysfunction, esp. of the hands and feet. Approx. 700,000 people are infected each year worldwide; leprosy is endemic in India (the site of 70% of cases) and other tropical countries. It occasionally is reported in the U.S., e.g., in Hawaii, where it was once endemic, and in the Gulf Coast states, where it is carried by an animal host, the nine-banded armadillo. SYN: *Hansen's disease*. SEE: *granuloma*.

The *lepromatous* (LL) form is characterized by skin lesions and symmetrical involvement of peripheral nerves with anesthesia, muscle weakness, and paralysis. In this form, the lesions are limited to the cooler portions of the body such as skin, upper respiratory tract, and testes. In *tuberculoid* (TT) leprosy, which is usually benign, the nerve lesions are asymmetrical and skin anesthesia is an early occurrence. Visceral involvement is not seen.

Lepromatous leprosy is much more contagious than the tuberculoid form. In the latter, *M. leprae* are found in lesions only rarely except during reactions.

Between the two major forms are *borderline* (BB) and *indeterminate* leprosy. In the borderline group, the clinical and bacteriological features represent a combination of the two principal types. In the indeterminate group, there are fewer skin lesions and bacteria are much less abundant in the lesions. In many respects, this infection resembles tuberculoid leprosy and for many years was regarded as incurable; this is no longer considered to be valid.

**ETIOLOGY:** The disease-producing bacterium, *M. leprae*, grows only at 32° to 34°C, the temperature of skin. A normal T cell response by the host produces tuberculoid leprosy, which can be transmitted by respiratory droplets. Once inhaled, the organisms produce granulomas in the lungs and move through the bloodstream to the skin.

In contrast, lepromatous (anergic) leprosy occurs in persons who have an

abnormal T-lymphocyte response to the organism. Transmission requires contact between material from a skin lesion and the blood of a recipient, which is reached through cuts on the skin. Genetic differences have been identified in those who develop the two forms of leprosy. Other intermediate or borderline forms of the disease are well-known, such as borderline lepromatous, borderline tuberculoid, and tuberculoid leprosy.

**SYMPTOMS:** In tuberculoid leprosy, skin lesions initially are flat and red, but later become large, hard, irregular, and swollen, with pale depressed centers. Granulomas infiltrate the peripheral nerves, which gradually degenerate, producing loss of feeling in the skin, muscle atrophy, and contractures. Lepromatous leprosy produces large macular (flat), papular (raised), or nodular lesions without sensation on the skin, particularly on the face, hands, knees, and feet. The eyes, mucosa of the upper airway, and testes also are commonly involved. The lesions contain large numbers of infected macrophages. Infection of peripheral nerves causes loss of sensation and muscle atrophy. Non-protective antibodies are formed, which bind with bacterial antigens; the resulting immune complexes may cause vasculitis and glomerulonephritis. In all patients with leprosy, loss of sensation leads to inadvertent trauma and skin ulcers; autoamputation may occur. The disease has a slow course and rarely causes death.

**DIAGNOSIS:** Biopsy of a suspected skin lesion is used for diagnosis. The bacilli may not be present in tuberculoid lesions. In vitro tests of the immunological response can be accomplished by the lymphocyte transformation test and the leukocyte migration inhibition test.

**COMPLICATIONS:** Bacterial skin infections, ulcers, and traumatic amputation of fingers owing to anesthesia may occur. Tuberculosis is a much more common complication in untreated cases of lepromatous leprosy than in the tuberculoid form. Amyloidosis may be the cause of death in advanced cases.

**TREATMENT:** Tuberculoid leprosy is treated with multiple drug therapies, such as daily oral dapsone plus one dose of rifampin each month for 6 months. Daily dapsone and clofazimine plus monthly doses of rifampin for 24 months are required to treat lepromatous leprosy. Directly observed therapy is recommended, esp. for the rifampin doses. There is concern that *M. leprae* is becoming resistant to these drugs. Treatment is complicated in pregnant women and in persons with glucose-6-phosphate dehydrogenase enzyme deficiency, because of drug intolerance. De-

spite effective treatments for many patients, the incidence of leprosy worldwide has not diminished in recent years.

**PROGNOSIS:** With proper therapy, esp. if given at the earliest time possible, the outlook is favorable.

**leprotic** (lěp-rŏt'ik) [Gr. *lepra*, leprosy] Leprous.

**leprous** (lěp'rūs) 1. Pert. to leprosy. 2. Affected by leprosy. SYN: *leprotic*.

**-lepsy** [Gr. *lepsia*, seizure] Suffix meaning *seizure*.

**leptin** (lěp'tin) A helical peptide hormone produced by adipose tissue. Leptin acts on cells in the hypothalamus in response to increases in body fat storage to suppress appetite and increase energy expenditure. It also contributes to the onset of puberty and to the secretion of insulin by the pancreas.

**lepto-** [Gr. *leptos*, thin, fine, slim] A combining form meaning *thin, fine, slight, delicate*.

**leptocephalia** (lěp'tŏ-sě-fā'lě-ă) [Gr. *leptos*, slender, + *kephale*, head] Having an abnormally vertically elongated, narrow skull.

**leptocephalus** (lěp'tŏ-sěf'ă-lūs) An individual possessing an abnormally vertically elongated, narrow skull.

**leptochromatic** (lěp'tŏ-krŏ-măt'ik) [l' + *chromatin*] Having a fine chromatin network.

**leptomeninges** (lěp'tŏ-mě-nĭn'jēs) *sing.*, **leptomeninx** [l' + *meninx*, membrane] The pia mater and arachnoid as distinct from the dura mater. SYN: *piararachnoid*.

**leptomeningitis** (lěp'tă-mě-nĭn'jĭt'is) [l' + " + *itis*, inflammation] Meningitis in which infection, carcinoma, or inflammation involves only the pia mater and arachnoid membranes of the brain, not the dura mater. SEE: *meningitis*.

**SYMPTOMS:** Patients have an acute headache, pain in the back, spinal rigidity, irritability, and drowsiness ending in coma. SYN: *piarachnitis*.

**leptomeningopathy** (lěp'tŏ-mě-nĭngŏp'ă-thē) [l' + " + *pathos*, disease] A disease of the leptomeninges of the brain.

**leptomeninx** (lěp'tŏ-mě-nĭnks) *Sing.* of leptomeninges.

**leptonema** (lěp'tŏ-ně'mă) [l' + *nema*, thread] The early stage of prophase in meiosis. At this stage the chromatin coils into visible filaments. SEE: *cell division*.

**leptophonia** (lěp'tŏ-fŏ-ně-ă) [l' + *phone*, voice] Weakness of the voice.

**leptoprosopia** (lěp'tŏ-prŏ-sŏ-pě-ă) [l' + *prosopon*, face] Narrowness of the face.

**leptorhine, leptorrhine** (lěp'tŏr-rĭn) [l' + *rhis*, nose] Having a very thin or slender nose.

**leptoscope** (lěp'tŏ-skŏp) [l' + *skopein*, to examine] An optical device for measuring the thickness of cell membranes.

**Leptospira** (ləp-tō-spī-rā) [" + *speira*, coil] A genus of slender spirochetes with hooked ends.

**L. interrogans icterohaemorrhagiae**

The species that causes hemorrhagic, spirochetal jaundice (Weil's disease). The bacteria are found worldwide; the natural hosts are wild animals and dogs, which develop chronic kidney infection. Humans acquire the bacteria from exposure to animal urine, often in water such as ponds and puddles. Symptomatic infection ranges from mild gastrointestinal upset to fatal liver failure often in association with meningitis. A vaccine is available for dogs.

**leptospirosis** (ləp-tō-spī-rō-sis) [" + " + *osis*, condition] Condition resulting from *Leptospira* infection. SYN: *spirochetal jaundice*.

**leptospiuria** (ləp-tō-spī-rūr-ē-ā, -oor') [" + " + *ouron*, urine] The presence of *Leptospira* in the urine.

**leptotene** (ləp-tō-tēn) [" + *tainia*, ribbon] The initial stage of the prophase of cell division. The chromosomes become visible as separate entities but are not yet paired.

**leptothricosis** (ləp-tō-thrī-kō-sis) [" + *thrix*, hair] Disease caused by the gram-negative bacillus *Leptothrix*.

**Leptus autumnalis** (ləp-tūs) Parasitic mite larvae causing itch and sometimes wheals. SEE: *chiggers*.

**Leriche's syndrome** (lə-rēsh'ēz) [René Leriche, Fr. surgeon, 1879–1955] Occlusion of the abdominal aorta by a thrombus at its bifurcation. This causes intermittent ischemic pain (i.e., claudication) in the lower extremities and buttocks, impotence, and absent or diminished femoral pulses.

**Leri's pleonosteosis** (lā-rēz) [André Leri, Fr. physician, 1875–1930] A form of hereditary physical malformation characterized by upward slanting palpebral fissures, broad thumbs, short stature, and flexion contractures of the fingers.

**lesbian** (ləs'bē-ān) [Gr. *lesbios*, pert. to island of Lesbos] **1.** Pert. to lesbianism or sexual intercourse between women. SEE: *bisexual*; *homosexual*. **2.** A woman who has sex exclusively with women.

**lesbianism** (ləz'bē-ān-izm) Sexual congress preferentially or exclusively between women. It was named for the Island of Lesbos, where the practice of lesbianism was reputed to have been widespread in ancient Greek history. SYN: *sapphism*.

**Lesch-Nyhan disease** (ləsh-nī'ān) [Michael Lesch, b. 1939, William Leo Nyhan, b. 1926, U.S. pediatricians] An X-linked recessive metabolic disease, in which mental retardation, aggressive behavior, self-mutilation, and renal fail-

ure are exhibited by affected boys. The disease is caused by faulty purine metabolism, resulting in excessive uric acid levels in the body.

**lesion** (lē'zhūn) [L. *laesio*, a wound] **1.** A circumscribed area of pathologically altered tissue. **2.** An injury or wound. **3.** A single infected patch in a skin disease.

Primary or initial lesions include macules, vesicles, blebs or bullae, chancres, pustules, papules, tubercles, wheals, and tumors. Secondary lesions are the result of primary lesions. They may be crusts, excoriations, fissures, pigmentations, scales, scars, and ulcers.

**Bankart I.** SEE: *Bankart lesion*.

**coin I.** Solitary pulmonary nodule.

**degenerative I.** A lesion caused by or showing degeneration.

**Dieulafoy I.** [Georges Dieulafoy, Fr. physician, 1839–1911] A vascular defect in the mucosa of the gastrointestinal tract (typically the stomach, but sometimes other organs) in which an arteriole protrudes into the lumen and bleeds briskly. Dieulafoy lesions are an uncommon cause of massive gastrointestinal blood loss. The bleeding can be controlled with cauterization, rubber banding, wedge resection, or other techniques.

**diffuse I.** A lesion spreading over a large area.

**focal I.** A lesion of a small definite area.

**gross I.** A lesion visible to the eye without the aid of a microscope.

**indiscriminate I.** A lesion affecting separate systems of the body.

**initial I. of syphilis** A hard chancre. SEE: *chancre*; *syphilis*.

**lower motor neuron I.** An injury occurring in the anterior horn cells, nerve roots, or peripheral nervous system that results in diminished reflexes, flaccid paralysis, and atrophy of muscles.

**low-grade squamous intraepithelial I.** ABBR: LGSIL. A cytological abnormality found in Pap tests where there are early mild changes in the epithelial cells covering the outside of the cervix. Causes include infection with human papillomavirus, cervical trauma, or postmenopausal changes. Risk factors include intercourse with multiple sex partners or a partner with multiple sex partners, unprotected sex at a young age, history of sexually transmitted disease, and tobacco use. About 60% of LGSIL will spontaneously resolve. If left untreated, a small number of women eventually develop cervical cancer.

**peripheral I.** A lesion of the nerve endings.

**primary I.** The first lesion of a disease, esp. used in referring to chancre of syphilis.

**reverse Hill Sachs I.** An indentation



fracture of the anteromedial humeral head that occurs following a posterior dislocation of the glenohumeral joint. The cartilage of the humeral head is damaged, causing instability that may predispose the individual to subsequent posterior glenohumeral dislocations.

**TREATMENT:** Usually no surgical intervention is required when less than approx. 25% of the articular surface is involved in the fracture. When the glenoid fossa is also fractured, shoulder arthroplasty may be required.

**structural l.** A lesion that causes a change in tissue.

**systemic l.** A lesion confined to organs of common function.

**toxic l.** A lesion resulting from poisons or toxins from microorganisms.

**vascular l.** A lesion of a blood vessel.

**LET** *linear energy transfer.* A measure of the rate of energy transfer from ionizing radiation to soft tissue.

**lethal** [Gr. *lethe*, oblivion] Pert. to or that which causes death.

**lethality** (lē-thäl'tī-tē) The propensity for a disease or injury to cause death, rather than disability, illness, or pain.

**lethargy** (lēth'är-jē) [Gr. *lethargos*, drowsiness] Sleepiness, drowsiness, somnolence, or mental sluggishness.

**induced l.** A hypnotic trance. **lethargic** (lä-thahr'jik, *adj.*)

**lethe** (lē'thē) [Gr., oblivion] Amnesia.

**Letterer-Siwe disease** (lēt'ēr-ēr-sī'wē) [Erich Letterer, Ger. physician, b. 1895; S. August Siwe, Ger. physician, 1897–1966] The most common of three distinct histiocytosis syndromes collectively known as Langerhans cell histiocytosis, marked by proliferation of histiocytes in the viscera, bones, and skin. It is believed that this disease and the other two forms—eosinophilic granuloma of bone and Hand-Schüller-Christian syndrome—share a common pattern of granulomatous lesions with histiocyte proliferation.

The cutaneous lesions often develop during infancy or early childhood and in some cases are present at birth. These lesions include papulovesicular eruptions; inflamed, pruritic diaper area rashes; and scaly scalp lesions, all of which can be misdiagnosed as “cradle cap” (seborrheic dermatitis of the scalp) or severe diaper rash. When the disease is confined to the skin, spontaneous resolution in infancy may occur. In systemic presentations, the spleen and liver are enlarged, pulmonary infiltration is widespread, and bone marrow failure is accompanied by fever and infections. The cause of the disease is unknown.

**DIAGNOSIS:** Diagnosis is based on results of a skin biopsy performed with special staining techniques.

**TREATMENT:** No specific treatment

exists. Corticosteroids and antineoplastic drugs are used in the more severe forms of the disease, but many children die of pulmonary failure or overwhelming infections despite treatment. SEE: *histiocytosis, Langerhans cell.*

**letter of intent** Formal written notice given by one party to another of a commitment to pursue an action, e.g., of a plan to bring suit against another party or to take on an assignment on behalf of that party.

**Leu** Conventional symbol for the amino acid leucine.

**leuc-** SEE: *leuko-*.

**leucine** (loo'sin) [Gr. *leukos*, white] An essential amino acid, C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub>; it cannot be synthesized by the liver and must be present in the diet; required for protein synthesis. It is present in body tissues and is essential for normal growth and metabolism.

**leucine aminopeptidase** ABBR: LAP. A proteolytic enzyme present in the pancreas, liver, and small intestine. Its serum level is elevated in disease of the pancreas, esp. acute pancreatitis, and in obstruction of the common bile duct.

**leucine-rich repeat kinase 2** ABBR: LRRK2. Dardarin.

**leucinosis** (loo'sin-ō'sis) [l' + *osis*, condition] Maple syrup urine disease.

**leucinuria** (loo'sin-ū'rē-ä) [l' + *ouron*, urine] The presence of leucine in urine.

**leucovorin** (loo-köv'ō-rin) Folinic acid, the active form of folic acid in the body. It is used to treat anemia and as an antidote to protect normal cells from high doses of the anticancer drug methotrexate and to increase the antitumor effects of fluorouracil (5-FU) and tegafur-uracil. SYN: *citrovorum factor*.

**leuk-** SEE: *leuko-*.

**leukapheresis** (loo'kä-fē-rē'sis) [l' + *aphairesis*, removal] The separation of leukocytes from blood, which are then transfused back into the patient.

**leukemia** (loo-kē'mē-ä) [Gr. *leukos*, white, + *haima*, blood] Any of a class of hematological malignancies of bone marrow cells in which immortal clones of immature blood cells multiply at the expense of normal blood cells. As normal blood cells are depleted from the body, anemia, infection, hemorrhage, or death result. The leukemias are categorized as chronic or acute; by the cell type from which they originate; and by the genetic, chromosomal, or growth factor aberration present in the malignant cells.

Chronic leukemias, which have a relatively slow course, include chronic lymphocytic (CLL), chronic myelogenous or granulocytic (CML), and hairy cell leukemia (a subtype of CLL). Median survival in these illnesses is about 4 yr.

Acute leukemias include acute lymphocytic (ALL) and acute myeloid (my-

ogenous) (AML) leukemia. If untreated, these diseases are fatal within weeks or months. Each of these types of leukemia is discussed in subentries, below. SEE: *Nursing Diagnoses Appendix*.

**ETIOLOGY:** All the different molecular events leading to the development of unchecked cellular reproduction in the leukemias result from genetic or chromosomal lesions in blood-forming cells. Duplications of genetic material (hyperdiploidy), loss of genetic information (hypodiploidy), inactivation of genes that normally suppress tumor development, chromosomal translocations, and the release of abnormal fusion proteins can all cause leukemia. These genetic lesions in turn can be produced by viruses, ionizing radiation, chemotherapeutic drugs, and toxic chemicals. Rarely, leukemias are caused by familial genetic syndromes (e.g., as ataxia telangiectasia, Bloom's syndrome, or Fanconi's syndrome).

**SYMPTOMS:** Clinical findings such as anemia, fatigue, lethargy, fever, and bone and joint pain may be present. Physical findings include combinations of pallor, petechiae, or purpura; mucous membrane bleeding; enlarged liver, spleen, and kidneys; and tenderness over the sternum and other bones.

**DIAGNOSIS:** Microscopic examination of peripheral blood and specimens of bone marrow are used to establish the diagnosis. These studies are followed by cytochemical and cytogenetic studies of abnormal cells found in the marrow or the peripheral blood to confirm the diagnosis with special stains and chromosomal analysis. Leukemic cells can also be identified by flow cytometry and immunocytochemistry, which rely on antibodies binding to and helping to identify malignant cells. The spread of leukemias to internal organs (e.g., the brain, the kidneys, or the lungs) may be evaluated with imaging tests (e.g., MRI studies, CT scans, or ultrasound).

**TREATMENT:** Chemotherapy, bone marrow transplantation, or both are used to treat leukemias. Regimens are devised regularly and are tailored to specific illnesses. Treatment is often given in several phases, with a period of induction chemotherapy to induce remission by completely eliminating leukemic cells from the bone marrow, followed by consolidation and maintenance phases. This multiphase treatment is designed to further deplete malignant cells from the bone marrow and to achieve complete cure.

**PATIENT CARE:** Patient care measures focus on eradicating the illness; managing complications; minimizing the effects of chemotherapy; preserving veins (often an indwelling port is inserted to administer chemotherapy);

and providing comfort, education, and psychological support. The specific needs of patients (many of whom are children) and their families must be considered. Instruction is provided about drugs the patient will receive, including any adverse reactions and measures that will be taken to prevent or alleviate these effects. Prescribed chemotherapy is administered with special precautions when indicated for infusion and drug disposal. If the chemotherapy causes weight loss or anorexia, nutritional guidance is provided. Oral, skin, and rectal care must be meticulous, e.g., the nurse must thoroughly clean the skin before all invasive procedures, inspect the patient for perirectal erosions, use strict aseptic technique when starting an intravenous line, and change sets (i.e., intravenous tubing and associated equipment) according to chemotherapeutic protocols. Ports are irrigated according to agency protocol. If the patient is receiving intrathecal chemotherapy, the lumbar puncture site is checked frequently for bleeding or oozing. The patient and family are taught to recognize signs of infection (fevers, chills, sore throat, cough, urinary difficulties) and are urged to report these to the oncologist/hematologist promptly. To prevent infection in neutropenic patients, strict hand hygiene protocols, special diets, and (in hospitalized patients) laminar airflow or other reverse isolation measures are instituted. The patient is monitored for bleeding. If bleeding occurs, compresses are applied and the bleeding site is elevated. Transfusions of platelets and other blood cells are often needed. Complications associated with specific chemotherapeutic regimens (e.g., hair loss, nausea and vomiting, anemia, neutropenia, and low platelets) are explained to the patient, along with management strategies that will be employed. Prescribed analgesics are administered as needed, and noninvasive pain relief techniques and comfort measures (e.g., position changes, cutaneous stimulation, distraction, relaxation breathing, and imagery) may be used. Gentle oral hygiene measures and protective skin care are explained. Fluid intake should be increased to eliminate chemotherapy metabolites, and the patient advised to void more frequently to prevent cystitis. Dietary fiber is important, and stool softeners may be used to ensure normal bowel movements. Anti-diarrheals usually control diarrhea, but the patient should be monitored for signs of dehydration. Fatigue is an anticipated adverse effect of treatment; therefore the patient is encouraged to alternate activity with rest periods and to obtain assistance with daily activities

as necessary. Reproductive issues should be discussed with the patient. Patient care routines and visiting times should be flexible when hospitalization is required. The patient and family are encouraged to participate in care as much as possible. Referrals are made to social service agencies, home health care agencies, and support groups. If the patient does not respond to treatment and has reached the terminal phase of the disease, supportive nursing, palliative care, or hospice care should be discussed sensitively with patients and their caregivers.

**acute lymphoblastic l.** Acute lymphocytic leukemia.

**acute lymphocytic l.** ABBR: ALL. A hematological malignancy marked by the unchecked multiplication of immature lymphoid cells in the bone marrow, blood, and body tissues. In 2008 the American Cancer Society estimated about 5400 Americans would be diagnosed with ALL. It is rapidly fatal if left untreated. SYN: *acute lymphoblastic l.* SEE: *illus; leukemia.*

**ETIOLOGY:** Any of a wide range of acquired or congenital chromosomal abnormalities can cause ALL, including lesions that result in the release of excess growth factors from cells and those that cause the loss of cancer-suppressing genes.

**SYMPTOMS:** Fatigue, lethargy, bleeding, bone and joint pain, and a predisposition to fever and infection are characteristic of ALL and other leukemias.

**DIAGNOSIS:** The disease is suggested by the presence of abnormalities on the complete blood count or peripheral blood smear and is confirmed by immunophenotyping.

**TREATMENT:** In childhood, ALL induction chemotherapy often begins with steroids, vinca alkaloids, and asparaginase. This is followed, after bone marrow recovery, by consolidation chemotherapy with multidrug regimens, including high-dose methotrexate. Maintenance therapies, which may last 2 years or longer, include methotrexate,

mercaptopyrimines, and other cytotoxic agents. Prophylaxis against central nervous system disease is accomplished by intrathecal drug administration. In referral hospitals, allogeneic stem cell transplantation is sometimes used for refractory disease. About 90% of treated children achieve remission. The 5-year survival of children with ALL is about 85%. Adult ALL is much less responsive to therapy; only about a third of adult patients are cured. In both childhood and adult ALL, allopurinol and hydration precede induction chemotherapy to prevent hyperuricemia caused by tumor lysis.

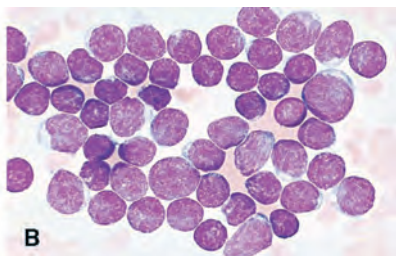
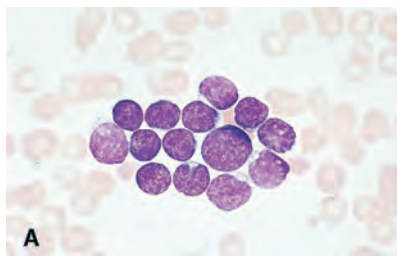
**PROGNOSIS:** Late complications of therapy are not uncommon.

**acute myelogenous l.** ABBR: AML. Acute myeloid leukemia.

**acute myeloid l.** ABBR: AML. Any of a group of hematological malignancies in which neoplastic cells develop from myeloid, monocytic, erythrocytic, or megakaryocytic precursors. AML is four times more common in adults than acute lymphocytic leukemia (ALL). In 2008, the American Cancer Society estimated about 13,300 Americans would be diagnosed with AML, and that the disease would cause 8,800 deaths. It occasionally follows a myelodysplastic disorder or aplastic anemia and sometimes occurs as a consequence of a familial disorder of fragile chromosomes (e.g., Fanconi's syndrome).

All forms of AML are marked by neoplastic replacement of normal bone marrow and circulation of immature cells ("blasts") in the peripheral blood. Anemia and thrombocytopenia commonly occur. The central nervous system and other organs are occasionally invaded. Complete remissions occur in approximately 65% of treated patients; responses to treatment lasting 5 years are achieved in 15% to 25% of treated patients. SYN: *acute myelogenous l.; acute nonlymphocytic l.*

**ETIOLOGY:** Genetic and chromosomal aberrations, such as are found in other leukemias, are characteristic.



**ACUTE LYMPHOCYTIC LEUKEMIA**

(A) Peripheral blood (Orig. mag.  $\times 640$ ), (B) bone marrow (Orig. mag.  $\times 640$ )

**SYMPTOMS:** Exertional fatigue as a result of anemia, bleeding due to thrombocytopenia, and infections due to a lack of normal white blood cells are common.

**TREATMENT:** Cytotoxic chemotherapies, with an induction phase followed by consolidation, are used. Typically, cytosine arabinoside and an anthracycline are used during induction for AML. Allogeneic bone marrow transplantation is used when a matching donor is available; stem cell transplantation is an option for some patients with specific cytogenetic abnormalities.

**acute nonlymphocytic l.** ABBR: ANLL. Acute myeloid leukemia.

**aleukemic l.** Leukemia cutis.

**chronic lymphocytic l.** ABBR: CLL. A malignancy in which abnormal lymphocytes (usually B cells) proliferate and infiltrate body tissues, often causing lymph node enlargement and immune dysfunction. Infectious complications are common. Median life expectancy is about 4 years. Chronic lymphocytic leukemia is the most common leukemia in industrialized nations. It usually occurs in people (older men) above age 60. Its incidence rises to 20 cases per 100,000 in people over 80. In 2008 the American Cancer Society estimated that 15,100 people would be diagnosed with CLL and that 4,400 would die of the disease. The timing of treatment and the prognosis in CLL depend on the stage of the disease. Staging includes such factors as the number of abnormal lymphocytes in the bloodstream, how quickly they double, and the presence of lymphadenopathy, organomegaly, or cytopenias. **SEE: illus.**

**TREATMENT:** Patients with advanced stages of the illness are often treated with chlorambucil, fludarabine, or other cytotoxic agents, often with rituximab (a monoclonal antibody) added to enhance response. Patients with early-stage disease are not usually given therapy.

**chronic myelogenous l.** ABBR: CML. Chronic myeloid leukemia.

**chronic myeloid l.** ABBR: CML. A

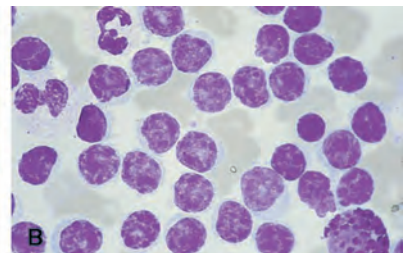
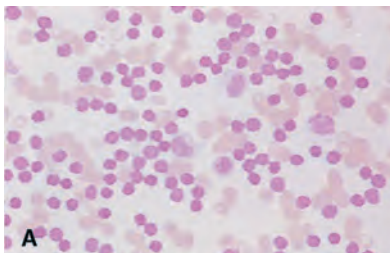
hematological malignancy marked by a sustained increase in the number of granulocytes, splenic enlargement, and a specific cytogenetic anomaly (the "Philadelphia chromosome") in the bone marrow of more than 90% of patients. The disease affects one or two people per 100,000. In 2008 the American Cancer Society estimated that 4830 people would be diagnosed with CML and that 450 would die of the disease. The course of the disease has three phases: a chronic one in which blood counts are relatively easy to control with medications; an accelerated phase in which granulocyte counts become more resistant to chemotherapy; and a "blast" crisis, which resembles acute leukemia. Median survival is about 4 years. It generally occurs between ages 40 and 50, affecting slightly more men than women (4600 adults in the U.S. in 2005). **SYN: chronic myelogenous l.** **SEE: leukemia.**

**ETIOLOGY:** CML results from a translocation of genetic material between chromosomes 9 and 22. The translocation results in the production of an abnormal tyrosine kinase that makes affected cells immortal.

**SYMPTOMS:** CML is diagnosed in asymptomatic patients who are found to have an unexplained leukocytosis when their complete blood counts are checked. Subsequent evaluation, including bone marrow aspiration and biopsy with cytogenetic analysis, reveal the Philadelphia chromosome.

**TREATMENT:** Imatinib mesylate (a drug that blocks an abnormal kinase made by Philadelphia chromosome positive CML cells) effectively reduces the number of tumor cells in the chronic phase of CML to normal in nearly 90% of patients. An alternative is stem cell transplantation.

**l. cutis** An invasion of the dermis and subcutaneous fat by leukemic cells. The invasion often happens before these cells proliferate in the bone marrow or are detectable in the peripheral blood. The cells may cause several different types of skin rashes, including blue nod-



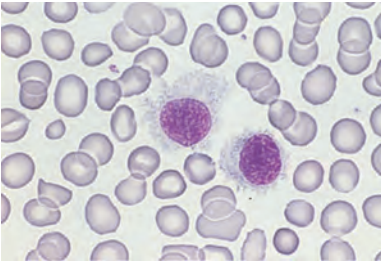
**CHRONIC LYMPHOCYTIC LEUKEMIA**

(A) Peripheral blood (Orig. mag.  $\times 400$ ), (B) bone marrow (Orig. mag.  $\times 640$ )



ules (giving the skin a “blueberry muffin” appearance), papules, plaques, and ulcers. SYN: *aleukemic l.*

**hairy cell l.** ABBR: HCL. A chronic, low-grade hematological malignancy of abnormally shaped B lymphocytes (“hairy cells”). The disease is marked by pancytopenia and splenomegaly. Median survival in untreated patients is about 5 years. The disease is rare, being only 1% to 2% of all leukemias. The median age of patients is 50 years; men are affected more commonly than women by a 4-to-1 ratio. SEE: *illus.*



LYMPHOCYTES IN HAIRY CELL LEUKEMIA

(Orig. mag.  $\times 640$ )

**SYMPTOMS:** Weight loss, hypermetabolism, infectious complications, and abdominal discomfort due to splenic enlargement are common.

**TREATMENT:** Cladribine, pentostatin, 2-chlorodeoxyadenosine, and fludarabine have been used.

**PROGNOSIS:** Before the availability of the chemotherapeutic agents, the mean survival time was 4.6 years for nonsplenectomized patients and 6.4 for those who had splenectomy. The use of chemotherapy in HCL patients may permit longer survival times.

**leukemic** (loo-kēm'ik) [*l'* + *haima*, blood] **1.** Relating to leukemia. **2.** Affected with leukemia.

**leukemid** (loo-kē'mid) Any nonspecific skin lesion associated with leukemia. The lesions may or may not contain leukemic cells.

**leukemogenesis** (loo-kē'mō-jěn'ě-sis) [*l'* + *l'* + *genesis*, generation, birth] The induction of leukemia.

**leukin** (loo'kin) A thermostable bactericidal substance present in leukocytes.

**leuko-, leuk-, leuc-** [Gr. *leukos*, white] Combining forms meaning *white* or *white corpuscle*.

**leukoagglutinin** (loo'kō-ă-gloo'ti-nĭn) [*l'* + L. *agglutinans*, gluing] An antibody that agglutinates white blood cells.

**leukoareosis** (loo-koh-ar-ee-oh'sis) An abnormal appearance of the periventricular white matter of the brain, seen in people with poorly controlled hypertension, Alzheimer's disease, and other conditions.

**leukocidin** (loo-kō-sī'dĭn) [*l'* + L. *caedere*, to kill] A bacterial toxin that destroys leukocytes.

**leukocoria, leukokoria** (loo'kō-kōr'ē-ă) [*l'* + Gr. *kore*, girl, pupil of the eye] White or abnormal pupillary reflex. This reflex may be present in infants and children who have retinoblastoma, cataract, retinal detachment, and intraocular infections. Patients with this reflex should be referred to an ophthalmologist without delay.

**leukocyte** (loo'kō-sīt) [*l'* + *kytos*, cell] A white blood cell (WBC). There are two types: granulocytes (those possessing, in their cytoplasm, large granules that stain different colors under a microscope) and agranulocytes (those lacking granules). Granulocytes include basophils, eosinophils, and neutrophils. Agranulocytes include monocytes and lymphocytes. Clinically, granulocytes are often referred to as “polys” because they are all polymorphonuclear (multi-lobed nuclei); whereas agranulocytes are mononuclear (one nucleus). SEE: *blood* for *illus.*

Neutrophils, 55% to 70% of all WBCs, are the most numerous phagocytic cells and are a primary effector cell in inflammation. Eosinophils, 1% to 3% of total WBCs, destroy parasites and are involved in allergic reactions. Basophils, less than 1% of all WBCs, contain granules of histamine and heparin and are part of the inflammatory response to injury. Monocytes, 3% to 8% of all WBCs, become macrophages and phagocytize pathogens and damaged cells, esp. in the tissue fluid. Lymphocytes, 20% to 35% of all WBCs, have several functions: recognizing foreign antigens, producing antibodies, suppressing the immune response to prevent excess tissue damage, and becoming memory cells.

Leukocytes are formed from the undifferentiated stem cells that give rise to all blood cells. Those in the red bone marrow may become any of the five kinds of WBCs. Those in the spleen and lymph nodes may become lymphocytes or monocytes. Those in the thymus become lymphocytes called T lymphocytes.

**FUNCTION:** Leukocytes are the primary effector cells against infection and tissue damage. They not only neutralize or destroy organisms, but also act as scavengers, engulfing damaged cells by phagocytosis. Leukocytes travel by amoeboid movement and are able to penetrate tissue and then return to the bloodstream. Their movement is directed by chemicals released by injured cells, a process called chemotaxis. After coming in contact with and recognizing an antigen, neutrophils or macrophages phagocytize (engulf) it in a small vacuole that merges with a lysosome, to per-



mit the lysosomal enzymes to digest the phagocytized material. When leukocytes are killed along with the pathogenic organisms they have destroyed, the resulting material is called pus, commonly found at the site of localized infections. Pus that collects because of inadequate blood or lymph drainage is called an abscess.

**Microscopic examination:** Leukocytes can be measured in any bodily secretion. They are normally present in blood and, in small amounts, in spinal fluid and mucus. The presence of WBCs in urine, sputum, or fluid drawn from the abdomen is an indication of infection or trauma. The type of WBC present is identified by the shape of the cell or by the use of stains (Wright's) to color the granules: granules in eosinophils stain red, those in basophils stain blue, and those in neutrophils stain purple.

Clinically, WBC counts are important in detecting infection or immune system dysfunction. The normal WBC level is 5000 to 10,000/mm<sup>3</sup>. An elevated (greater than 10,000) leukocyte count (leukocytosis) indicates an acute infection or inflammatory disease process (such as certain types of leukemia), whereas a decrease in the number of leukocytes (less than 5000) indicates either immunodeficiency or an overwhelming infection that has depleted WBC stores. In addition to the total WBC count, the differential count is also frequently important. A differential count measures the percent of each type of WBC (e.g., neutrophils, monocytes, lymphocytes). The differential also measures the number of immature cells of each cell type as an indication of production by the bone marrow. Immature cells are called "blasts" (e.g., lymphoblasts, myeloblasts). During infections or in certain types of leukemia, blasts may be present in peripheral blood. SEE: *inflammation*.

**acidophilic l.** Eosinophil.

**agranular l.** Nongranular l.

**basophilic l.** Basophil.

**eosinophilic l.** Eosinophil.

**granular l.** A leukocyte containing granules in cytoplasm.

**heterophilic l.** A neutrophilic leukocyte of certain animals whose granules stain with an acid stain.

**lymphoid l.** Nongranular l.

**neutrophilic l.** Neutrophil.

**nongranular l.** An agranulocyte; a lymphocyte or monocyte. SYN: *agranular leukocyte*; *lymphoid leukocyte*.

**polymorphonuclear l.** ABBR: PMN. A white blood cell with a nucleus made of two or more lobes, i.e., the granular leukocytes: neutrophils, eosinophils, or basophils. SYN: *polysegmented neutrophil*. SEE: *basophil*; *eosinophil*; *neutrophil*.

**leukocyte reduction** The removal of white blood cells from blood prior to its transfusion, to decrease the likelihood of transfusion reactions or infection of the recipient with viral diseases.

**leukocytic** (loo'kō-sit'ik) [l' + *kytos*, cell] Pert. to leukocytes.

**leukocytoblast** (loo'kō-sī'tō-blást) [l' + " + *blastos*, germ] A cell from which a leukocyte arises.

**leukocytogenesis** (loo'kō-sī'tō-jěn'ē-sīs) [l' + *kytos*, cell, + *genesis*, generation, birth] Leukopoiesis.

**leukocytoid** (loo'kō-sī'toyd) [l' + " + *eidos*, form, shape] Resembling a leukocyte.

**leukocytolysin** (loo'kō-sī-tōl'ī-sīn) A lysin that destroys leukocytes. SEE: *leukocidin*.

**leukocytolysis** (loo'kō-sī-tōl'ī-sīs) [l' + *kytos*, cell, + *lysis*, dissolution] Destruction of leukocytes.

**leukocytoma** (loo'kō-sī-tō'mă) [l' + " + *oma*, tumor] 1. A tumor composed of cells resembling leukocytes. 2. A tumorlike mass of leukocytes.

**leukocytopenia** (loo'kō-sī'tō-pē'nē-ā) [l' + " + *penia*, want] Leukopenia.

**leukocytopoiesis** (loo'kō-sī'tō-poy-ē'sīs) [l' + " + *poiein*, to make] The formation of white blood cells.

**leukocytosis** (loo'kō-sī-tō'sīs) [l' + *kytos*, cell, + *osis*, condition] An increase in the number of leukocytes (usually above 10,000/mm<sup>3</sup>) in the blood. It occurs most commonly in disease processes involving infection, inflammation, trauma, or stress, but it also can result occasionally from the use of some medications (e.g., corticosteroids). SEE: *leukemoid*; *leukocyte*; *leukopenia*.

It usually is caused by an increase in one particular type of white blood cell (WBC). For example, neutrophils increase in acute bacterial infections and inflammation, monocytes increase in chronic infections, lymphocytes increase in viral and chronic bacterial infections, and eosinophils increase in allergic disorders, such as asthma. Leukemias often cause a huge increase in circulating cells, owing to the unchecked reproduction of a single clone of malignant cells.

**basophilic l.** An increase in the basophils in the blood.

**mononuclear l.** An increase in the monocytes in the blood.

**pathological l.** Leukocytosis due to a disease such as an infection.

**leukocytotaxis** (loo'kō-sī'tō-tăk'sīs) [Gr. *leukos*, white, + *kytos*, cell, + *taxis*, arrangement] The movement of leukocytes either toward or away from an area such as a traumatized or infected site.

**leukocytotoxin** (loo'kō-sī'tō-tōk'sīn) [l' + " + *toxikon*, poison] A toxin that destroys leukocytes. SYN: *leukotoxin*.

**leukoderma** (loo-kō-dēr'mă) [l' + *derma*, skin] Deficiency of skin pigmentation, esp. in patches. SEE: *vitiligo*.

**syphilitic l.** Macular depigmentation, esp. of the skin of the neck and shoulders, seen in late syphilis.

**leukodystrophy** (loo'kō-dīs'trō-fē) Any disease (such as globoid cell leukodystrophy, adrenoleukodystrophy, or metachromatic leukodystrophy) whose hallmarks are metabolic defects in the formation of myelin. Bone marrow transplantation can cure some affected children.

**metachromatic l.** A type of hereditary leukodystrophy caused by a deficiency of the enzyme cerebrosidase sulfatase, an enzyme that is essential for the degradation of sulfatide. Deficiency of the enzyme allows excess deposition of sulfatide in nerve tissues. Clinical signs of this disease usually appear at about 1 year of age. They include gait disturbance, inability to learn to walk, spasticity of the limbs, hyperreflexia, dementia, and eventually death. The disease, for which there is no specific therapy, is usually fatal by age 10.

**leukoedema** (loo'kō-ē-dē'mă) [l' + *oedema*, swelling] A benign leukophakia-like abnormality of the mucosa of the mouth or tongue. The affected areas are opalescent or white, and wrinkled.

**leukoencephalitis** (loo'kō-ēn-sēf-ā-lī'tīs) [l' + *enkephalos*, brain + *itis*, inflammation] Inflammation of the white matter of the brain.

**acute hemorrhagic l.** A neurological syndrome marked by rapidly progressive neurological findings, associated with asymmetric inflammatory pathological changes in the brain, and bleeding. SYN: *Weston Hurst syndrome*.

**leukoencephalopathy** (loo'kō-ēn-sēf-ā-lō'pā-thē) [Gr. *leukos*, white, + *enkephalos*, brain, + *pathos*, disease, suffering] Damage to the white matter of the brain, especially to myelin.

**leukoencephalopathy, progressive multifocal** ABBR: PML. A disease characterized by the presence of widespread demyelinating lesions of the brain, brainstem, and/or cerebellum. It is caused by infection with polyoma JC virus. PML is usually associated with chronic, immune suppressing illnesses, such as AIDS, and some lymphomas or leukemias. Clinical findings include aphasia, ataxia, blindness, dementia, dysarthria, and eventual coma. The disease is sometimes diagnostically confused with multiple sclerosis.

**leukoencephalopathy, toxic** Damage to the white matter of the brain caused by exposure to chemicals, radiation, and certain viruses, including HIV. The chemical agents include, but are not limited to, alcohol, carbon monoxide, co-

caine, toluene, and some cytotoxic drugs.

**SYMPTOMS:** Confusion, disinterest, lethargy, memory losses, and psychiatric symptoms are common in early stages. Profoundly ill patients may display stupor or coma. Language disturbances are unusual.

**leukoerythroblastosis** (loo'kō-ē-rīth'rō-blās-tō'sīs) [l' + *erythros*, red, + *blastos*, germ, + *osis*, condition] Anemia due to any condition that causes the bone marrow to be infiltrated and thus inactivated.

**leukokeratosis** (loo'kō-kēr-ā-tō'sīs) [l' + *keras*, horn, + *osis*, condition] Leukoplakia.

**leukokraurosis** (loo'kō-kraw-rō'sīs) [l' + *krauros*, dry, + *osis*, condition] Lichen sclerosus et atrophicus.

**leukolymphosarcoma** (loo'kō-līm'fō-sār-kō'mă) [l' + L. *lymphā*, lymph, + Gr. *sarx*, flesh, + *oma*, tumor] Lymphosarcoma cell leukemia.

**leukoma** (loo-kō'mă) [l' + *oma*, tumor] A white, dense corneal opacity.

**l. adherens** A corneal opacity to which the iris is attached.

**leukomatous** (loo-kō'mă-tūs) [Gr. *leukos*, white, + *oma*, tumor] **1.** Pert. to leukoma. **2.** Suffering from leukoma.

**leukomyelitis** (loo'kō-mī-ē-lī'tīs) [l' + *myelos*, marrow, + *itis*, inflammation] Inflammation of the white matter of the spinal cord.

**leukomyelopathy** (loo'kō-mī-ēl-ōp'ā-thē) [l' + *pathos*, disease] Disease involving the white matter of the spinal cord.

**leukonecrosis** (loo'kō-nē-krō'sīs) [l' + *nekrosis*, state of death] Dry, light-colored, or white gangrene.

**leukonychia** (loo'kō-nīk'ē-ā) [l' + *onyx*, nail] White spots or streaks on the nails. SYN: *canities unguium*; *leukopathia unguium*.

**leukopathia** (loo'kō-pāth'ē-ā) [l' + *pathos*, disease] **1.** The absence of pigment in the skin. SEE: *leukoderma*. **2.** A disease involving leukocytes.

**l. unguium** Leukonychia.

**leukopedesis** (loo'kō-pē-dē'sīs) [l' + *pedan*, to leap] The passage of leukocytes through the walls of the blood vessels.

**leukopenia** (loo'kō-pē-nē-ā) [l' + *penia*, lack] Abnormal decrease of white blood cells usually below 5000/mm<sup>3</sup>. A great number of drugs may cause leukopenia, as can failure of the bone marrow. SYN: *granulocytopenia*; *leukocytopenia*.

**leukoplakia** (loo'kō-plā'kē-ā) [l' + *plax*, plate] Formation of white spots or patches on the mucous membrane of the tongue or cheek. The spots are smooth, irregular in size and shape, hard, and occasionally fissured. The lesions may become malignant. SYN: *leukokoria*; *leukoplasia*.

***I. buccalis*** Leukoplakia of the mucosa of the cheek.

**oral hairy *I.*** Leukoplakia of the tongue. SEE: *illus.*



#### ORAL HAIRY LEUKOPLAKIA

In a patient with AIDS

***I. vulvae*** Lichen sclerosus et atrophicus.

**leukoplasia** (loo-kō-plā'zē-ă) Leukoplakia.

**leukopoiesis** (loo'kō-poy-ē'sis) [*"* + *poiesis*, formation] Leukocyte production. SYN: *leukocytogenesis*. **leukopoi-etic** (-ēt'ik), *adj.*

**leukoreduction** (loo'kō-rē-dūk'shūn) [Gr. *leukos*, white, + L. *reductio*, leading back] The loss of white blood cells from a unit of packed red cells by filtration of the blood before transfusion. White blood cells in red cell transfusions have been associated with immunosuppression in recipients. Leukoreduction typically lowers the white cell content of packed red cells from about  $3 \times 10^9$  per unit of blood to about  $2.5 \times 10^8$  per unit. It has been associated with a decrease in post-transfusion fevers, and, in some studies, with decreased post-transfusion mortality.

**leukorrhagia** (loo'kō-rā'jē-ă) [*"* + *rhegynai*, to burst forth] Leukorrhoea.

**leukorrhea** (loo'kō-rē-ă) [*"* + *rhoia*, flow] A white, estrogen-related, scant-to-moderate, odorless, physiological vaginal discharge, normally preceding menarche and occurring during ovulation, during pregnancy, and in response to sexual excitement. Some women note an increased discharge related to oral contraceptive or hormone replacement therapy. Chronic cervicitis and vaginal infections are the most common causes of abnormal genital discharge. Signs of infection include increased discharge, change in color and consistency, odor, vulvar irritation, dysuria, and itching. SYN: *leukorrhagia*. SEE: *vaginitis*.

**leukosarcoma** (loo'kō-sār-kō'mă) [Gr. *leukos*, white, + *sarx*, flesh, + *oma*, tumor] A variant of lymphoma in which malignant cells enter the blood stream and circulate.

**leukotactic** (loo'kō-tăk'tik) [*"* + *taxis*,

arrangement] Possessing the power of attracting leukocytes.

**leukotaxis** (loo'kō-tăks'is) Possessing the power of attracting (positive leukotaxis) or repelling (negative leukotaxis) leukocytes.

**leukotomy** (loo-kōt'ō-mē) [*"* + *tome*, incision] Lobotomy.

**leukotoxic** (loo'kō-tōks'ik) [*"* + *toxi-kon*, poison] Destructive to leukocytes.

**leukotoxin** (loo'kō-tōk'sin) [*"* + *toxi-kon*, poison] Leukocytotoxin.

**leukotrichia** (loo'kō-trik'ē-ă) [*"* + *thrix*, hair] Whiteness of the hair. SYN: *canities*.

**leukotriene** (loo'kō-trī'ēn) Any of a group of arachidonic acid metabolites that functions as a chemical mediator of allergic reactions and inflammation. Leukotrienes C<sub>4</sub>, D<sub>4</sub>, and E<sub>4</sub> are derived from the precursor molecule leukotriene A<sub>4</sub>. The subscripted number specifies the number of double bonds in the molecule. All are synthesized by cells in response to inflammation or tissue injury. Leukotrienes have been implicated in the development of the inflammatory responses in asthma, psoriasis, rheumatoid arthritis, and inflammatory bowel disease. They are powerful bronchoconstrictors and vasodilators and mediate the adverse vascular and bronchial effects of systemic anaphylaxis.

**leumorphin** (loo-mōr'fin) [*"* + *Morpheus*, ancient Gr. god of dreams or sleep] An endogenous endorphin derived from proenkephalin. It decreases the secretion of vasopressin and fluid intake but increases feeding and opposes apoptosis.

**Levaquin** SEE: *levofloxacin*.

**levator** (lē-vā'tor) *pl.* **levatores** [L., lifter] **1.** A muscle that raises or elevates a part; opposite of depressor. **2.** An instrument that lifts depressed portions.

***I. ani*** A broad muscle that helps to form the floor of the pelvis.

***I. palpebrae superioris*** A muscle that elevates the upper eyelid.

**levator ani syndrome** Chronic pain and/or pressure felt in the anus or high in the rectum. The cause is unknown, but muscular tension or spasm, nerve irritation, or tendonitis may contribute. Some patients improve with injections of corticosteroid medications.

**LeVeen shunt** (lē-vēn') [Harry LeVeen, U.S. surgeon, 1917–1997] A shunt from the peritoneal cavity to the venous circulation used to help control ascites by allowing ascitic fluid to enter the venous circulation.

**level of health care** SEE: *system, health care*.

**lever** (lēv'ēr, lē'vēr) [L. *levare*, to raise] A rigid bar used to modify direction, force, and motion. A type of simple ma-

chine that provides the user with a mechanical advantage. Levers are used to facilitate the moving and lifting of objects too heavy or awkward for one to move unassisted.

**Levey-Jennings chart** (lĕv'ĕ-jĕn'jĕngz) [S. Levey, 20th century American statistician; E.N. Jennings, 20th century American statistician] A graphical representation of control data, arranged in chronological order, that shows a mean or target value and one or more sets of acceptable limits.

**Levine, Myra** (lĕ-vĕn') A nursing educator, died 1996, who developed the Conservation Model of Nursing. SEE: *Nursing Theory Appendix*.

**Levine-Critchley syndrome** (lĕ-vĕn'-krĭch'lĕ) Neuroacanthosis.

**Levin's tube** (lĕ-vĭnz') [Abraham L. Levin, U.S. physician, 1880–1940] A catheter that is usually introduced through the nose and extends into or through the stomach. It is used to help prevent accumulation of intestinal liquids and gas during and after intestinal surgery. This tube is often referred to as a nasogastric tube. A variant includes the addition of a sump channel, which helps to reduce gas build-up in the upper gastrointestinal tract. SEE: *Salem sump tube*.

**levitation** (lĕv'i-tā'shŭn) [L. *levitas*, lightness] The subjective sensation of rising in the air or moving through the air unsupported. It occurs in dreams, altered states of consciousness, and certain mental disorders.

**levocardia** (lĕv'vō-kār'dĕ-ă) [L. *laevus*, left, + Gr. *kardia*, heart] A term describing the normal position of the heart when other viscera are inverted. SEE: *dextrocardia*.

**levocarnitine** (lĕv'vō-kār'nĭ-tĕn) An amino acid-derived drug used in treating primary carnitine deficiency. SEE: *carnitine*.

**levoclination** (lĕv'vō-klĭ-nā'shŭn) [ + *clinatus*, leaning] Torsion or twisting of the upper meridians of the eyes to the left. SYN: *levotorsion* (2).

**levocycloduction** (lĕv'vō-sĭ'klō-dŭk'shŭn) [ + Gr. *kyklos*, circle, + L. *ducere*, to lead] Levoduction.

**levodopa** (lĕv'vō-dō'pă) L-3,4-dihydroxyphenylalanine; a drug used in the treatment of Parkinson's disease. Also called L-dopa.

**levoduction** (lĕv'vō-dŭk'shŭn) [L. *laevus*, left, + *ducere*, to lead] Movement or drawing toward the left, esp. of an eye. SYN: *levocycloduction*.

**levofloxacin** (lĕv'vō-flōk'să-sĭn) A fluoroquinolone and anti-infective, administered orally to treat urinary tract and gynecological infections and gonorrhea. It is also used to treat prostatitis; infectious diarrhea; and infections of the res-

piratory tract, abdomen, skin, bones, and joints.

**levophobia** (lĕv'vō-fō'bĕ-ă) [ + Gr. *phobos*, fear] A morbid dread of objects on the left side of the body.

**levorotation** (lĕv'vō-rō-tā'shŭn) [ + *rotare*, to turn] Levotorsion (1).

**levorotatory** (lĕv'vō-rō'tā-tor-ĕ) Causing to turn toward the left, applied esp. to substances that turn polarized light rays to the left.

**levothyroxine sodium** (lĕv'vō-thĭ-rōk'sĕn) ABBR: T<sub>4</sub>. The sodium salt of the natural isomer of thyroxine used to treat thyroid deficiency. A typical dosage is 1.6 mcg/kg/day given orally.

**levotorsion, levoversion** (lĕv'vō-tor'shŭn, lĕv'vō-vĕr'shŭn) [ + *torsio*, a twisting] 1. A twisting to the left. SYN: *levorotation*. 2. Levoclination.

**levulinic acid** (lĕv'vō-lĭn'ĭk) CH<sub>3</sub>COCH<sub>2</sub>-CH<sub>2</sub>COOH; An acid formed when certain simple sugars are acted on by dilute hydrochloric acid.

**levulose** (lĕ-v'vō-lōs) SEE: *fructose*.

**levulosemia** (lĕv'vō-lō-sĕ'mĕ-ă) [ + Gr. *haima*, blood] The presence of fructose in the blood.

**levulosuria** (lĕv'vō-lō-sŭ-rĕ-ă) [ + Gr. *ouros*, urine] The presence of fructose in the urine.

**lewisite** (lŭ'ĭ-sĭt) [Warren Lee Lewis, U.S. chemist, 1878–1943] A toxic gas similar in action to mustard gas, used in warfare to disable and kill. It acts as a vesicant in the lungs. Dimercaprol is the treatment drug of choice.

**Lewy body** (loo-wĕ) [Frederic H. Lewy, Ger. neurologist, 1885–1950] A neuronal cell with pigmented inclusion bodies. They are found in the brain in the substantia nigra and locus ceruleus, esp. in Parkinson's disease. SEE: *illus.*



LEWY BODY

**Leydig cell** (lĭ'dĭg) [Franz von Leydig, Ger. anatomist, 1821–1908] One of the interstitial cells in the testicles that produce testosterone.

**LFA** *left frontoanterior* fetal position.

**L-forms** [named for *Lister Institute*] Spontaneous variants of bacteria that replicate as filterable spheres with defective or absent cell walls. They are fil-



terable because of their flexibility rather than their size. Stable forms may grow for an indefinite time in a wall-less state. Organisms of the unstable form are capable of regenerating their cell walls and reverting to their antecedent bacterial form. The ability of L-forms to cause disease is unknown. SYN: *L-phase variants*.

**LFP** *left frontoposterior fetal position.*

**LFT** *left frontotransverse fetal position.*

**LGA** *large for gestational age.*

**LGSIL** *low-grade squamous intraepithelial lesion.* SEE: under *lesion*.

**LH** *luteinizing hormone.* SEE: under *hormone*.

**Lhermitte's sign** (lār-mēs't) [Jacques Jean Lhermitte, Fr. neurologist, 1877–1959] The symptom (rather than a sign) of a pain resembling a sudden electric shock throughout the body produced by flexing the neck. It is caused by trauma to the cervical portion of the spinal cord, multiple sclerosis, cervical cord tumor, or cervical spondylosis.

**LHRH** *luteinizing hormone-releasing hormone.* SEE: under *hormone*.

**Li** Symbol for the element lithium.

**liability** Legal responsibility. A health care provider is legally responsible for actions that fail to meet the standards of care or are grossly negligent, thereby causing harm to the patient.

**school-specific l.** The legal standard that holds licensed practitioners liable only for those actions that violate the standards of their own education and training. As a result, chiropractic liability is judged based on standards of care in the school of chiropractic, while surgical liability is based on the standards set forth among surgeons.

**enterprise l.** The legal and financial liability of a health care institution for injuries that result from the actions, behaviors, or negligence of its staff.

**strict l.** Liability attributed to a manufacturer or seller of a dangerous or defective product regardless of proven negligence or fault.

**vicarious l.** Legal responsibility of a health care professional or health care institution for the negligent actions of its trainees and employees.

**libel** (lī'bēl) [L. *libellus*, little book, pamphlet] Defaming the character of another by means of the written word. To qualify legally as libel, written communication must intentionally impugn the reputation of another person and be both malicious and demonstrably false.

**Liberty Mutual elbow** Boston arm.

**libidinous** (lī-bīd'ī-nūs) [L. *libidinosus*, pert. to desire] Characterized by sexual desires.

**libido** (lī-bī'dō, -bē'dō) [L., desire] 1. The sexual drive, conscious or uncon-

scious. 2. In psychoanalysis, the energy that is the driving force of human behavior. It has been variously identified as the sex urge, desire to live, desire for pleasure, or satisfaction.

**low l.** A sexual dysfunction marked by inhibited sexual desire and inability to sustain arousal during sexual activities. Diminished sexual drive may be related to advanced age, psychogenic causes, general illness, side effects of some medications, or substance abuse.

In men it manifests as partial or complete failure to attain or maintain erection until completion of the sex act. In women there is partial or complete failure to attain or maintain the vaginal lubrication-swelling response of sexual excitement until completion of the sex act. SEE: table.

### Some Classes of Drugs That Inhibit Libido

Class	Examples
alcohol	beer, liquor, wine
antidepressants	amitriptyline, fluoxetine
alpha blockers	clonidine
beta blockers	atenolol, propranolol
drugs of abuse	amphetamines, cocaine, heroin
histamine <sub>2</sub> blockers	cimetidine
major tranquilizers	clozapine, fluphenazine, thioridazine
oral contraceptives	many types
sedative/hypnotics	benzodiazepines

**Libman-Sacks disease** (līb'mān-sāks') [Emanuel Libman, U.S. physician, 1872–1946; Benjamin Sacks, U.S. physician, 1896–1939] Verrucous, nonbacterial endocarditis. SEE: *endocarditis*.

**Libman-Sacks endocarditis** An eponym for nonbacterial thrombotic endocarditis.

**library** A stored, retrievable collection of data.

**lice** Pl. of louse.

**licensed occupational therapist** ABBR: LOTR; OTR/L. An occupational therapist who has met the requirements to practice in states with licensure laws governing occupational therapy. Usually, licensed therapists have been certified by the National Board for Certification in Occupational Therapy as a registered occupational therapist (OTR). Some state governments, as part of their licensure statutes, permit use of the OTR/L or LOTR designations.

**licensing, compulsory** A law granting a government access to patented drugs



and other intellectual property before the patent formally expires. Drug companies have opposed compulsory licensing on the grounds that it limits the financial value of patent holding. Some nations have sought obligatory access to drugs, or their generic copies, to limit pharmaceutical costs or address national health emergencies.

**licensure** (lī'sēn-shūr) In the health care professions, the granting of permission—official, legal, or both—to perform professional actions that may not be legally performed by those who do not have such permission. Qualification for a license in health care is usually determined by an official body representing the state or federal government.

**individual l.** In the health care profession, licensure of an individual to perform certain medical actions.

**institutional l.** In the health care industry, the authorization of hospitals, clinics, or corporations to provide specific forms of care.

**mandatory l.** Licensure that regulates the practice of a profession such as nursing or medicine by requiring compliance with the licensing statute if an individual engages in activities defined within the scope of that profession.

**multistate nurse l.** In the U.S., authority or permission to practice nursing in several states, granted after making a single application.

**licentiate** (lī-sēn'shē-āt) **1.** An individual who practices a profession by the authority granted by a license. **2.** In some countries, a medical practitioner who has no medical degree.

**lichen** (lī'kēn) [Gr. *leichen*, lichen] **1.** Any form of papular skin disease; usually denoting lichen planus. **2.** In botany, any one of numerous plants consisting of a fungus growing symbiotically with certain algae. They form characteristic scaly or branching growths on rocks or barks of trees.

**myxedematous l.** Generalized eruption of asymptomatic nodules caused by mucinous deposits in the upper layers of the skin and in vessels and organs.

**l. nitidus** A rare skin condition characterized by small, chronic, asymptomatic papules that are usually pink and are usually located only on the penis, abdomen, and flexor surfaces of the elbows and palms.

**l. pilaris** Lichen spinulosus.

**l. planopilaris** A form of lichen planus in which white shiny follicular papules are present along with the usual plane papules.

**l. planus** An inflammatory rash marked by the presence of itchy, red to violet, polygon-shaped papules, which typically appear on the scalp, in the oral cavity, or on the limbs. The papules may merge into plaques crisscrossed by faint

lines called "Wickham's striae." Typically, the rash persists for 1 to 2 years and then spontaneously improves, although about one in five patients will suffer a recurrence. SYN: *lichen ruber planus*. SEE: *illius*.



LICHEN PLANUS

**ETIOLOGY:** The cause of the rash is not known, but it is occasionally associated with the use of certain chemicals (e.g., photoprocessing compounds, gold) or medications (e.g., beta blockers, diuretics, nonsteroidal anti-inflammatory drugs).

**TREATMENT:** Corticosteroids, applied topically, taken orally, or injected into the lesions, often are effective.

**l. ruber moniliformis** Large verrucous lesions of lichen planus arranged as the beads in a necklace.

**l. ruber planus** Lichen planus.

**l. sclerosus et atrophicus** A chronic, atrophic skin disorder marked by the appearance of discrete, flat-topped, white papules, which may coalesce and degenerate. The skin affected by the rash, which occurs most often on the vulva, is often thin, shiny, and scarred. Although this condition is not considered precancerous, squamous cell carcinomas arise in 1% to 5% of cases.

**SYMPTOMS:** Itching of the vulva, which may be intractable, is the most common complaint.

**TREATMENT:** Potent topical corticosteroids produce remission, but not cure, in the great majority of patients. SYN: *vulvar dystrophy*.

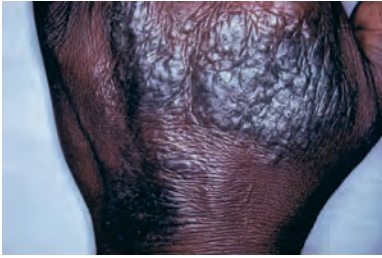
**l. scrofulosus** An eruption of tiny punctate reddish-brown papules arranged in circles or groups in young persons with tuberculosis. The lesions are caused by the spread of the tubercle bacilli through the blood to the skin.

**l. simplex chronicus** An itching papular eruption that is circumscribed and located on skin that has become thickened and pigmented as a result of scratching. SEE: *illius*; *neurodermatitis* for *illius*.

**l. spinulosus** A form of lichen with a spine developing in each follicle. SYN: *l. pilaris*; *keratosis pilaris*.

**l. striatus** A papular eruption usually seen on one extremity of a child. It





LICHEN SIMPLEX CHRONICUS

is arranged in linear groups and consists of pink papules. The disease, though self-limiting, may last for a year or longer.

**l. tropicus** A form of lichen with redness and inflammatory reaction of the skin. SYN: *miliaria*.

**lichenification** (lī-kēm"tī-fī-kā'shūn) [Gr. *leichen*, lichen, + L. *facere*, to make] 1. Cutaneous thickening and hardening from continued irritation. 2. The changing of an eruption into one resembling a lichen.

**lichenoid** (lī'kēm-oyd) [" + *eidōs*, form, shape] Resembling lichen.

**Lichtheim's syndrome** (līkt'hīmz) [Ludwig Lichtheim, Ger. physician, 1845–1928] Subacute combined degeneration of the spinal cord associated with pernicious anemia.

**licorice** (līk'ēr-īs, -ēr-īsh) [ME.] A dried root of *Glycyrrhiza glabra* used as a flavoring agent, demulcent, and mild expectorant. Glycyrrhiza is prepared from licorice. Ingestion of large amounts of licorice can cause salt retention, excess potassium loss in the urine, and elevated blood pressure. SEE: *glycyrrhiza*.

**lid** [ME.] An eyelid.

**lidocaine** (lī'dō-kān) A local anesthetic drug.

**l. hydrochloride** A local anesthetic also used intravenously to treat certain cardiac arrhythmias, esp. ventricular dysrhythmias.

**lie, transverse** A position of the fetus in utero in which the long axis of the fetus is across the long axis of the mother. SEE: *presentation* for ill.

**Lieberkühn crypt** (lē'bēr-kēn) [Johann N. Lieberkühn, Ger. anatomist, 1711–1756] One of the simple tubular glands present in the intestinal mucosa. In the small intestine the crypts open between the bases of the villi, and their epithelium includes absorptive cells that produce digestive enzymes, enteroendocrine cells that secrete hormones, goblet cells that produce mucus, and Paneth cells that secrete lysozyme. In the large intestine the crypts open to the mucosal surface and secrete mucus. SYN: *intestinal glands*; *Lieberkühn's glands*.

**lie detector** polygraph

**lien** (lī'ēn) [L.] The spleen.

**lienal** (lī-ē'nāl) [L. *lien*, spleen] Splenic.

**lienitis** (lī'ē-nī'tīs) [" + Gr. *itis*, inflammation] Splenitis.

**lienocoele** (lī-ē'nō-sēl) [" + Gr. *kele*, tumor, swelling] Splenocoele.

**lienomalacia** (lī-ē'nō-mā-lā'shē-ā) [" + Gr. *malakia*, softening] Splenomalacia.

**lienomyelomalacia** (lī-ē'nō-mī'ēl-ō-mā-lā'shē-ā) [" + " + *malakia*, softening] Softening of the spleen and bone marrow.

**lienopancreatic** (lī-ē'nō-pān'krē-āt'īk) [" + Gr. *pankreas*, pancreas] Relating to the spleen and pancreas.

**lienorenal** (lī-ē'nō-rē'nāl) [" + *renalis*, pert. to kidney] Relating to the spleen and kidney.

**life** (lif) [AS.] 1. The capability of using metabolic or biochemical processes to grow, reproduce, and adapt to the environment. 2. The time between the birth or inception and the death of an organism. The life of an organism begins at conception and ends at death; however, for legal and other reasons the definition of when life begins and death occurs has been subject to a variety of interpretations. SEE: *death*. 3. The sum total of those properties that distinguish living things (animals or plants) from nonliving inorganic chemical matter or dead organic matter.

**l. expectancy** The number of years that an average person of a given age may be expected to live. Numerous factors influence life expectancy, including habits (e.g., smoking); chronic illnesses (e.g., congestive heart failure, end-stage renal disease, or cancers); gender (women live longer than men); and socioeconomic status. In the U.S., the average life expectancy at birth is about 78 years. SEE: tables; *years of life lost*.

**l. extension** The prolongation of life with healthful practices (e.g., regular exercise, balanced diet, abstaining from tobacco, and limiting consumption of alcohol). SYN: *age retardation*.

**l. satisfaction** A person's attitudes about life (e.g., morale or relative well-being). It is sometimes used as a synonym for "successful aging."

**l. satisfaction index** ABBR: LSI. A self-reporting instrument to measure personal fulfillment or contentment, esp. with one's social relationships, occupation, maturation, or aging. A total of five rating scales are used.

**l. span** The maximal obtainable age by a member of a species.

**l. table** A statistical portrait of the life expectancy of individuals in a population, based on known mortality data for different ages, races, and sexes.

**life care retirement community** ABBR: LCRC. A residential facility, typically for older adults, that provides several levels of supervision and access to reg-

## Expectation of Life in Years, by Race, Sex, and Age: 1996

Age in 1990 (years)	White		Black	
	Male	Female	Male	Female
Birth	73.9	79.7	66.1	72.2
5	69.5	75.2	62.4	70.3
10	64.5	70.2	57.5	65.4
15	59.6	65.3	52.6	60.5
20	54.9	60.4	48.0	55.7
25	50.2	55.6	43.7	50.9
30	45.6	50.7	39.4	46.2
35	40.9	45.9	35.1	41.6
40	36.4	41.1	31.5	37.1
45	31.9	36.4	27.1	32.8
50	27.5	31.7	23.4	28.5
55	23.3	27.3	19.9	24.5
60	19.4	23.0	16.7	20.7
65	15.8	19.1	13.9	17.2
70	12.6	15.4	11.2	13.9
75	9.8	12.0	9.0	11.2
80	7.3	8.9	7.0	8.5
85 and over	5.3	6.3	5.3	6.2

SOURCE: Adapted from U.S. Bureau of the Census: Statistical Abstract of the United States: 1999, 119th edition. Washington, DC, 1999.

## Expectation of Life at Birth, 1970 to 1997, and Projections, 1995 to 2010\*

Year	Total		White		Black and Other	
	Male	Female	Male	Female	Male	Female
1970	67.1	74.7	68.0	75.6	61.3	69.4
1975	68.8	76.6	69.5	77.3	63.7	72.4
1980	70.0	77.4	70.7	78.1	65.3	73.6
1981	70.4	77.8	71.1	78.4	66.2	74.4
1982	70.8	78.1	71.5	78.7	66.8	74.9
1983	71.0	78.1	71.6	78.7	67.0	74.7
1984	71.1	78.2	71.8	78.7	67.2	74.9
1985	71.1	78.2	71.8	78.7	67.0	74.8
1986	71.2	78.2	71.9	78.8	66.8	74.9
1987	71.4	78.3	72.1	78.9	66.9	75.0
1988	71.4	78.3	72.2	78.9	66.7	74.8
1989	71.7	78.5	72.5	79.2	66.7	74.9
1990	71.8	78.8	72.7	79.4	67.0	75.2
1991	72.0	78.9	72.9	79.6	67.3	75.5
1992	72.3	79.1	73.2	79.8	67.7	75.7
1993	72.2	78.8	73.1	79.5	67.4	75.5
1994	72.3	79.0	73.2	79.6	67.5	75.8
1995	72.5	78.9	73.4	79.6	67.9	75.7
1996	73.0	79.0	73.8	79.6	68.9	76.1
1997	73.6	79.2	74.3	79.9	(NA)	(NA)
Projection†:						
1995	72.5	79.3	73.6	80.1	(NA)	(NA)
2000	73.0	79.7	74.2	80.5	(NA)	(NA)
2005	73.5	80.2	74.7	81.0	(NA)	(NA)
2010	74.1	80.6	75.5	81.6	(NA)	(NA)

\* In years. Excludes deaths of nonresidents of the United States.

† Based on middle mortality assumptions.

‡ NA = Not available.

SOURCE: Adapted from U.S. Bureau of the Census: Statistical Abstract of the United States: 1999, 119th edition. Washington, DC, 1999.

istered health care professionals. LCRCs are typically at a location that combines independent apartments with assisted living residences and skilled nursing facilities. Residents relocate from one level of care to another, depending on their immediate needs for assistance. For example, an older woman who undergoes a knee replacement procedure may spend several weeks recuperating and undergoing rehabilitation in the nursing facility before returning to semi-independent apartment living (in which meals are provided in a common cafeteria) or to independent housing (e.g., with a healthy spouse).

**life review therapy** A type of insight-oriented therapy that focuses on conflict resolution. It is usually conducted with people near the end of their lives and is designed to allow them to come to terms with conflict with others, gain meaning from their lives, and die peacefully.

**life skills** Any personal ability that helps an individual to cope with people, problems, situational changes, or stress. Life skills include adaptability, creativity, critical thinking, decision making; emotional intelligence, listening, negotiation, relationship building, and self-awareness.

**lifestyle** A person's pattern of living and behavior, esp. as distinguished from the behavior patterns or life choices of others. SEE: *lifestyle, sedentary*.

**life support** The use of any technique, therapy, or device to assist in sustaining life.

**advanced cardiac l.s.** ABBR: ACLS. **1.** The resuscitation of dying patients; a process that involves management of the airway, reestablishment of breathing, and the restoration of spontaneous heart rhythm, blood pressure, and organ perfusion. ACLS begins with the recognition of cardiac or respiratory emergencies, and includes basic life support (opening the airway and providing chest compressions), defibrillation, endotracheal intubation, oxygenation and ventilation, the use of medications that restore normal cardiac rhythms and cardiac output, cardiac pacing (when needed), and post-resuscitation care. It may begin in the out-of-hospital setting, or take place in the hospital. **2.** A training course in resuscitation techniques for health care providers offered by the American Heart Association. SEE: *basic cardiac life support; cardiopulmonary resuscitation; emergency cardiac care*.

**advanced trauma l.s.** ABBR: ATLS. **1.** Treatment measures needed to manage a critically injured patient. **2.** A course offered by the American College of Surgeons designed to prepare physicians to manage critical trauma patients.

**basic life s.** ABBR: BLS. **1.** A level of provider trained in CPR and emergency care. **2.** A level of out-of-hospital emergency service. **3.** Cardiopulmonary resuscitation and the use of an automatic external defibrillator. SEE: *defibrillation; defibrillator*.

**basic cardiac l.s.** ABBR: BLS. The phase of cardiopulmonary resuscitation (CPR) and emergency cardiac care that either (1) prevents circulatory or respiratory arrest or insufficiency by prompt recognition and early intervention or by early entry into the emergency care system or both; or (2) externally supports the circulation and respiration of a patient in cardiac arrest through CPR. When cardiac or respiratory arrest occurs, BLS should be initiated by anyone present who is familiar with CPR. SEE: *advanced cardiac life support; bag-valve-mask resuscitator; cardiopulmonary resuscitation; emergency cardiac care; Heimlich maneuver*.

**prehospital trauma l.s.** ABBR: PHTLS. A continuing education course developed by the National Association of Emergency Medical Technicians, designed to improve the assessment and management of trauma patients in the field.

**withholding l.s.** Removal of or not giving medical interventions during end-of-life care, with the expectation that the patient will die as a result.

**lifestyle, sedentary** Reports a habit of life that is characterized by a low physical activity level. SEE: *Nursing Diagnoses Appendix*.

**lifestyle redesign** A comprehensive customized program of community-based occupational therapy, intended to improve daily work, recreation, and health practices as well as the social interactions of independently living people, esp. older adults.

**life-sustaining therapy** Therapy of a critically ill patient that, if discontinued, would cause the patient to die. SEE: *life support*.

**Li-Fraumeni syndrome** (lē'frō-mē-nē) [Fredrick Li, epidemiologist; Joseph Fraumeni, epidemiologist] Inherited condition in which individuals develop multiple primary tumors, including breast cancer, osteosarcoma, chondrosarcoma, soft tissue sarcoma, brain tumors, adrenal cortex tumors, etc. Mutations of the p53 gene on chromosome 17 are responsible for this disease.

**lift** (lift) [ME. *liften*] **1.** To raise or elevate. **2.** A material used to equalize the length of a shortened side of the body with the unshortened side.

**ligament** (lig'ă-měnt) [L. *ligamentum*, a band] **1.** A band or sheet of strong fibrous connective tissue connecting the articular ends of bones, binding them together to limit motion. **2.** A thickened



portion or fold of peritoneum or mesentery that supports a visceral organ or connects it to another viscus. **3.** A band of fibrous connective tissue connecting bones, cartilages, and other structures and serving to support or attach fascia or muscles. **4.** A cordlike structure representing the vestigial remains of a fetal blood vessel.

**accessory I.** A ligament that supplements another, esp. one on the lateral surface of a joint. This type of ligament lies outside of and independent of the capsule of a joint.

**acromioclavicular I.** The ligament supporting the acromioclavicular joint; it joins the acromial process of the scapula and the distal end of the clavicle and, in combination with the coracoclavicular ligaments, holds the clavicle down.

**alar I.** One of a pair of short round ligaments extending up from the sides of the dens, through the foramen of the atlas, and attaching to the sides of the foramen magnum of the skull. They limit side flexion and rotation of the head in relation to the vertebral column.

**annular I.** A circular ligament, esp. one enclosing a head or radius or one holding the footplate of the stapes in the oval window.

**anococcygeal I.** A band of fibrous tissue joining the tip of the coccyx with the external anal sphincter.

**anterior cruciate I.** ABBR: ACL. The ligament of the knee that originates on the anteromedial portion of the tibia's intercondylar eminence, passes laterally to the posterior cruciate ligament, and attaches on the medial portion of the posterior aspect of the lateral femoral condyle. The ACL prevents anterior displacement of the tibia relative to the femur, internal and external rotation of the tibia on the femur, and hyperextension of the tibiofemoral joint.

**SYMPTOMS:** A torn ACL causes pain and functional instability in the knee.

**TREATMENT:** Arthroscopic surgery is usually necessary to repair torn ACLs. Sometimes open surgery, or arthrotomy, is necessary for particularly complex repairs.

**anterior talofibular I.** The ligament of the ankle that connects the lateral talus and fibular malleolus, preventing anterior displacement of the talus in the mortise. This ligament is injured with an excessive inversion and plantar flexion motion (supination) and is the most commonly injured ligament of the ankle.

**anterior longitudinal ligament** The thick wide connective tissue band running along the front of the entire vertebral column. The anterior longitudinal ligament attaches to the front and sides

of the bodies of the vertebrae and the intervertebral discs.

**anterior tibiofibular I.** A broad ligament located on the anterior half of the distal fibula, superior to the lateral malleolus, that binds the fibula to the tibia. The anterior tibiofibular ligament is part of the distal ankle syndesmosis. SEE: *crural interosseous I.*; *posterior tibiofibular I.*

**anterior tibiotalar I.** Ligament of the ankle that connects the anteromedial portion of the talus to the anterior portion of the medial malleolus, preventing anterior displacement of the talus within the mortise, esp. when the ankle is plantar flexed. The anterior tibiotalar ligament is categorized as part of the ankle's deltoid ligament complex. SEE: *deltoid I.*

**apical I.** A single median ligament extending from the odontoid process to the occipital bone.

**arcuate I.** The lateral, medial, and anterior ligaments that extend from the 12th rib to the transverse process of the first lumbar vertebra, to which the diaphragm is attached.

**arterial I.** A fibrous cord extending from the pulmonary artery to the arch of the aorta, the remains of the ductus arteriosus of the fetus.

**auricular I.** The anterior, posterior, and superior auricular ligaments uniting the external ear to the temporal bone.

**broad I. of liver** A wide, sickle-shaped fold of peritoneum, attached to the lower surface of the diaphragm, the internal surface of the right rectus abdominis muscle, and the convex surface of the liver.

**broad I. of uterus** The folds of peritoneum attached to lateral borders of the uterus from insertion of the fallopian tube above to the pelvic wall. They consist of two layers between which are found the remnants of the wolffian ducts, cellular tissues, and the major blood vessels of the pelvis.

**calcaneofibular I.** ABBR: CFL. An extracapsular ligament of the lateral ankle joint. The calcaneofibular ligament originates from the inferior apex of the lateral malleolus and courses at approximately a 133° angle to attach to the calcaneus. It is the primary restraint against talar inversion when the ankle is in its neutral position.

**capsular I.** Heavy fibrous structures, lined with synovial membrane and surrounding articulations.

**check I.** A ligament that restrains the motion of a joint, esp. the lateral odontoid ligaments.

**collateral I.** One of the ligaments that provide medial and lateral stability to joints. They include the medial (ulnar) and lateral (radial) collateral ligaments





at the elbow, the medial (tibial) and lateral (fibular) collateral ligaments at the knee, the medial (deltoid) and lateral collateral ligaments at the ankle, and the collateral ligaments of the fingers.

**conoid l.** The posterior and inner portion of the coracoclavicular ligament.

**coracoacromial l.** The broad triangular ligament attached to the outer edge of the coracoid process of the scapula and the tip of the acromion.

**coracoclavicular l.** The ligament uniting the clavicle and coracoid process of the scapula. It has two parts, the conoid and the trapezoid ligaments.

**coracohumeral l.** The broad ligament connecting the coracoid process of the scapula to the greater tubercle of the humerus.

**coronary l. of liver** A fold of peritoneum extending from the posterior edge of the liver to the diaphragm.

**costocoracoid l.** The ligament joining the first rib and coracoid process of the scapula.

**costotransverse l.** The ligaments uniting the ribs with the transverse processes of the vertebrae.

**costovertebral l.** Ligaments uniting the ribs and vertebrae.

**cricopharyngeal l.** A ligamentous bundle between the upper and posterior border of the cricoid cartilage and the anterior wall of the pharynx.

**cricothyroid l.** The ligament uniting cricoid and thyroid cartilages and the location for the horizontal incision (called coniotomy) to prevent choking.

**cricotracheal l.** The ligamentous structure uniting the upper ring of the trachea and the cricoid cartilage. SEE: *cricoid cartilage*.

**cruciate l. 1.** The ligament of the ankle passing transversely across the dorsum of the foot that holds tendons of the anterior muscle group in place. **2.** A cross-shaped ligament of the atlas consisting of the transverse ligament and superior and inferior bands, the former passing upward and attaching to the margin of the foramen magnum, the latter passing downward and attaching to the body of the atlas. **3.** Either of two ligaments of the knee, the anterior (from the posterior femur to the anterior tibia), and the posterior (from the anterior femur to posterior tibia). They provide rotary stability for the knee and prevent displacement of the tibia. SYN: *cruciform l.* SEE: *anterior cruciate l.*

**SYMPTOMS:** A torn cruciate ligament causes instability and pain in the knee. The type of instability depends on which cruciate ligament is damaged.

**TREATMENT:** Arthroscopic surgery is usually necessary to repair torn cruciate ligaments. Sometimes open surgery, or

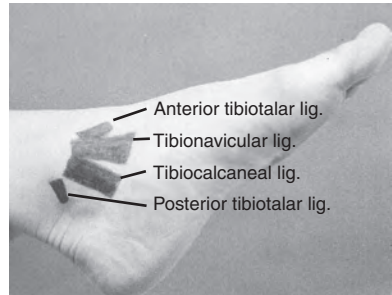
arthrotomy, is necessary for particularly complex repairs.

**cruciform l.** Cruciate ligament.

**crural l.** Inguinal ligament.

**crural interosseous l.** A thickening of the interosseous membrane as it extends into the space between the distal tibia and fibula, allowing only a slight amount of spreading between the two bones. SEE: *anterior tibiofibular l.*; *posterior tibiofibular l.*

**deltoid l.** The collective term for the medial ankle ligaments, formed by the anterior tibiotalar, tibionavicular, tibio-calcaneal, and posterior tibiotalar ligaments. As a group, the deltoid ligament limits eversion and rotation of the talus within the ankle mortise. SEE: *illus.*



#### DELTOID LIGAMENTS

##### Surface anatomy

**dentate l.** Lateral extensions of the spinal pia mater between the nerve roots; they fuse with the arachnoid and dura mater, and hold the spinal cord in place in the dural sheath. They have a scalloped appearance as they pierce the arachnoid to attach to the dura mater at regular intervals.

**dentoalveolar l.** Periodontal l.

**falciform l. of liver** A wide, sickle-shaped fold of peritoneum attached to the lower surface of the diaphragm, internal surface of the right rectus abdominis muscle, and convex surface of the liver.

**fundiform l. of penis** The ligament extending from the lower portion of the linea alba and Scarpa's fascia to the dorsum of the penis.

**gastrocolic l.** The secondary attachment of the greater curvature of the stomach and the transverse colon formed by the folding of the gastrocolic mesentery to become the greater omentum.

**gastrophrenic l.** A fold of peritoneum between the esophageal end of the stomach and the diaphragm.

**gastrosplenic l.** The fold of visceral peritoneum that connects the edge of the stomach and the hilum of the spleen.

**Gimbernat's I.** SEE: *Gimbernat's ligament*.

**gingivodental I.** The part of the periodontal ligament that extends into the gingiva and blends with the connective tissue lamina propria.

**glenohumeral I.** One of the fibers of the coracohumeral ligament passing into the joint and inserted into the inner and upper part of the bicipital groove.

**glenoid I.** Glenoid labrum.

**Henle's I.** SEE: under *Henle, Friedrich G.J.*

**hepaticoduodenal I.** A fold of peritoneum from the transverse fissure of the liver to the vicinity of the duodenum and right flexure of colon, forming the anterior boundary of the epiploic foramen.

**iliofemoral I.** The Y-shaped bundle of fibers forming the upper and anterior portion of the capsular ligament of the hip joint. This ligament extends from the ilium to the intertrochanteric line. SYN: *Y ligament*.

**iliopectineal I.** A portion of the pelvic fascia attached to the iliopectineal line and to the capsular ligament of the hip joint.

**inguinal I.** The ligament extending from the anterior superior iliac spine to the pubic tubercle. SYN: *crural I.*; *Poupart's ligament*.

**interclavicular I.** The bundle of fibers between the sternal ends of the clavicles, attached to the interclavicular notch of the sternum.

**interspinal I.** The ligament extending from the superior margin of a spinous process of one vertebra to the lower margin of the one above.

**ischiocapsular I.** In the hip, the ligament extending from the ischium to the ischial border of the acetabulum.

**Lisfranc's I.** SEE: *Lisfranc's ligament*.

**Mackenrodt's I.** SEE: *Mackenrodt's ligament*.

**medial I.** A broad ligament that connects the medial malleolus of the tibia to the tarsal bones.

**median umbilical I.** The fibrous cord extending from the apex of the bladder to the umbilicus. It represents the remains of the urachus of the fetus.

**nuchal I.** The upward continuation of the supraspinous ligament, extending from the seventh cervical vertebra to the occipital bone.

**palpebral I.** Two ligaments, medial and lateral, extending from tarsal plates of the eyelids to the frontal process of the maxilla and the zygomatic bone, respectively. The orbicularis oculi muscles attach to the medial palpebral ligaments.

**patellar I.** The continuation of the tendon of the quadriceps femoris muscle; it encloses the patella and secures it in front of the knee joint.

**pectineal I.** A triangular ligament that extends from the medial end of the inguinal ligament along the pectineal line of the pubis.

**periodontal I.** ABBR: PDL. The connective tissue attached to the cementum on the outer surface of a dental root and the osseous tissue of the alveolar process. The periodontal ligament holds the teeth in the sockets of the bone. SYN: *dentoalveolar I.*; *alveolar periosteum*.

**Petit's I.** SEE: *Petit's ligament*.

**phrenicocolic I.** A fold of peritoneum joining the left colic flexure of the colon to the adjacent costal portion of the diaphragm.

**phrenicopericardial ligaments** The connective tissue that attaches the bottom of the fibrous pericardial sac to the top of the central tendon of the diaphragm. When the diaphragm contracts and moves downward, the pericardial sac and the heart are pulled down and elongated.

**popliteal arcuate I.** The ligament on the posterolateral side of the knee, extending from the head of the fibula to the joint capsule.

**posterior longitudinal I.** The continuous narrow band of connective tissue lining the front inner surface of the entire vertebral canal. It attaches the vertebral bodies and intervertebral discs and forms the smooth front wall of the vertebral foramen.

**posterior talofibular I.** ABBR: PTL. A ligament of the lateral ankle that attaches the posterior portion of the talus, and a portion of the posterolateral calcaneus, to the medial malleolus. The posterior talofibular ligament limits the excessive dorsiflexion and inversion of the talus within the ankle mortise.

**posterior tibiofibular I.** A broad ligament that binds the fibula to the tibia; located on the posterior half of the distal fibula, superior to the lateral malleolus. The posterior tibiofibular ligament is part of the distal ankle syndesmosis. SEE: *anterior tibiofibular I.*; *crural interosseous I.*

**posterior tibiotalar I.** Ligament of the ankle that connects the posteromedial portion of the talus to the posterior portion of the medial malleolus, preventing posterior displacement of the talus within the mortise, esp. when the ankle is dorsiflexed. The posterior tibiotalar ligament is categorized as part of the deltoid ligament complex of the ankle. SEE: *deltoid I.*

**Poupart's I.** Inguinal I.

**pterygomandibular I.** The ligament between the apex of the internal pterygoid plate of the sphenoid bone and the posterior extremity of the internal oblique line of the mandible.

**pubic arcuate I.** The ligaments con-

necting the pubic bones at the symphysis pubis, including anterior and superior pubic ligaments and the arcuate (inferior) ligament.

**pulmonary l.** A fold of pleura that extends from the hilus of the lung to the base of the medial surface of the lung.

**rhomoid l. of clavicle** A ligament extending from the tuberosity of the clavicle to the outer surface of the cartilage of the first rib.

**Rivinus' l.** SEE: under *Rivinus, August Quirinus*.

**round l. of femur** The ligament of the head of the femur that is attached to the anterior superior part of the fovea of the head of the femur and to the sides of the acetabular notch.

**round l. of liver** A fibrous cord extending upward from the umbilicus and enclosed in lower margin of the falciform ligament; represents obliterated left umbilical vein of the fetus.

**round l. of uterus** The pair of ligaments attached to the uterus immediately below and in front of the entrance of the fallopian tubes. Each extends laterally in the broad ligament to the pelvic wall, where it passes through the inguinal ring, terminating in the labium majora.

**sacroiliac l.** Two ligaments, the anterior and posterior, that connect sacrum and ilium.

**sacrospinous l.** The ligament extending from the spine of the ischium to the sacrum and coccyx in front of the sacrotuberous ligament.

**sacroteruberous l.** The ligament extending from the tuberosity of the ischium to the posterior superior and inferior iliac spines and to the lower part of the sacrum and coccyx.

**sphenomandibular l.** The ligament attached superiorly to the spine of the sphenoid and inferiorly to the lingula of the mandible. The sphenomandibular ligament is a key part of the temporomandibular joint, helps support the weight of the mandible when the mandibular muscles are relaxed, and also controls and guides the swing of the mandible as it moves.

**spiral l. of cochlea** The thickened periosteum of the peripheral wall of the osseous cochlear canal. The basilar membrane is attached to its inner surface.

**spring l.** The interior calcaneonavicular ligament of the sole of the foot. It joins the calcaneus to the navicular.

**stellate l.** One of the anterior costovertebral ligaments.

**stylohyoid l.** A thin fibroelastic cord between the lesser cornu of the hyoid bone and the apex of the styloid process of the temporal bone.

**supraspinal l.** A ligament uniting the

apices of the spinous processes of the vertebrae.

**suspensory l. of axilla** The continuation of the clavipectoral fascia down to attach to the axillary fascia.

**suspensory l. of lens** The zonula ciliaris (ciliary zonule); the fibers holding the crystalline lens in position.

**suspensory l. of ovary** A ligament extending from the tubal end of the ovary laterally to the pelvic wall. It lies in the layers of the broad ligament in which the ovarian artery is found.

**suspensory l. of penis** A triangular bundle of fibrous tissue extending from the anterior surface of the symphysis pubis and adjacent structures to the penis, surrounding the penis at its root before merging with the deep fascia of the penis.

**sutural l.** Any of the thin layers that are found in a fibrous joint between bones (e.g., the bones of the skull) and are united by sutures.

**temporomandibular l.** The thickened portion of the joint capsule that passes from the articular tubercle at the root of the zygomatic arch to attach to the subcondylar neck of the mandible.

**transverse humeral l.** A fibrous band that bridges the bicipital groove of the humerus in connecting the lesser and greater tuberosities.



**transverse l. of atlas** A ligament passing over the odontoid process of the axis.

**trapezoid l.** The lateral portion of the coracoclavicular ligament.

**triangular l.** One of two ligaments, right and left, connecting posterior portions of the right and left lobes of the liver with corresponding portions of the diaphragm.

**uterorectosacral l.** One of the ligaments that arise from the sides of the cervix and pass upward and backward, passing around the rectum, to the second sacral vertebra. They are enclosed within the rectouterine folds, which demarcate the borders of the rectouterine pouch.

**uterosacral l.** SEE: *Petit's ligament*.

**venous l. of liver** A solid fibrous cord representing the obliterated ductus venosus of the fetus. It lies between the caudate and left lobes of the liver and connects the left branch of the portal vein to the inferior vena cava.

**ventricular l. of larynx** The lateral free margin of the quadrangular membrane. It is enclosed within and supports the ventricular fold.

**vesicouterine l.** The ligament that attaches the anterior aspect of the uterus to the bladder.

**vocal l.** The thickened free edges of the elastic cone extending from the thyroid angle to the vocal processes of

arytenoid cartilages. They support the vocal folds.

**xiphocostal l.** The ligament connecting the xiphoid process to the cartilage of the eighth rib.

**Y l.** Iliofemoral ligament.

**yellow l.** One of the ligaments connecting the laminae of adjacent vertebrae.

**Zagla's l.** SEE: *Zagla's ligament*.

**ligamenta** (lĭg-ă-mĕn'tă) Pl. of *ligamentum*.

**ligamentous** (lĭg'ă-mĕn'tūs) [L. *ligamentum*, band] **1.** Relating to a ligament. **2.** Like a ligament.

**ligamentum** (lĭg'ă-mĕn'tūm) *pl.* **ligamenta** [L., a band] Ligament.

**l. arteriosus** In the adult, the cord-like remnant of the fetal ductus arteriosus between the left pulmonary artery and the arch of the aorta. Just after birth, the ductus arteriosus constricts and begins to fill with endothelial cells, and within a few months the ductus arteriosus is completely closed. For the remainder of one's life, the closed duct remains as a connecting cord attaching the two large outflow arteries of the heart.

**l. flavum** A ligament that binds adjacent vertebral laminae to each other.

**l. teres** In the adult, the closed remnant of the fetal umbilical vein. It runs inside the free edge of the falciform ligament from the underside of the umbilicus to the liver.

**ligand** (lĭ'gănd, lĭg'ănd) [L. *ligare*, to bind] **1.** In chemistry, an organic molecule attached to a central metal ion by multiple bonds. **2.** Any chemical that binds to a specific receptor site, e.g., on a cell membrane. **3.** In immunology, a small molecule bound to another chemical group or molecule.

**fas l.** ABBR: FasL. A protein on the surface of activated T cells that binds to Fas receptors on the surface of the same or other T cells and triggers a series of events causing apoptosis. This process is involved in the activation-induced cell death necessary to ensure that autoreactive T cells do not attack "self"-antigens.

**neuroimmunophilin l.** Any of the small molecules that can stimulate neurons to grow new axons and dendrites. They can cross the blood-brain barrier, and therefore may be used to treat neurodegenerative diseases or central nervous system injuries.

**ligase** (lĭ'gās, lĭg'ās) The general term for a class of enzymes that catalyze the joining of the ends of two chains of DNA.

**ligase chain reaction** A technique for amplifying the quantity of specific sequences of nucleic acid in a specimen. The patient's DNA, or specimens thought to contain pathogenic DNA, are mixed with DNA ligase and oligonucle-

otide probes. Double-stranded DNA is denatured. Probes bind to the complementary strands on any denatured target DNA. Ligase joins the bound probes, and multiple copies of the DNA of interest are made. In clinical practice, ligase chain reactions are used primarily in urinary (noninvasive) assays to detect genital infections with chlamydia or gonorrhea.

**ligate** (lĭ'gāt) To apply a ligature.

**ligating module** (lĭ'gāt-ing) In orthodontics an appliance, typically made of polyurethane, that fits over a bracket and holds an archwire in place.

**ligation** (lĭ-gā'shūn) The application of a ligature.

**rubber-band l.** The application of a rubber band around a superficial bit of tissue, such as an internal hemorrhoid or an esophageal varix. Because its blood supply is thereby cut off, the tissue dies and sloughs.

**ligature** (lĭg'ă-chūr) [L. *ligatura*, a binding] **1.** Process of binding or tying. **2.** A band or bandage. **3.** A thread or wire for tying a blood vessel or other structure in order to constrict or fasten it. The cord or material used may be catgut, synthetic suture materials such as nylon or Dacron, polyglycolic acid, or natural fibers such as silk or cotton. Sometimes strips of fascia obtained from the patient are used as a ligature. SEE: *suture*.

**wire l.** A soft, thin wire, elastic cord, or elastic loop used in orthodontics to anchor an arch wire or other dental devices or to tie two structures together.

**light** (lĭt) [AS. *lihtan*, to shine] Radiant electromagnetic energy limited to a wavelength of about 400 nm (extreme violet) to 770 nm (extreme red).

**l. adaptation** Changes that occur in a dark-adapted eye in order for vision to occur in moderate or bright light. Principal changes are contraction of the pupil and breakdown of rhodopsin. Bright sunlight is 30,000 times the intensity of bright moonlight, but the eye adapts so that visual function is possible under both conditions. SEE: *night vision*; *vision*.

**axial l.** Light with rays parallel to each other and to the optic axis.

**cold l.** Any form of light that is not perceptibly warm. The heat of ordinary light rays is dissipated when they are passed through some medium such as quartz.

**l. difference** The difference between the two eyes with respect to sensitivity to light intensity.

**diffused l.** Rays broken by refraction.

**idioretinal l.** The sensation of light when there are no retinal stimuli to produce that sensation. SYN: *intrinsic l.*

**intrinsic l.** Idioretinal light.

**oblique l.** Light that strikes a surface obliquely.

**polarized l.** Light in which waves vibrate in one direction only.

**reflected l.** Light rays that are thrown back by an illuminated object such as a mirror.

**refracted l.** Rays bent from their original course.

**l. sense** One of the three parts of visual function, the other parts being color sense and form sense. It is tested by visual field examination. SEE: *color sense*; *form sense*.

**l. therapy** Phototherapy.

**transmitted l.** Light that passes through an object.

**white l.** Light that contains all of the visible wavelengths of light.

**Wood's l.** SEE: *Wood's rays*.

**lightening** [AS. *leohte*, not heavy] The descent of the presenting part of the fetus into the pelvis. This often occurs 2 to 3 weeks before the first stage of labor begins. It may not occur in multiparas until active labor begins. SYN: *engagement*. SEE: *labor*.

**light-headedness** The feeling of dizziness or of being about to faint; a nonspecific symptom of many conditions, including for example, anemia, anxiety, cardiac rhythm disturbances, fever, low blood pressure, many infections, and some drugs.

**lightning** The discharge of atmospheric electricity from cloud to cloud or from cloud to earth. About 100 lightning strokes hit the earth every second. In the U.S. each year, about 500 to 1000 people are struck by lightning; between 150 and 300 of these die as a result of being struck.

**lightning safety rules** Any of the rules that, if followed, could reduce the deaths that occur from electrocution due to lightning. During a lightning storm one should remain indoors but not near open doors, fireplaces, radiators, or appliances. Plug-in electric equipment (e.g., hair dryers, electric toothbrushes, or electric razors) should not be used. One should not take laundry off clotheslines or work on fences, computers or word processors, telephones or telephone lines, power lines, pipelines, or structural steel construction, or use metal objects such as fishing rods or golf clubs. When outdoors, if lightning is spotted nearby, one should plan an evacuation to a safe, substantial building or an enclosed metal vehicle. Hilltops should be avoided. In a forest, shelter should be sought in a low area under a thick growth of small trees. Open spaces, wire fences, metal clotheslines, exposed sheds, and all electrically conductive elevated objects should be avoided. People should get out of water and off small boats but stay in an au-

tomobile if driving. If an electrical charge is evidenced by hair standing on end or tingling of the skin, one should immediately squat with feet touching each other and hands clasped around the knees. No part of the rest of the body should touch the ground. It is important to be aware that, when lightning strikes, the charge may be as much as 100 million volts. Trees conduct electricity better than air, and metal and water conduct better than trees. Lightning will strike the tallest object.

**light reaction** That stage of photosynthesis in which photons are captured by cells and used to supply the energy needed to synthesize carbohydrates. Chlorophyll is the light-trapping molecule of most plants. Bacteriochlorophyll is a related compound used by bacteria to capture the energy supplied by light.

**light sleep** A colloquial term for the first stage of non-rapid eye movement (NREM) sleep. It is sometimes also applied to the second stage of NREM sleep.

**light unit** A foot-candle, or the amount of light 1 ft from a standard candle. The ideal amount of light required for work varies with the specific type of work being done. The term *foot-candle* took the place of *candle power*, but light intensity in the International System of Units is indicated by lumen. SEE: *candela*; *lumen*.

**lightwand** (lit'wänd) [?" + ME. slender stick] A stylet that transilluminates the soft tissues of the neck. It is used in endotracheal intubation.

**lignan** (lig'nän) A steroid-like chemical found in flaxseed and related plants that may be beneficial in the management of hormone-sensitive illnesses. SEE: *phytoestrogen*.

**lignin** (lig'nin) A polymer present in plants that combines with cellulose to form cell walls. It is one of the components of dietary fiber in fruits and vegetables. Lignin is not digestible at all by the bacterial enzymes in the colon.

**lignoceric acid** (lig'nō-sēr'ik) A saturated, naturally occurring fatty acid, C<sub>24</sub>H<sub>48</sub>O<sub>2</sub>, present in certain foods, including peanuts.

**likelihood ratio** (lik'lē-hood") ABBR: LR. A statistical tool used to help determine the usefulness of a diagnostic test for including or excluding a particular disease. An LR = 1 suggests that the test ordered neither helps to diagnose the disease in question nor helps to rule it out. Higher LRs increase the probability that the disease will be present; LRs <1.0 decrease the probability that the disease is present.

A positive LR can be thought of as the probability that someone with a suspected condition will, accurately, have a positive test result, divided by the prob-



ability that a healthy person will, inaccurately, test positive for the disease. Mathematically this can be represented by the following equation:  $LR+ = \text{sensitivity of the test} / (1 - \text{specificity of the test})$ . A negative LR is the probability that a sick person will fail to be detected by the test, divided by the probability that a healthy person will be accurately shown by the test to have no sign of disease. Mathematically:  $LR- = (1 - \text{sensitivity of the test}) / \text{specificity of the test}$ .

**limb** (lĭm) [AS. *lim*] **1.** An arm or leg. **2.** An extremity. **3.** A limblike extension of a structure.

**anacrotic l.** The ascending portion of the pulse wave.

**anterior l. of internal capsule** The lenticulocaudate portion that lies between the lenticular and caudate nuclei.

**ascending l. of renal tubule** The portion of the tubule between the bend in Henle's loop and the distal convoluted tubule.

**catacrotic l.** The descending portion of the pulse wave.

**descending l. of renal tubule** The portion of the tubule between the proximal convoluted tubule and the bend in Henle's loop.

**pectoral l.** The upper extremity.

**pelvic l.** The lower extremity.

**phantom l.** SEE: *sensation, phantom*.

**l. replantation** The surgical reattachment of a traumatically amputated limb or part.

**thoracic l.** The upper extremity.

**limbic** (lĭm'bĭk) [L. *limbus*, border] Pert. to a limbus or border. SYN: *marginal*.

**limbic system** A group of brain structures, including the hippocampus, amygdala, dentate gyrus, cingulate gyrus, gyrus fornicatus, the archicortex, and their interconnections and connections with the hypothalamus, septal area, and a medial area of the mesencephalic tegmentum. The system is activated by motivated behavior and arousal, and it influences the endocrine glands and autonomic nervous system. SEE: *illus*.

**limb perfusion** A method for concentrating a dose of chemotherapy in an arm or leg affected by cancer. Large blood vessels near the tumor are cannulated, the limb is wrapped in a tourniquet, and chemotherapy is circulated into the limb. Isolated limb perfusion has been used to treat melanomas or sarcomas. SYN: *isolated limb perfusion*.

**limb reduction defect** A congenital malformation in which one or more limbs develop incompletely or not at all.

**limbus** (lĭm'bŭs) *pl.* **limbi** [L., border] The edge or border of a part.

**l. alveolaris** **1.** The upper free edge of

the alveolar process of the mandible. **2.** The lower free edge of the alveolar process of the maxilla. SYN: *arcus alveolaris maxillae*.

**l. conjunctivae** The edge of the conjunctiva overlapping the cornea.

**l. corneae** The edge of the cornea where it unites with the sclera.

**corneoscleral l.** In the eye, a transitional dome 1 or 2 mm wide where the cornea joins the sclera and conjunctiva.

**l. laminae spiralis osseae** A thickening of the periosteum of the osseous spiral lamina of the cochlea to which the tectorial membrane is attached.

**l. palpebrales anteriores** The anterior margin of the free edge of the eyelids from which the cilia or eyelashes grow.

**l. palpebrales posteriores** The posterior margin of the free edge of the eyelids; the region of transition of skin to conjunctival mucous membrane.

**l. sphenoidalis** Ridge on the anterior portion of upper surface of sphenoid bone.

**lime** (lĭm) [AS. *lim*, glue] Calcium oxide, CaO.

**soda l.** A white granular substance consisting of a mixture of calcium hydroxide and sodium hydroxide or potassium hydroxide, or both. It is used to absorb carbon dioxide and as an absorbing compound in anesthesia.

**lime** [Fr.] **1.** The fruit of *Citrus aurantiifolia*, which contains vitamin C. **2.** The yellowish green fruit of a lime with an acid pulp used as a preservative, flavoring agent, and high in vitamin C.

**limen** (lĭ'mĕn) *pl.* **limina** [L.] Entrance; threshold.

**l. nasi** The boundary line between the bony and cartilaginous portion of the nasal cavity. It is also at this point that the nasal cavity proper and the vestibule of the nose meet.

**l. of insula** The portion of the cortex of the brain that provides a threshold to the insula. The middle cerebral artery passes over this threshold to extend to the insula.

**limestone** A rock formed of organic fossil remains of shells, composed mostly of calcium carbonate. SEE: *lime*.

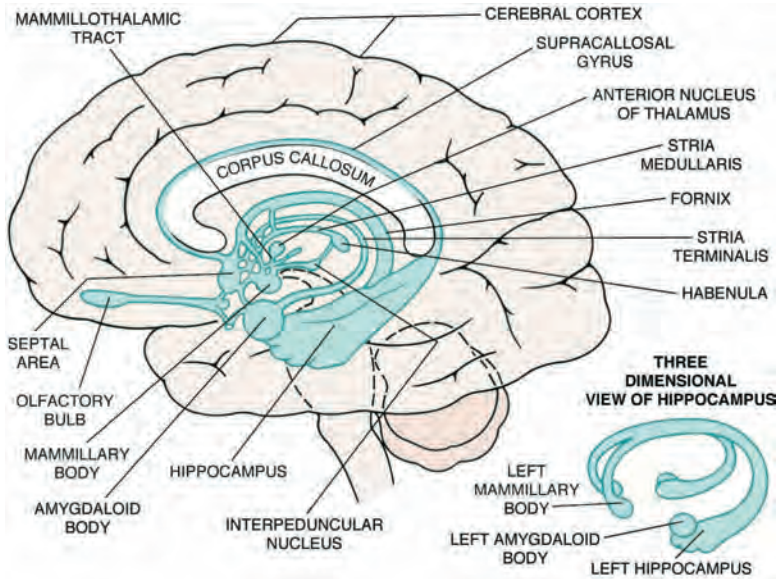
**liminal** (lĭm'ĭ-nāl) [L. *limen*, threshold] Hardly perceptible; relating to a threshold as of consciousness or vision.

**limit** (lĭm'ĭt) **1.** A boundary. **2.** A point or line beyond which something cannot or may not progress.

**acceptance l.** In radiology, the range of images within the diagnostic range of quality (i.e., density, contrast, detail).

**assimilation l.** The amount of carbohydrate that can be absorbed or ingested without causing glycosuria.

**audibility l.** The highest and the lowest frequencies of sound that can be detected by the human ear. The lower



THE LIMBIC SYSTEM OF THE BRAIN

limit is approx. 8 to 16 Hz and the upper limit is approx. 12 to 20,000 Hz.

***l. of detection*** The smallest amount of an analyte that can be detected by an analytical system.

***elastic l.*** The extent to which something may be stretched or bent and still be able to return to its original shape.

***l. of flocculation*** The amount of a toxin or toxoid that causes the most rapid flocculation when combined with its antitoxin.

***Hayflick's l.*** SEE: *Hayflick's limit*.

***l. of perception*** The smallest stimulus that can be perceived by any of the senses: e.g., the faintest light, the smallest amount of pressure, the softest sound, the most dilute flavor, etc.

***l. of quantitation*** ABBR: LOQ. The smallest amount of analyte that can be measured with stated and acceptable imprecision and inaccuracy e.g., the smallest number of viral particles that can be detected in a milliliter of blood. SEE: *l. of detection*; *sensitivity*.

***quantum l.*** The minimum wavelength present in the spectrum produced by x-rays.

***ventilator l.*** A secondary ventilator alarm or stop mechanism that prevents a specific variable from exceeding a preset parameter.

**limitans** (līm'ī-tāns) [L. *limitare*, to limit] **1.** A term used in conjunction with other words to denote limiting. **2.** Membrane limitans.

**limitation** (līm'ī-tā'shūn) The condition of being limited.

***activity l.*** Functional limitation.

***functional l.*** In rehabilitation science, any restriction in the performance of activities resulting from disease, injury, or environmental restrictions. SYN: *activity limitation*; *disability*.

***l. of motion*** The restriction of movement or range of motion of a part or joint, esp. that imposed by disease or trauma to joints and soft tissues.

**limited-service provider** Health care providers or institutions, such as outpatient surgery centers or facilities, that provide care to a market niche, i.e., to those individuals with a limited number of diseases or conditions.

**limnology** (līm-nól'ō-jē) [Gr. *limne*, pool, + *logos*, study] The scientific study of fresh water in the environment (i.e., potability, pH, degree of pollution, mineral content, and variation with seasonal and climatic changes).

**limonene** (līm'ō-nēn) An essential oil derived from orange or lemon peel. It is used as a flavoring agent in cough syrups.

**limp** To walk with abnormal, jerky movements.

**limulus amebocyte lysate test** (līm'ū-lūs) ABBR: LAL test. A test used to detect minute quantities of bacterial endotoxins and to test for pyrogens in various materials; it is also used to detect septicemia due to gram-negative bacteria. *Limulus amebocyte lysate* is

formed from the lysed circulating amoebocytes of the horseshoe crab (*Limulus polyphemus*).

**LINAC** *linear accelerator*.

**lincture, linctus** (lĭnk'tūr, -tūs) [L. *linctus*, a licking] A thick, sweet, syrupy medicinal preparation given for its effect on the throat, usually sipped but may be licked or sucked as with a throat lozenge.

**lindane** (lĭn'dān) Gamma benzene hexachloride.

**Lindau's disease** (lĭn'dowz) [Arvid Lindau, Swedish pathologist, 1892–1958] Lindau–von Hippel disease.

**Lindau–von Hippel disease** (lĭn'dow-vōn-hĭp'ĕl) [Arvid Lindau; Eugen von Hippel, Ger. ophthalmologist, 1867–1939] Angiomata of the retina and cysts and angiomata of the brain and certain visceral organs.

**line** (lĭn) [L. *linea*] **1.** Any long, relatively narrow mark. **2.** A boundary or outline. **3.** A wrinkle. **4.** In anthropometry or cephalometry, an imaginary line connecting two anatomical points. This is necessary to establish a plane or an axis. **5.** A catheter attached to a patient, as an intravenous line or arterial line.

**abdominal l.** Arbitrary lines delineating abdominal regions. SEE: *abdominal regions*.

**absorption l.** A black line in the continuous spectrum of light passing through an absorbing medium.

**ala-tragus l.** An imaginary line that extends from the ala of the nose to the tragus of the ear. The line is an estimated point of entry for intraoral dental radiographs of the maxilla and is also used in denture prosthodontics.

**arterial l.** A hemodynamic monitoring system consisting of a catheter in an artery connected to pressure tubing, a transducer, and an electronic monitor. It is used to measure systemic blood pressure and to provide ease of access for the drawing of blood (e.g., in intensive care, when regular monitoring of blood gases is necessary).

**axial l.** A line running in the main axis of the body or some part of it. The axial line of the hand runs through the middle digit; the axial line of the foot runs through the second digit.

**axillary l.** Anterior, posterior, and midaxillary lines that extend downward from the axilla.

**base l.** The line from the infraorbital ridge through the middle of the external auditory meatus to midline of occiput.

**basiobregmatic l.** The line from basion to bregma.

**Beau's l.** SEE: *Beau's lines*.

**blue l.** Lead line.

**Burton's l.** SEE: *Burton's line*.

**canthomeatal l.** An imaginary line extending from the canthus of the eye to

the center of the external auditory meatus.

**cement l.** The refractile boundary of an osteon in compact bone.

**central l.** A venous access device inserted into and kept in the vena cava, innominate, or subclavian veins. It is used to infuse fluids and medicines, or for gaining access to the heart to measure pressures in the venous circulation. Keeping the line open permits later venous access when the veins might be collapsed and difficult to enter. SEE: *catheter, central venous*.

**central intravenous l.** SEE: *catheter, central venous; central line*.

**cervical l.** **1.** A line of junction of cementum and enamel of a tooth. **2.** A line on the neck of the tooth where the gum is attached.

**cleavage l.** Langer's lines.

**l. of demarcation** A line of division between healthy and diseased tissue.

**Douglas' l.** SEE: *Douglas' line*.

**ectental l.** The point of the endodermal and ectodermal junction in the gastrula.

**epiphyseal l.** A line at the junction of the epiphysis and diaphysis of a long bone. It is the remnant of the epiphyseal disk.

**Feiss' l.** SEE: *Feiss' line*.

**l. of fixation** An imaginary line drawn from the subject viewed to the fovea centralis.

**gingival l.** A line determined by the extent of coverage of the tooth by gingiva. The shape of the gingival line is similar to the curvature of the cervical line but they rarely coincide. It is also called the free gingival margin. SYN: *gum l.; gingival margin*.

**gluteal l.** Three lines— anterior, posterior, and inferior—on the exterior surface of the ilium.

**gum l.** Gingival line.

**iliopectineal l.** The bony ridge marking the brim of the pelvis.

**incremental l.** One of the lines seen in a microscopic section of tooth enamel. They resemble growth lines in a tree.

**incremental l. of Retzius** Periodic dark lines seen in the enamel of a tooth that represent occasional metabolic disturbances of mineralization.

**incremental l. of von Ebner** Very light lines in the dentin of a tooth that represent the boundary between the layers of dentin produced daily.

**inferior nuchal l.** One of two curved ridges on the occipital bone extending laterally from the exterior occipital crest. SEE: *superior nuchal l.*

**infraorbitomeatal l.** An imaginary line from the inferior orbital margin to the external auditory meatus, used for radiographical positioning of the skull.

**intercondylar l.** The transverse ridge

joining condyles of the femur above the intercondyloid fossa.

**interpupillary l.** An imaginary line between the centers of the eyes, used for radiographical positioning of the skull.

**intertrochanteric l.** The ridge on the posterior surface of the femur between the greater and lesser trochanters.

**Langer's l.** SEE: *Langer's lines*.

**lateral supracondylar l.** One of two ridges on the posterior surface of the distal end of the femur, formed by diverging lips of the *linea aspera*. It is one of the proximal attachments of the *vastus lateralis* muscle of the quadriceps. SEE: *medial supracondylar l.*

**lead l.** An irregular dark line in the gingival margin. The line is present in chronic lead poisoning and is caused by the deposition of lead in that portion of the gum. SYN: *blue l.*

**lip l.** The highest or lowest point the lips reach on the teeth or gums during a broad smile.

**M l.** In striated muscle, the thin, dark line in the center of an H band of a sarcomere. It is made of myomesin, the protein that connects the thick (myosin) filaments. SYN: *M disk*.

**mamillary l.** An imaginary vertical line through the center of the nipple.

**mammary l.** An imaginary horizontal line from one nipple to the other.

**medial supracondylar l.** One of two ridges on the posterior surface of the distal end of the femur, formed by diverging lips of the *linea aspera*. SEE: *lateral supracondylar l.*

**median l.** An imaginary line joining any two points in the periphery of the median plane of the body or one of its parts.

**mentomeatal l.** An imaginary line from the mental point of the mandible to the external auditory meatus, used in radiography of the skull.

**milk l.** SEE: *ridge, mammary*.

**muco gingival l.** SEE: *junction, muco gingival*.

**mylohyoid l.** A ridge on the inner surface of the mandible. It extends from a point beneath the mental spine upward and back to the ramus past the last molar. The mylohyoid muscle and the superior constrictor muscle of the pharynx attach to this ridge.

**nasal l.** A line from the lower edge of the *ala nasi* curving to the outer side of the *orbicularis oris* muscle.

**oblique l. of mandible** The ridge on the outer surface of the lower jaw.

**oculozygomatic l.** A line appearing between the inner canthus of the eye and the cheek, supposedly indicative of neural disorders.

**orbitomeatal l.** The imaginary line running through the mid-orbit and external auditory meatus. It is commonly used for radiographic positioning.

**l. of Owen** [Sir Richard Owen, Brit. anatomist, 1804–1892] Occasional prominent growth lines or bands in the dentin of a tooth. They provide a record of the growth of the coronal or radicular dentin.

**parasternal l.** The line midway between the nipple and the border of the sternum.

**pectineal l.** The line on the posterior surface of the femur extending downward from the lesser trochanter. It is the portion of the iliopectineal line formed by the *os pubis*.

**popliteal l. of femur** An oblique line on the posterior surface of the femur.

**popliteal l. of tibia** A line on the posterior surface of the tibia, extending obliquely downward from the fibular facet on the lateral condyle to the medial border of the bone.

**pure l. 1.** The progeny of a single homozygous individual obtained by self-fertilization. **2.** The progeny of an individual reproducing asexually by simple fission, or by buds, runners, stolons, and so on. **3.** The progeny of two homozygous individuals reproducing sexually.

**resting l.** A smooth cement line seen in microscopic sections that separates old bone from newly formed bone.

**reversal l.** A cement line seen in microscopic sections of bone that shows scallops and irregularities representing earlier bone resorption. Resorption to that point occurred before the process reversed and new bone was formed by apposition. SEE: *Howship's lacuna*.

**scapular l.** In anatomical descriptions, the imaginary line extending downward from the lower angle of the scapula.

**semilunar l.** Spigelian line.

**Shenton's l.** SEE: *Shenton's line*.

**sight l.** The line from the center of the pupil to a viewed object.

**soleal l. of tibia** A line on the posterior surface of the tibia extending diagonally from below the tibial condyle to the medial border of the tibia. The *soleus* muscle and fascia are attached to that line.

**spigelian l.** SEE: *spigelian line*.

**sternal l.** The medial line of the sternum.

**superior nuchal l.** One of two curved ridges on the occipital bone extending laterally from the exterior occipital crest. SEE: *inferior nuchal l.*

**supraorbital l.** The line across the forehead above the root of the exterior angular process of the frontal bone.

**umbilicopubic l.** The portion of median line extending from the umbilicus to the symphysis pubis.

**visual l.** The line that extends from object to macula lutea passing through the nodal point. SYN: *visual axis*.

**Zöllner's I.** Parallel lines, usually three long ones, with a series of short lines drawn at regular intervals across one of the lines at approx. 60 degrees. Similar lines are drawn across the second line at the angle of approx. 120 degrees. Short lines are drawn across the third at the same angle as on the first lines. These lines produce the optical illusion that the long lines are converging or diverging.

**linea** (līn'ē-ā) *pl. lineae* [L. *linea*, line] An anatomical line.

***l. alba*** The white line of connective tissue in the middle of the abdomen from sternum to pubis.

***l. albicantes*** Lines seen on the abdomen, buttocks, and breasts, frequently caused by pregnancy, obesity, or prolonged adrenal cortical hormone therapy but may occur as the result of abdominal distention from any cause.

***l. aspera*** A longitudinal ridge on the posterior surface of the middle third of the femur.

***l. costoarticularis*** A line between the sternoclavicular articulation and the point of the 11th rib.

***l. nigra*** A dark line or discoloration of the abdomen that may be seen in pregnant women during the latter part of term. It runs from above the umbilicus to the pubes.

***l. semilunaris*** Spigelian line.

***l. striae atrophicae*** Stria atrophica.

***l. terminalis*** A bony ridge on the inner surface of the ilium continued on to the pubis that divides the true and false pelvis.

**lineage** (līn'ē-īj) [ME. *linage*] A group of individuals, animals, cells, or genes that share a common ancestor.

**linear** (līn'ē-ār) [L. *linea*, line] Pert. to or resembling a line.

***l. energy transfer*** A measure of the rate of energy transfer from ionizing radiation to soft tissue.

**linear accelerator** A device that uses high-frequency electromagnetic waves to speed up charged particles such as electrons to high energies within a linear tube for use in radiation therapy, the creation of radioisotopes, and research.

**linear immunoglobulin A disease** A blistering condition that causes lesions beneath the epidermis, in the oral cavity, and sometimes on the conjunctiva, where scars may form. The disease is characterized by the presence of immunoglobulin A deposits lined up along the basement membrane of the epithelium.

**linearity** (līn-ē-ār'ī-tē) In radiography, the production of a constant amount of radiation for different combinations of milliamperage and exposure time, commonly used as a quality management benchmark.

**line pairs per millimeter** ABBR: lp/mm.

A measurement of fine radiographic image detail demonstrated by the number of pairs of lead lines per millimeter that can be imaged.

**liner** (līn'ēr) Anything applied to the inside of a hollow body or structure.

***cavity I.*** A layer of material applied to a cavity preparation to protect the pulp of the tooth. It is usually a suspension of zinc phosphate or calcium hydroxide and is used to neutralize the acidity of the base or cement material.

***soft I.*** The material applied to the underside of a denture to provide a soft surface contact with the oral tissues. Some acrylic or silicone resins have been made resilient and are used as liners.

**lingua** (līng'gwā) *pl. linguae* [L.] The tongue or a tongue-like structure.

***l. frenata*** Ankyloglossia.

***l. geographica*** Geographic tongue.

***l. nigra*** Hairy tongue.

***l. plicata*** Fissured tongue.

**lingual** (līng'gwāl) [L. *lingua*, tongue]

1. Pert. to the tongue. 2. Tongue-shaped. SYN: *linguiform*. 3. In dentistry, pert. to the tooth surface that is adjacent to the tongue.

**lingual goiter** SEE: under *goiter*.

**Linguatula serrata** (līng-wā'too-lā sēr-ā'tā) [L. "little serrated tongue"] An arthropod parasite in snakes, commonly known as the tongue worm. Its larvae, nymphs, and adults occasionally infect humans. Ingested infective larvae migrate to the nasal passages and may cause a parasitic nasopharyngeal obstruction known as linguatulus.

**lingula** (līng'gū-lā) [L., little tongue] A tongue-shaped process of some structure.

***l. cerebelli*** A tongue-like process of the cerebellum projected forward on the upper surface of the superior medullary velum.

***l. of lung*** The projection of lung that separates the cardiac notch from the inferior margin of the left lung.

***l. of mandible*** The projection of bone that forms the medial boundary of the mandibular foramen and gives attachment to the sphenomandibular ligament.

***l. of sphenoid*** The ridge between the body and the greater wings of the sphenoid.

**lingulectomy** (līng'gū-lēk'tō-mē) [L. *lingula*, little tongue, + Gr. *ektome*, excision] Surgical removal of the lingula of the upper lobe of the left lung.

**linguo-** [L. *lingua*, tongue] Combining form meaning *tongue*.

**linguoinclination** (līng'gwō-kli-nā'shūn) [' + *clinatus*, leaning] Angulation of a tooth in its vertical axis toward the tongue.

**linguodental** (līng'gwō-dēn'tl) Relating to the tongue and teeth, such as the



speech sound "th," which is produced with the aid of the tongue and teeth.

**linguopapillitis** (līng'gwō-pāp'ī-lī'tīs) [" + *papilla*, nipple, + Gr. *itis*, inflammation] Small ulcers of the papillae of the edge of the tongue.

**linguopulpal** (līng'gwō-pūl'pāl) Pert. to the lingual and pulpal surfaces of a cavity preparation.

**linguoversion** (līng'gwō-vēr'zhūn) [" + *versio*, a turning] Displacement of a tooth toward the tongue.

**liniment** (līn'ī-mēnt) [L. *linimentum*, smearing substance] A liquid vehicle (usually water, oil, or alcohol) containing a medication to be rubbed on or applied to the skin. It may be applied by the friction method or on a bandage.

**linitis** (līn-ī'tīs) [Gr. *linon*, flax, + *itis*, inflammation] Inflammation of the lining of the stomach.

**l. plastica** An infiltrating cancer of the stomach wall. SEE: *leather-bottle stomach*.

**linkage** In genetics, the association between distinct genes that occupy closely situated loci on the same chromosome. This results in an association in the inheritance of these genes.

**sex l.** A genetic characteristic that is located on the X or Y chromosome.

**linseed** (līn'sēd) [AS. *līnsaed*] Seed of the common flax, *Linum usitatissimum*; the source of linseed oil. Linseed is used as a demulcent and emollient. SYN: *flaxseed*.

**lip** [AS. *lippa*] **1.** A soft external structure that forms the boundary of the mouth or opening to the oral cavity. SYN: *labium oris*. **2.** One of the lips of the pudendum (*labia majora* or *minora*). SEE: *labia*; *labium*. **3.** A liplike structure forming the border of an opening or groove.

**PATHOLOGY:** *Chancere:* It is not unusual to have the initial lesion of syphilis appear on the lip of the mouth as an indurated base with a thin secretion and accompanied by enlargement of the submaxillary glands. *Condyloma latum:* This appears as a mucous patch, flattened, coated with gray exudate, with strictly delimited area, usually at the angle of the mouth. *Eczeema:* This is characterized by dry fissures, often covered with a crust, bleeding easily, and occurring on both lips. *Epithelioma:* This may be confused with chancere. It seldom appears before the age of 40, but there are exceptions. It may appear as a common cold sore, a painless fissure, or other break of the lower lip. A crust or scab covers the lesion, leaving a raw surface if removed. Pain does not appear until the lesion is well advanced. It is much more common on the lower lip than on the upper. *Herpes:* These lesions may appear on the lips in pneumonia, typhoid, common cold, and other

febrile diseases. *Tuberculous ulcer:* This type of ulcer is located at the inner portion of the lip, close to the angle of the mouth. Pathological examination is necessary for verification.

**DIAGNOSIS:** Examination is considered to be incomplete unless the lips are everted to expose buccal surfaces. *Bluish or purplish:* This sign may appear in the aged, in those exposed to great cold, and in hypoxemia. *Dry:* Mouth dryness may be seen in fevers or be caused by drugs such as atropine, by thirst, or by mouth breathing. *Fissured:* This may occur after exposure to cold, in avitaminosis, and in children with congenital syphilis. *Pale:* Pallor may be seen in anemia and wasting diseases, in prolonged fever, and after a hemorrhage. *Rashes:* These may be manifestations of typhoid fever, meningitis, or pneumonia. Mucous patches may appear in secondary syphilis, chancre, cancer, and epithelioma.

**cleft l.** A vertical cleft or clefts in the upper lip. This congenital condition, resulting from the faulty fusion of the median nasal process and the lateral maxillary processes, is usually unilateral and on the left side, but may be bilateral. It may involve either the lip or the upper jaw, or both, and often accompanies cleft palate. Nongenetic factors may also be responsible for causing this condition. The incidence of cleft lip is from one in 600 to one in 1250 births. SYN: *harelip*.

**double l.** A redundant fold of mucous membrane in the mouth on either side of the midline of the lip.

**glenoid l.** Glenoid labrum.

**Hapsburg l.** A thick, overdeveloped lower lip.

**oral l.** Upper and lower lips that surround the mouth opening and form the anterior wall of the buccal cavity.

**tympanic l.** The lower border of the sulcus spiralis internus of the cochlea.

**vestibular l.** The upper border of the sulcus spiralis internus of the cochlea.

**lip-** SEE: *lipo-*.

**lipacidemia** (līp'ās-ī-dē'mē-ā) [Gr. *lipos*, fat, + L. *acidus*, acid, + Gr. *haima*, blood] Excess fatty acids in the blood.

**lipaciduria** (līp'ās-ī-dū'rē-ā) [" + " + Gr. *ouron*, urine] Fatty acids in the urine.

**liparocoele** (līp'ā-rō-sēl) [" + *kele*, tumor, swelling] **1.** A scrotal hernia containing fat. **2.** A fatty tumor.

**lipase** (lī'pās, lī'pās) [" + *-ase*, enzyme] A fat-splitting enzyme found in blood, pancreatic secretion, and tissues. Emulsified fats are changed in the stomach to fatty acids and glycerol by gastric lipase. SEE: *digestion*; *enzyme*.

**pancreatic l.** The pancreatic enzyme that digests fats emulsified by bile salts to fatty acids and glycerol.

**lip bumper** In orthodontics a removable appliance to push the lower molars posteriorly to create additional space for the lower anterior teeth. It consists of an archwire that attaches posteriorly to the lower mandible and anteriorly to a plastic mold. The plastic sits just behind the lips and in front of the lower incisors. It forces the molars back when the jaw moves.

**lipectomy** (lĭ-pĕk'tō-mĕ) [" + *ektome*, excision] Excision of fatty tissues.

**suction l.** SEE: *liposuction*.

**lipedema** (lĭp'ĕ-dĕ'mă) [" + *oidema*, swelling] Swelling of the skin, esp. of the lower extremity, owing to accumulation of fat and fluid subcutaneously.

**lipemia** (lĭ-pĕ'mĕ-ă) [" + *haima*, blood] An abnormal amount of fat in the blood.  
**alimentary l.** An accumulation of fat in the blood after eating.

**l. retinalis** A condition in which retinal vessels appear reddish white or white; found in cases of hyperlipidemia. SEE: *hyperlipoproteinemia*.

**lipid-** SEE: *lipo-*.

**lipid(e)** (lĭp'ĭd, -ĭd) [Gr. *lipos*, fat] Any one of a group of fats or fatlike substances, characterized by their insolubility in water and solubility in fat solvents such as alcohol, ether, and chloroform. The term is descriptive rather than a chemical name such as protein or carbohydrate. It includes true fats (esters of fatty acids and glycerol); lipoids (phospholipids, cerebroside, waxes); and sterols (cholesterol, ergosterol). SEE: *fat*; *cholesterol* for table.

**lipidemia** (lĭp'ĭ-dĕ'mĕ-ă) Lipemia. SEE: *atherosclerosis*; *cholesterol*.

**lipid histiocytosis** Niemann-Pick disease.

**lipido-** [Gr. *lipos*, fat] SEE: *lipo-*.

**lipidosis** (lĭp'ĭ-dō'sis) Any disorder of fat metabolism.

**arterial l.** Arteriosclerosis.

**cerebroside l.** Gaucher's disease.

**lipid storage disease** A group of rare inherited disorders of fat metabolism in which lipids are metabolized abnormally and accumulate in tissues such as the brain and peripheral nerves.

**lipiduria** (lĭp'ĭ-dū'rĕ-ă) [" + Gr. *ouron*, urine] Lipids in the urine.

**Lipitor** (lĭp'ĭ-tōr) SEE: *atorvastatin*.

**lipo-, lip-, lipid-, lipido-** [Gr. *lipos*, fat] Combining forms meaning *fat*. SEE: *adipo-*; *steato-*.

**lipoarthritis** (lĭp'ō-ărth-rĭ'tis) [" + *arthron*, joint, + *itis*, inflammation] Arthritis associated with the presence of lipid particles in the joint fluid.

**lipoaspiration** Liposuction.

**lipotrophia, lipotrophy** (lĭp'pō-ă-trō'fĕ-ă, lĭp'pō-ăt'rō'fĕ) [" + *a-*, not, + *trophe*, nourishment] Atrophy of subcutaneous fatty tissue. This may occur, for example, at the site of insulin injection. SEE: *lipodystrophy*.

**lipoblast** (lĭp'ō-blăst) [" + *blastos*, germ] An immature fat cell.

**lipoblastoma** (lĭp'ō-blăst-tō'mă) [" + " + *oma*, tumor] A benign tumor of the fatty tissue. SEE: *lipoma*.

**lipocèle** (lĭp'ō-sĕl) [" + *kele*, tumor, swelling] The presence of fatty tissue in a hernia sac. SYN: *adipocèle*; *liparocèle*.

**lipochondrodystrophy** (lĭp'ō-kōn'drō-dĭs'trō-fĕ) [" + *chondros*, cartilage, + *dys*, bad, + *trephein*, to nourish] Mucopolysaccharidosis IH.

**lipochondroma** (lĭp'ō-kōn-drō'mă) [" + " + *oma*, tumor] A tumor that is both fatty and cartilaginous.

**lipochrome** (lĭp'ō-krōm) [" + *chroma*, color] Any one of a group of fat-soluble pigments (e.g., carotene, the fat-soluble yellow pigment found in carrots, sweet potatoes, egg yolk, butter, body fat, and corpus luteum).

**lipocyte** (lĭp'ō-sĭt) SEE: *cell*, *fat*.

**lipodermatosclerosis** Thickening and red discoloration of the skin as a result of diminished blood flow, usually caused by local or regional venous obstruction.

**lipodystrophy** (lĭp'ō-dĭs'trō-fĕ) [" + *dys*, bad, + *trophe*, nourishment] Disturbance of fat metabolism. Common findings include the localized accumulation of fat under the skin and on the trunk, or fatty atrophy.

**gynoid l.** Cellulite.

**insulin l.** A complication of insulin administration characterized by changes in the subcutaneous fat at the site of injection. The changes may take the form of atrophy or hypertrophy; rarely are both types present in the same patient. Atrophy develops in as many as one third of children and women who use insulin regularly, but rarely in men. The defect in subcutaneous fat leaves a saucer-like depression. Hypertrophy at the injection site occurs in the form of a spongy localized area. This complication of insulin administration is slightly more common in males than in females. It is usually associated with a history of repetitive use of one injection site.

**intestinal l.** A disease characterized principally by fat deposits in intestinal and mesenteric lymphatic tissue, fatty diarrhea, loss of weight and strength, and arthritis.

**progressive l.** A pathological condition in which there is progressive, symmetrical loss of subcutaneous fat from the upper part of the trunk, face, neck, and arms.

**lipodystrophy syndrome** A side effect encountered in the treatment of HIV patients with protease inhibitors in which they develop abnormal accumulations of body fat (e.g., over the upper back), hypercholesterolemia, hyperglycemia, hypertriglyceridemia, and insulin resistance.

**lipofibroma** (lĭp'ō-fĭ-brō'mă) [ " + L. *fibra*, fiber, + Gr. *oma*, tumor] A lipoma having much fibrous tissue. SYN: *fibrolipoma*.

**lipofilling, lipostucture** (lĭ'pō-fĭl'ĭng) The injection of fat cells or fatty tissue to fill body contours, reduce skin wrinkles, or eliminate other perceived defects in appearance.

**lipofuscin** (lĭp'ō-fūs'sĭn) [ " + L. *fuscus*, brown] An insoluble fatty pigment found in aging cells. It is the residue of cellular or extracellular material that the cells have ingested but not completely digested. SEE: *atrophy*, *brown*; *free radical*.

**lipofuscinosis** (lĭp'ō-fū'sĭn-ō'sĭs) [ " + " + Gr. *osis*, condition] Abnormal deposition of lipofuscin in tissues.

**neuronal ceroid I.** Batten disease.

**lipogenesis** (lĭp'ō-jĕn'ĕ-sĭs) [Gr. *lipos*, fat, + *genesis*, generation, birth] Fat formation.

**lipogenetic, lipogenic** (lĭp'ō-jĕ-nĕt'ĭk, lĭp'ō-jĕn'ĭk) Producing or produced by fat. SYN: *lipogenous*.

**lipogenous** (lĭp'ō-jĕ'nūs) Lipogenetic.

**lipogranuloma** (lĭp'ō-grăn-ŭ-lō'mă) [ " + L. *granulum*, granule, + Gr. *oma*, tumor] Inflammation of fatty tissue with granulation and development of oily cysts.

**lipogranulomatosis** (lĭp'ō-grăn'ŭ-lō-mă-tō'sĭs) [ " + " + " + *osis*, condition] A disorder of fat metabolism in which a nodule of fat undergoes central necrosis and the surrounding tissue becomes granulomatous.

**lipohyalinosis** (lĭ-pō-hĭ'ă-lĭn-ō'sĭs) Degenerative changes in small blood vessels, marked by the accumulation of a glassy- or waxy-appearing lipid within the vessel wall. This type of vascular degeneration occurs in hypertension and atherosclerosis, and predisposes patients to small infarcts, esp. in penetrating arteries of the brain.

**lipoid** (lĭp'oyd) [ " + *eidōs*, form, shape] 1. Similar to fat. 2. Lipid(e).

**lipoidosis** (lĭp-oy-dō'sĭs) [ " + " + *osis*, condition] Excessive lipid accumulation. SEE: *xanthomatosis*; *lipidosis*.

**arterial I.** Arteriosclerosis.

**cerebroside I.** A familial disease characterized by deposition of glucocerebroside in cells of the reticuloendothelial system. SYN: *Gaucher's disease*.

**lipoiduria** (lĭp'oy-dū'rĕ-ă) [ " + " + *ouron*, urine] Lipoids in the urine.

**lipolipoidosis** (lĭp'ō-lĭp'oy-dō'sĭs) [ " + *lipos*, fat, + *eidōs*, form, shape, + *osis*, condition] Infiltration of fats and lipoids into a tissue.

**lipolysis** (lĭp-ōl'ĭ-sĭs) [ " + *lysis*, dissolution] The decomposition of fat.

**lipolytic** (lĭp-ō-lĭt'ĭk) Relating to lipolysis.

**lipoma** (lĭ-pō'mă) [Gr. *lipos*, fat, + *oma*, tumor] A benign fatty tumor. They often appear in crops on the arms

or trunk but are not metastatic. SEE: *chondrolipoma*.

**I. arborescens** An abnormal treelike accumulation of fatty tissue in a joint.

**cystic I.** A lipoma containing cysts.

**diffuse I.** A lipoma not definitely circumscribed.

**I. diffusum renis** A condition in which fat displaces parenchyma of the kidney. SYN: *lipomatosis renis*.

**I. durum** A lipoma with marked hypertrophy of the fibrous stroma and capsule.

**nasal I.** A fibrous growth of the subcutaneous tissue of the nostrils.

**osseous I.** A lipoma in which the connective tissue has undergone calcareous degeneration.

**I. telangiectodes** A rare form of lipoma containing a large number of blood vessels.

**lipomatoid** (lĭ-pō'mă-toyd) [ " + " + *eidōs*, form, shape] Similar to a lipoma.

**lipomatosis** (lĭp'ō-mă-tō'sĭs) [ " + *oma*, tumor + *osis*, condition] A condition marked by the excessive deposit of fat in a localized area.

**I. renis** Lipoma diffusum renis.

**lipomatous** (lĭp-ō'mă-tūs) 1. Of the nature of lipoma. 2. Affected with lipoma.

**lipomeningocele** (lĭp'ō-mĕ-nĭng'gō-sĕl) [ " + *meninx*, membrane, + *kele*, tumor, swelling] A meningocele associated with lobules of fat tissue.

**lipomeria** (lĭ'pō-mĕ'rĕ-ă) [Gr. *leipein*, to leave, + *meros*, a part] In a deformed fetus, the congenital absence of a limb.

**lipometabolism** (lĭp-ō-mĕ-tăb'ōl-ĭzm) [ " + " + *-ismos*, condition] Fat metabolism.

**lipomyoma** (lĭp'ō-mĭ-ō'mă) [ " + *mys*, muscle, + *oma*, tumor] A myoma containing fatty tissue.

**lipomyxoma** (lĭp'ō-mĭks-ō'mă) [ " + *myxa*, mucus, + *oma*, tumor] A mixed lipoma and myxoma. SYN: *myxolipoma*.

**lipopenia** (lĭp'ō-pĕ'nĕ-ă) [ " + *penia*, poverty] A deficiency of lipids. **lipopenic** (-nĭk), *adj.*

**lipopeptid, lipopeptide** (lĭp'ō-pĕp'tĭd, -tĭd) A complex of lipids and amino acids.

**lipophagia, granulomatous** (lĭp'ō-fă'jĕ-ă) Intestinal lipodystrophy.

**lipophagy** (lĭ-pōf'ă-jĕ) The ingestion of fat cells by phagocytes.

**lipophanerosis** (lĭp'ō-făn'ĕ-rō'sĭs) [ " + *phaneros*, visible, + *osis*, condition] The alteration of fat in a cell so that it becomes visible as droplets.

**lipophil** (lĭp'ō-fĭl) [ " + *philein*, to love] 1. Having an affinity for fat. 2. Absorbing fat.

**lipophilia** (lĭp'ō-fĭl'ĕ-ă) [ " + *philos*, love] Affinity for fat.

**lipopolysaccharide** (lĭp'ō-pōl'ĕ-săk'ă-rĭd) The linkage of molecules of lipids with polysaccharides.

**lipoprotein** (lĭp'ō-prō'tĕn) Conjugated

chemicals in the bloodstream consisting of simple proteins bound to fat. Cholesterol, phospholipids, and triglycerides are all fatty components of lipoproteins. Analyzing the concentrations and proportions of lipoproteins in the blood can provide important information about patients' risks of atherosclerosis, coronary artery disease, and death.

Lipoproteins are classified as very low-density (VLDL), low-density (LDL), intermediate-density (IDL), and high-density (HDL). Increased levels of LDL and total cholesterol directly raise one's chances of having coronary heart disease (CHD). For this reason LDL has been referred to colloquially as "bad" cholesterol. By contrast, increased levels of HDL ("good" cholesterol) are linked with a lowered risk of CHD. The National Cholesterol Education Program has designated 70–100 mg/dl or less as a desirable level of LDL in those already affected by CHD; for people without CHD, a desirable level of LDL is 100 mg/dl or less. SEE: *atherosclerosis; coronary artery disease; hyperlipoproteinemia; statins; cholesterol* for table.

**ETIOLOGY:** Elevated levels of lipoproteins usually are the result of a diet that is excessively rich in fats, saturated fats, and cholesterol. In a small number of patients with extremely high lipoprotein levels, genetic diseases play a part.

**SYMPTOMS:** High lipoprotein levels may cause no symptoms of their own until patients develop arterial blockages. If arteries become blocked by lipoproteins, ischemic symptoms may develop.

**TREATMENT:** Abnormal lipoprotein levels normalize in many patients who consume less dietary fat and increase their level of exercise. When lipoproteins do not reach expected levels despite diet and exercise, medications to improve lipoprotein profiles are prescribed. These include drugs such as niacin, bile-acid binding resins, and the statins.

**l. (a)** A lipid-protein complex that is found normally in the plasma in small amounts in all people, but in very high concentrations in some persons with familial forms of atherosclerosis.

**alpha l.** High-density lipoprotein.

**high-density l.** ABBR: HDL. Plasma lipids bound to albumin, consisting of lipoproteins. They contain more protein than either very low-density lipoproteins or low-density lipoproteins. High-density lipoprotein cholesterol is the so-called good cholesterol; a high level is desirable. SYN: *alpha l.*

**intermediate-density l.** ABBR: IDL. Plasma lipids bound to albumin, consisting of lipoproteins with less protein

than high-density, but more than low-density, lipoproteins.

**l. lipase** ABBR: Lp(a). An enzyme produced by many cells. On the surface of cells lining the vasculature, it hydrolyzes fat (chylomicrons) and very low-density lipoprotein (VLDL) to monoglycerides to free fatty acids and intermediate-density lipoprotein (IDL). This enzyme, similar to plasminogen, is an important regulator of lipid and lipoprotein metabolism. Even though the physiological functions of Lp(a) and apoprotein(a) are not fully understood, there is a positive association of plasma Lp(a) with premature myocardial infarction. Deficiency of this enzyme leads to an increase in chylomicrons and VLDLs, and to low levels of high-density lipoproteins (HDL). Diseases associated with acquired causes of decreased lipoprotein lipase include acute ethanol ingestion, diabetes mellitus, hypothyroidism, chronic renal failure, and nephrotic syndrome.

**low-density l.** ABBR: LDL. Plasma lipids that carry the majority of the cholesterol in plasma. Bound to albumin, LDLs are a proven cause of atherosclerosis; lowering LDLs with a low-fat diet or with drugs helps to prevent and treat coronary artery disease.

**Lp(a) l.** A low-density lipoprotein in which apolipoprotein B-100 is linked to apoprotein(a). It contributes to the obstruction of blood vessels in atherosclerosis.

**oxidized low-density cholesterol l.** A form of low-density lipoprotein cholesterol whose presence in the blood is often associated with unstable coronary events, such as acute myocardial infarction.

**very low-density l.** ABBR: VLDL. Plasma lipids bound to albumin and consisting of chylomicrons and prelipoproteins. This class of plasma lipoproteins contains a greater ratio of lipid than the low-density lipoproteins and is the least dense.

**liposarcoma** (lip'ō-sār-kō'mā) [Gr. *lipos*, fat, + *sarx*, flesh, + *oma*, tumor] A malignant tumor derived from embryonal fat cells.

**liposculpture** (lip'ō-skūlp'chēr) The surgical removal of fat from one part of the body to another in order to smooth wrinkles, fill hollows, or create new body contours.

**lipshaver** (li'pō-shā-ver) A device used in plastic surgery to carve out unwanted fat and create smooth contours beneath the skin.

**liposis** (li-pō'sis) [l' + *osis*, condition] Adiposis.

**liposoluble** (lip'ō-sōl'ū-b'l) [l' + L. *solubilis*, soluble] Soluble in fats.

**liposome** (lip'ō-sōm) [l' + *sōma*, body] The sealed concentric shells formed

when certain lipid substances are in an aqueous solution. As it forms, the liposome entraps a portion of the solution in the shell. Liposomes may be manufactured and filled with a variety of medications. These have been used to deliver substances to particular organs. These drug forms may be more effective and less toxic than drugs given by other means.

**lipostomy** (lī-pōs'tō-mē) [Gr. *leipein*, to fail, + *stoma*, mouth] Congenital absence or extreme smallness of the mouth.

**liposuction** (lī'pō-sūk'shūn) The removal of subcutaneous fat tissue with a blunt-tipped cannula introduced into the fatty area through a small incision. Suction is then applied and fat tissue removed. Liposuction is a form of plastic surgery intended to remove adipose tissue from localized areas of fat accumulation as on the hips, knees, buttocks, thighs, face, arms, or neck. To be cosmetically successful, the skin should be elastic enough to contract after the underlying fat has been removed. Liposuction will not benefit dimpled or sagging skin or flabby muscles. There are no health benefits to liposuction, and as with any surgery there may be risks such as infection, severe postoperative pain, cardiac arrhythmias, shock, and even death. There is also the possibility the results will be unsatisfactory to the patient. SYN: *lipoaspiration*; *suction lipectomy*.

**lipotropic** (līp-ō-trōp'ik) [l' + *trope*, a turning] Having an affinity for lipids, as with certain dyes (e.g., Sudan III, which stains fat readily).

**l. factors** Compounds that promote the transportation and use of fats and help to prevent accumulation of fat in the liver.

**lipotropism, lipotropy** (lī-pōt'rō-pīzm, -pē) [l' + *trope*, a turn, + *-ismos*, condition] **1.** Having the action of removing fat deposits in the liver. **2.** An agent that acts to remove fat from the liver.

**lipovaccine** (līp'ō-vāk'sēn) A vaccine suspended in vegetable oil.

**lipoxidase** (lī-pōk'sī-dās) An enzyme that catalyzes the oxidation of the double bonds of an unsaturated fatty acid. SYN: *lipoxygenase*.

**lipoxin** (lī-pōk'sīn) Any of a group of eicosanoids formed by the action of phospholipases on cell membrane phospholipids. Some lipoxins have anti-inflammatory effects, but some promote inflammation and hypersensitivity reactions. SEE: *leukotriene*; *prostaglandin*.

**lipoxygenase** (lī-pōks'i-jē-nās) Lipoxidase.

**Lippes loop** (lī'pēz) [Jacob Lippes, U.S. obstetrician, b. 1924] A type of intrauterine contraceptive device.

**liping** (līp'ing) A growth of bony tissue beyond the joint margin in degenerative joint disease.

**lip-pit syndrome** Van der Woude's syndrome.

**lip reading** Interpreting what is being said by watching the speaker's lip and facial movements and expression. This method is used as a means of speech discrimination by people with hearing impairments.

**lipuria** (lī-pū'rē-ā) [Gr. *lipos*, fat, + *ouron*, urine] Fat in the urine.

**liquefacient** (līk'wē-fā'shēnt) [L. *liquere*, to flow, + *facere*, to make] **1.** An agent that converts a solid into a liquid. **2.** Converting a solid into a liquid.

**liquefaction** (līk'wē-fāk'shūn) **1.** The conversion of a solid into a liquid. **2.** The conversion of solid tissues to a fluid or semifluid state.

**liquescent** (līk-wēs'sēnt) [L. *liquescere*, to become liquid] Becoming liquid.

**liquid** (līk'wid) [L. *liquere*, to flow] **1.** Flowing easily. **2.** The state of matter in which a substance flows without being melted. SEE: *emulsion*; *liquefacient*; *liquefaction*.

**l. measure** A measure of liquid capacity.

**liquid air therapy** The therapeutic application of air that is so cold as to be liquefied. SEE: *CO<sub>2</sub> therapy*; *cryotherapy*; *hypothermia*.

**liquid-based cytology** ABBR: LBC. A means of performing a Papanicolaou test in which the head of the plastic spatula used to obtain cells from the endocervix is inserted directly into a vial containing a fluid cellular preservative. The vial is spun in the laboratory, and a pellet of pure cells is obtained. This cellular layer is then deposited on a microscope slide and examined for evidence of cellular atypia or frank cancer. The liquid-based cytology differs from traditional cervical cytology in that the contents of the spatula are not smeared directly onto a microscope slide. This reduces the number of specimens received by the laboratory that are unable to be interpreted pathologically.

**liquid crystal display** ABBR: LCD. A type of electronic display unit used on devices from watches to clinical laboratory instruments. It is very efficient and consumes little energy or power.

**liquor** (līk'ēr) [L.] **1.** Any liquid or fluid. **2.** An alcoholic beverage. **3.** A solution of medicinal substance in water.

**l. amnii** The amniotic fluid, a clear watery fluid that surrounds the fetus in the amniotic sac. SEE: *hydramnion*.

**l. folliculi** The fluid contained in the graafian follicle.

**l. sanguinis** Blood serum or plasma.

**Lisch nodule** (lish) [Karl Lisch, Ger. scientist, 1907–1999] A melanocytic ha-



martoma projecting from the surface of the iris of the eye. It is a well-defined, dome-shaped elevation that is clear to yellow or brown. These growths, which do not cause ophthalmological complications, may be seen without magnification, but examination with use of a slit lamp is needed to differentiate them from nevi of the iris. Lisch nodules are found only in patients with neurofibromatosis, type 1.

**Lisfranc's dislocation** (lis-frānks') [Jacques Lisfranc, Fr. surgeon, 1790–1847] A dislocation of the tarsometatarsal joints of the foot by direct or indirect mechanisms. Accompanying fracture is common.

**Lisfranc's ligament** The ligament joining the first cuneiform bone of the ankle to the second metatarsal.

**lisinopril** (li-sin'ō-pril) An angiotensin-converting enzyme inhibitor used, e.g., to treat high blood pressure and congestive heart failure.

**lisp** (lisp) [AS. *ulisp*, lipping] A substitution of sounds owing to a defect in speech, as of the "th" sounds of "thin" and "then" for "s" and "z."

**lissencephalous** (lis'sēn-sēf'ā-lūs) [Gr. *lissos*, smooth, + *enkephalos*, brain] Pert. to a condition in which the brain is smooth owing to failure of cerebral gyri to develop.

**lissotrichy** (lis-sōt'rī-kē) [" + *thrix*, hair] The condition of having straight hair.

**Lister, Lord Baron Joseph** (lis'tēr) British surgeon, 1827–1912, who developed the technique of antiseptic surgery, subsequently evolving into aseptic surgery, without which modern surgery would not be possible.

**Listeria** (li-stēr'ē-ā) A genus of gram-positive, non-spore-forming coccobacilli that may be found singly or in filaments. They are normal soil inhabitants.

**Listeria monocytogenes** The causative agent of listeriosis. This species lives in soil or the intestines of animals and may contaminate food, esp. milk or meat. Its growth is not inhibited by refrigeration.

**listeriosis, listeriosis** (lis-tēr'ē-ō'sis, lis'tēr-ō'sis) Infection with *Listeria monocytogenes*, which causes mild food poisoning in the healthy and severe systemic disease in immunosuppressed patients, older adults, pregnant women, fetuses, and neonates (during the first 3 weeks of life). The organism may be found in unpasteurized milk, unprocessed soft cheeses, processed foods (e.g., lunch meats) contaminated after production, or vegetables contaminated by soil or water containing the organism. Unlike other food-borne pathogens, *Listeria* grows in refrigerated food; it also grows on the walls of refrigerators and can infect other foods. The organ-

ism is destroyed by heat; therefore the risk of contracting listeriosis derives from consuming foods served cold or not heated to 158°F for at least 2 min. The Department of Agriculture recommends that people at risk for infection should not eat hot dogs, lunch meats, dried sausage, raw milk, and soft cheese (e.g., brie, blue cheese) or cheese made from raw milk. In pregnant women, *Listeria* infects the amniotic fluid and causes spontaneous abortion, stillbirth, or premature birth with lethal listeriosis; in immunosuppressed adults and neonates, it most commonly causes meningitis.

Person-to-person transmission is primarily in utero or during passage through an infected birth canal. Other modes of transmission include inhalation of contaminated dust; contact with infected animals, contaminated sewage, mud, or soil, or with feces containing the bacteria. Most often contact with *L. monocytogenes* results in a transient asymptomatic carrier state, but sometimes bacteremia and a generalized febrile illness is produced. Transplacental infections may cause abortion, premature delivery, stillbirth, or early neonatal death, though the pregnant woman herself may experience only mild illness.

**TREATMENT:** Ampicillin or penicillin G IV for 3 to 6 weeks is the treatment of choice, esp. since these drugs easily cross the blood-brain barrier to treat meningitis. Ampicillin plus ceftriaxone or cefotaxime or ampicillin plus an aminoglycoside also have proven effective against *Listeria* meningitis. Pregnant patients must be treated promptly and vigorously to manage fetal infection. If the patient is allergic to penicillin, then trimethoprim or sulfamethoxazole should be used. Dexamethasone may be given before antibiotic therapy to decrease cerebral edema.

**PATIENT CARE:** Public education is needed to inform pregnant women, older adults, people on immunosuppressive drug therapy, or those with HIV infection of the danger of ready-to-eat foods such as cold cuts and soft cheeses. Safe food handling techniques to minimize the risk of infection include washing hands well (at least 20 sec) when handling ready-to-eat cold foods, washing cutting boards and other utensils with hot soapy water before using them for another food, keeping uncooked foods separated from cooked foods, and washing all fruits and vegetables before eating, even those that come from a private garden.

**Listing's plane** [Johann Benedict Listing, Ger. physiologist, 1808–1882] A transverse vertical plane lying perpendicular to the anteroposterior axis of the eye

and containing the center of motion of the eyes. It also contains the transverse and vertical axes of voluntary ocular rotation.

**liter** (lē'tēr) [Fr. *litre*, liter] SI (metric) fluid measure; equivalent to 1000 ml, 270 fl drams, 61 cu in, 33.8 fl oz, or 1.0567 qt. The volume occupied by 1 kg of water at 4°C and 760 mm Hg pressure. SEE: *metric system*.

NOTE: It is common to define a liter as 1000 cc. This is not quite correct because 1 ml equals 1.000028 cc. Thus, liquid volume should be expressed in milliliters rather than in cubic centimeters.

**literate** Being able to read and write, and to use written language as in understanding graphs, charts, tables, maps, symbols, and formulas.

**lith-** SEE: *litho-*.

**lithectasy** (lith-ĕk'tă-sē) [Gr. *lithos*, stone, + *ektasis*, dilatation] The removal of a kidney stone from the bladder through the dilated urethra.

**lithectomy** (lith-ĕk'tō-mē) [" + *ektome*, excision] The surgical removal of a calculus.

**lithemia** (lith-ē'mē-ā) [" + *haima*, blood] An outdated term for hyperuricemia.

**lithiasis** (lith-ī'ă-sīs) Stone formation.

**lithium** (lith'ē-ūm) [Gr. *lithos*, stone] SYMB: Li. A metallic element; atomic weight 6.941; atomic number 3.

***l. carbonate*** A drug used to treat bipolar disorder. Given orally, it is readily absorbed and eliminated at a fast rate for 5 to 6 hr and much more slowly over the next 24 hr. SEE: *bipolar disorder*.

The dose is adjusted as needed to produce a plasma level of 0.8 mEq/L. When the dose has been found to produce the optimal plasma concentration, blood analysis is done every 3 months unless symptoms suggestive of toxicity are present. Plasma levels of 2 mEq/L or more cause serious toxic effects (e.g., stupor or coma, muscular rigidity, marked tremor, and, in some cases, epileptic seizure).

Side effects, including fatigue, weakness, fine tremor of the hands, nausea and vomiting, thirst, dry mouth, and polyuria, may be noticed in the first week of therapy. Most will disappear, but the thirst, polyuria, and tremor tend to persist. Dry mouth may be severe enough to promote dental decay.



Decreased dietary sodium intake lowers the excretion rate of lithium. It should not be administered to patients following a salt-free diet. The risk of toxicity is very high in patients with significant renal or cardiovascular disease, severe debilitation, dehydration, sodium depletion, or in patients receiving diuretics or nonsteroidal anti-inflammatory drugs. It is essential to monitor the blood

level of the drug in patients taking this therapy; samples should be taken 8 to 10 hr after the last dose and at intervals after medication.

**litho-, lith-** [Gr. *lithos*, stone] Combining forms meaning *stone* or *calculus*.

**lithocentesis** (lith'ō-sĕn-ō'sis) [" + *kenosis*, evacuation] The removal of crushed fragments of kidney stones from the bladder.

**lithoclast** (lith'ō-klăst) [" + *klastos*, broken] Forceps for breaking up large stones.

**lithoclasty** (lith'ō-klăst'ē) The crushing of a stone into fragments that may pass through natural channels.

**lithocystotomy** (lith'ō-sis-tōt'ō-mē) [" + *kystis*, bladder, + *tome*, incision] Incision of the bladder to remove a kidney stone.

**lithogenesis** (lith'ō-jĕn'ĕ-sis) [" + *genesis*, to produce] Formation of calculi.

**lithokelyphopedion** (lith'ō-kĕl'ī-fō-pĕ'dĕ-ōn) [" + *kelyphos*, sheath, + *paidion*, child] Calcification of both the fetus and the membranes of a lithopedion.

**lithokelyphos** (lith'ō-kĕl'ī-fōs) [" + *kelyphos*, sheath] A type of lithopedion in which only the membranes are calcified.

**litholabe** (lith'ō-lăb) [" + *lambanein*, to hold] A device for holding a stone during its removal.

**litholapaxy** (lith-ōl'ă-păks'ē) [Gr. *lithos*, stone, + *lapaxis*, evacuation] The operation of crushing a stone in the bladder followed by immediate washing out of the crushed fragments through a catheter. SEE: *percutaneous ultrasonic lithotripter*.

**lithology** (lith-ōl'ō-jĕ) [" + *logos*, word, reason] The science dealing with calculi.

**litholysis** (lith-ōl'ī-sis) [" + *lysis*, dissolution] Dissolving of stones.

**lithometer** (lith-ōm'ĕ-tēr) [" + *metron*, measure] An instrument for estimating the size of calculi.

**lithometra** (lith-ō-mĕ'tră) [" + *metra*, uterus] Uterine tissue ossification.

**lithonephrotomy** (lith'ō-nĕ-frōt'ō-mē) [" + *nephros*, kidney, + *tome*, incision] An incision of the kidney for removal of a kidney stone.

**lithopedion** (lith'ō-pĕ'dĕ-ōn) [" + *paidion*, child] A uterine or extrauterine fetus that has died and become calcified. SYN: *ostembryon*; *osteopedion*.

**lithotome** (lith'ō-tōm) [" + *tome*, incision] An instrument for performing lithotomy.

**lithotomy** (lith-ōt'ă-mē) [" + *tome*, incision] The incision of a duct or organ, esp. of the bladder, for removal of a stone. SEE: *lithotomy position*.

**PATIENT CARE:** Noninvasive measures and prescribed analgesic agents are provided to relieve pain. Fluid balance is monitored, and, unless other-

wise contraindicated by cardiac or renal status, fluid intake of 4 L/day is recommended to maintain a urine output of 3 to 4 L/day, which aids in the passage of small calculi (up to 5 mm in diameter) and prevents ascending infections. Supplemental IV fluids are provided if the patient is unable to tolerate the required volume by mouth. Vital signs and laboratory studies are monitored for signs of infection, and prescribed antibiotics are administered. The health care professional prepares the patient for lithotripsy or surgery, as indicated, by explaining postoperative equipment, care procedures, and expected sensations. Any incisions are assessed for drainage and healing; the character and amount of drainage are documented, usually via a ureteral catheter or nephrotomy tube (which should never be irrigated unless specifically prescribed). Using aseptic techniques, the health care professional protects surrounding skin from excoriation by redressing frequently. All urine is strained for evidence of stones, and any solid material is sent for analysis. Splinting the incision with a small pillow assists the patient to mobilize and to carry-out pulmonary hygiene. Based on laboratory analysis of the stone, treatments are prescribed to prevent recurrence.

**bilateral l.** A lithotomy performed with the incision across the perineum.

**high l.** A lithotomy performed through a suprapubic incision.

**lateral l.** A lithotomy performed with the incision from the front of the rectum to one side of the raphe.

**median l.** A lithotomy performed with the incision in the median line in front of the anus.

**rectal l.** A lithotomy performed through the rectum.

**vaginal l.** A lithotomy performed with the incision through the vaginal wall.

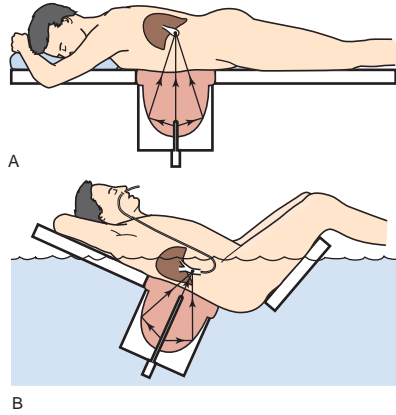
**lithotomy** (lith-ōt'ō-nē) [Gr. *lithos*, stone, + *teinein*, to stretch] The removal of a kidney stone through a small bladder incision that is instrumentally dilated.

**lithotresis** (lith'ō-trē'sis) [l' + *tresis*, boring] The drilling or boring of holes in a calculus to facilitate crushing. More recently, an ultrasonic probe is employed.

**lithotripsy** (lith'ō-trīp'sē) [l' + *tribein*, to rub] **1.** The use of sound waves to fragment or crush stones obstructing the bladder, gallbladder, ureter, or urinary bladder. **2.** The production of shock waves by use of an external energy source in order to crush renal stones.

**extracorporeal shock-wave l.** ABBR: ESWL. The fragmentation of kidney stones with an extracorporeal shock-wave lithotripter. **SEE:** *illus.*

**lithotriptic** (lith-ō-trīp'tik) **1.** Pert. to



### EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY

Shock waves are transmitted through water to break up gallstones. **A.** Position for stones in gallbladder. Patient is lying on a fluid-filled bag; **B.** Position for stones in common bile duct. Patient is in a water bath.

lithotripsy. **2.** An agent that dissolves stones.

**lithotripter** (lith'ō-trīp'tor) [l' + *tripsis*, friction] A device for breaking up kidney stones.

**electrohydraulic l.** An intracorporeal lithotripter (i.e., one that is inserted into a body cavity). This fluid-filled device uses electrically generated shock waves next to stones in order to fragment them.

**laser l.** A lithotripter that fragments stones by applying photothermal energy. An endoscope is inserted through the urethra into the bladder, ureter, or renal pelvis and is placed alongside the stone. Application of a laser causes the stone to break apart.

**percutaneous ultrasonic l.** A device that uses ultrasound to break up kidney stones and gallstones. The sound waves are applied to the outside of the body and penetrate to the calculi. **SEE:** *extracorporeal shock wave lithotripsy.*

**lithotripsy** (lith'ō-trīp-tōs'kō-pē) [l' + " + *skopein*, to examine] The crushing of a kidney stone under direct vision using a lithotripsy scope.

**lithotripsy** (lith'ō-trī-tē) The crushing of a kidney stone to small fragments in the bladder.

**lithoxiduria** (lith'ōks-i-dū-rē-ā) [l' + *L. oxidum*, oxide, + *Gr. ouron*, urine] The presence of xanthic oxide in the urine.

**litigation** (lit'i-gā'shūn) [*L. litigatio*, dispute, lawsuit] A lawsuit or legal action that determines the legal rights and remedies of the person or party.

**litmus** (lit'mūs) A blue dyestuff made by treating coarsely powdered lichens, such as those of the genus *Roccella*, with ammonia.

**I. paper** Chemically prepared blue paper that is turned red by acids and remains blue in alkali solutions; pH range is 4.5 to 8.5. SEE: *indicator*.

**litter** (lit'tēr) [O.Fr. *litiere*, offspring at birth, bed] **1.** A stretcher for carrying the wounded or the sick. **2.** The young produced at one birth by a multiparous mammal.

**litttritis** (lit-trī'tīs) An inflammation of the urethral glands.

**Litzmann's obliquity** (lits'mänz) [Karl K. T. Litzmann, Ger. gynecologist, 1815–1890] Posterior parietal presentation of the fetal head during labor. SYN: *posterior asynclitism*.

**lived experience** (livd) The subjective perception of one's experience of health or illness. Associated with Rosemarie Parse's Nursing Theory of Human becoming, it emphasizes the nurse's need to understand the personal health experience of patients, rather than to collect data from patients as objects. SEE: *Nursing Theory Appendix*.

**livido** (liv-ē'dō) [L. *livido*, lividness] A mottled staining of the skin, often blue or purple, as may be seen in a bruise. SEE: *lividity*.

**I. reticularis** Semipermanent bluish mottling of the skin of the legs and hands. It is aggravated by exposure to cold.

**liver** (liv'ēr) [AS. *lifer*] The largest solid organ in the body, situated on the right side below the diaphragm. The liver occupies the right hypochondrium, the epigastrium, and part of the left hypochondrium, and is level with the bottom of the sternum. Its undersurface is concave and covers the stomach, duodenum, hepatic flexure of colon, right kidney, and adrenal capsule. The liver secretes bile and is the site of numerous metabolic functions. SEE: *illus*.

**ANATOMY:** The liver has four lobes, five ligaments, and five fissures and is covered by a tough fibrous membrane, Glisson's capsule, which is thickest at the transverse fissure. At this point the capsule carries the blood vessels and hepatic duct, which enter the organ at the hilus. Strands of connective tissue originating from the capsule enter the liver parenchyma and form the supporting network of the organ and separate the functional units of the liver, the hepatic lobules.

The many intrahepatic bile ducts converge and anastomose, finally forming the secretory duct of the liver, the hepatic duct, which joins the cystic duct from the gallbladder to form the common bile duct or the ductus choledochus, which enters the duodenum at the

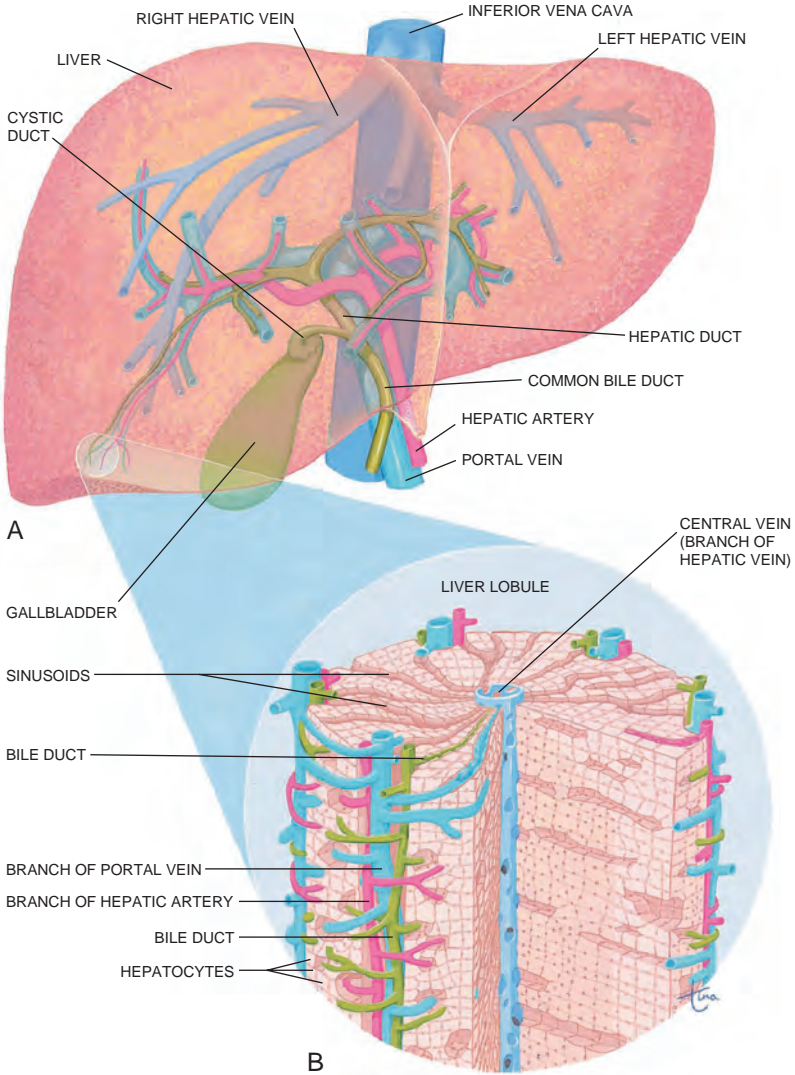
papilla of Vater. A ring of smooth muscle at the terminal portion of the choledochus, the sphincter of Oddi, permits the passage of bile into the duodenum by relaxing. The bile leaving the liver enters the gallbladder, where it undergoes concentration principally through loss of water absorbed by the gallbladder mucosa. When bile is needed in the small intestine for digestive purposes, the gallbladder contracts and the sphincter relaxes, thus permitting escape of the viscid gallbladder bile. Ordinarily, the sphincter of Oddi is contracted, shutting off the duodenal entrance and forcing the bile to enter the gallbladder after leaving the liver.

The functional units of the liver are the liver lobules, six-sided aggregations of hepatocytes permeated by capillaries called sinusoids. Lining these sinusoids are Kupffer cells, the macrophages of the liver.

**BLOOD SUPPLY:** The blood supply consists of oxygenated blood from the hepatic artery, a branch of the celiac artery, and blood from all the digestive organs and spleen by way of the portal vein. The end products of digestion and other materials thus pass through the liver before entering general circulation.

**NERVE SUPPLY:** The nerve supply consists of parasympathetic fibers from the vagi and sympathetic fibers from the celiac plexus via the hepatic nerve.

**FUNCTION:** The liver is one of the most metabolically active organs of the body. **Amino acid metabolism:** It synthesizes nonessential amino acids, deaminates excess amino acids for use in energy production, and forms urea, which the kidneys excrete. **Bile production:** It is responsible for the production of bile salts, which emulsify fats in the small intestine; 800 to 1000 ml of bile is secreted in 24 hr, and the secretion rate is increased greatly during digestion of meals rich in fats. **Carbohydrate metabolism:** It converts monosaccharides other than glucose to glucose, and stores excess glucose as the starch glycogen, until such energy is needed. **Detoxification:** It produces enzymes to metabolize potentially harmful substances found in the portal circulation (e.g., alcohol, ammonia, indole, many medications, and skatole) into less toxic ones. **Endocrine functions:** It facilitates the conversion of levothyroxine to the more metabolically active thyroid hormone, triiodothyronine. **Excretion:** It discharges the breakdown products of hemoglobin (bilirubin and biliverdin) into the bile; these are eliminated in feces. **Fat metabolism:** It synthesizes cholesterol as well as lipoproteins for the transport of fat to other body tissues; it converts fatty acids to acetyl groups or ketones, so they may be



(A) LIVER AND GALLBLADDER, (B) LOBULE

used as energy sources. *Phagocytosis*: Its macrophages (Kupffer cells) scavenge bacteria, other pathogens, and senescent red blood cells from the portal circulation. *Protein synthesis*: It manufactures albumin, alpha-globulins and beta-globulins, complement components, and clotting factors, some of which are dependent on vitamin K. *Storage*: It stores copper, iron, vitamin B<sub>12</sub>, and the fat-soluble vitamins A, D, E, and K.

**EXAMINATION**: The liver is examined by inspection, auscultation, percussion, and palpation. Inspection of the

organ includes indirect assessments (e.g., for jaundice [skin color], palmar erythema, and spider telangiectasias and other signs of chronic liver disease. Auscultation of the liver may reveal bruits associated with liver cancer; auscultation also is used to make a crude estimate of organ size. Percussion of the liver, which is performed in the right midclavicular line, provides another method for roughly estimating size. Palpation of the organ may reveal tenderness, irregular edges, masses, or tumors.

**abscess of l.** A localized collection of



pus in the liver caused by pathogenic organisms such as those of *Streptococcus* species; *Staphylococcus*; or *Entamoeba histolytica*.

**SYMPTOMS:** The patient will have high fevers; sweats and chills; and an enlarged, painful, tender liver, which may be bulging and fluctuating. Pus may be obtained by aspiration.

**PROGNOSIS:** Embolic (multiple) abscesses are generally fatal. Traumatic abscesses, or those due to an amebic dysentery, may terminate favorably after spontaneous or induced evacuation.

**amyloid l.** An enlargement of the liver caused by the deposition of amyloid proteins. SYN: *lardaceous liver*.

**SYMPTOMS:** The liver is enlarged, smooth, firm, and painless. Infiltration of other organs may cause kidney failure, intercerebral bleeding, heart failure, anemia, and other diseases and conditions.

**PROGNOSIS:** The prognosis is unfavorable.

**artificial l.** A biomechanical device typically combining a system of filters to remove toxins from the blood with hepatic cells or tissue. It is designed to support patients with hepatic failure temporarily until a donor liver becomes available for transplantation.

**biliary cirrhotic l.** Cirrhosis of the liver caused by fibrous tissue formed, as a result of infection or obstruction of the bile ducts.

**cancer of l.** Malignancy of the liver that results either from spread from a primary source or from primary tumor of the liver itself. The former is the more frequent cause. Male sex, hepatitis B or C, cirrhosis, and other liver diseases are predisposing factors. The liver is the most common site of metastatic spread of tumors that disseminate through the bloodstream. The prognosis for survival is from a few months to 1 yr.

**SYMPTOMS:** The disease may cause severe pain and tenderness; cachexia (i.e., loss of weight); and encephalopathy. Jaundice is common. The liver is enlarged, its surface is nodular, and a central depression or umbilications can often be detected.

**cirrhosis of l.** SEE: *cirrhosis*.

**cysts of l.** Simple cysts, usually small and single; hydatid cysts; or cysts associated with cystic disease of the liver, a rare condition usually associated with congenital cystic kidneys. SEE: *Echinococcus granulosus*; *hydatid*.

**fatty l.** Degenerative changes in liver cells owing to fat deposits in the cells.

**fibrous capsule of the l.** Glisson's capsule. SEE: under *Glisson, Francis*.

**l. flap** Asterixis.

**floating l.** An easily displaced liver. SYN: *wandering l.*

**foamy l.** The presence of gas bubbles

in the liver as a result of infection with anaerobic bacteria. This produces a honeycomb appearance in the liver tissue.

**hobnail l.** Degeneration of the liver characterized by fatty changes, fibrous scarring, nodular degeneration, and atrophy of the liver with the surface covered with brown or yellow nodules. This condition is seen in chronic alcoholism and malnutrition.

**inflammation of l.** Hepatitis.

**nutmeg l.** Chronic passive congestion of the liver, which produces a reddened central portal area and a yellowish periportal zone.

**shock l.** A colloquial term for injury to the liver resulting from insufficient blood flow, e.g., in patients who have suffered an episode of severe hypotension. A hallmark of this condition is a sudden and marked elevation in liver enzyme levels, such as alanine aminotransferase (ALT).

**l. spots** A popular term for pigmented skin discolorations, usually in yellow-brown patches. SEE: *Lentigo senilis*.

**wandering l.** Floating liver.

**liver function, risk for impaired** At risk for liver dysfunction. SEE: *Nursing Diagnoses Appendix*.

**liver function test** A blood test for a specific aspect of liver metabolism. Because of the diversity of liver functions and the disorders that may affect those functions, no single test provides a reliable measure of overall liver function. The ability to excrete bile pigments is measured by determining the serum bilirubin level; the levels of serum enzymes such as the aminotransferases aspartate and alanine may be used to assess damage to the liver cells and biliary tract obstruction or dysfunction. Levels of the serum proteins albumin and globulin and their ratio are used to judge the synthetic functions of the liver. Certain blood clotting factors are also synthesized in the liver, and abnormalities may indicate impairments in hepatic synthesis. Blood ammonia levels are elevated in some patients with either acute or chronic liver disease; marked elevations may suggest acute or chronic liver failure. SEE: *liver*.

**liver transplantation** The surgical implantation of a donor liver into a patient with end-stage liver disease, whether it is caused by alcoholic cirrhosis, chronic cholestatic diseases, chronic or fulminant hepatitis, or toxic liver destruction. Immunosuppressive drugs (such as cyclosporine) must be taken after the procedure to prevent rejection of the grafted organ. With optimal care, about 75% of grafted livers remain functional after 1 yr. Patients with human immunodeficiency virus or uncontrolled

systemic infections, metastatic cancer, active alcoholism, or other severe cardiac, pulmonary, or neurological illnesses are not candidates for the procedure. In the U.S. about 4000 liver transplants are performed annually.

**livid** (liv'íd) [L. *lividus*, lead-colored]  
**1.** Ashen, cyanotic. **2.** Discolored, black and blue.

**lividity** (lí-víd'í-tē) **1.** Skin discoloration, as from a bruise or venous congestion. SYN: *livor*. **2.** The state of being livid.

**postmortem I.** A dark blue staining of the dependent surface of a cadaver, resulting from the pooling and congestion of blood. SEE: *livor mortis*.

**living will** An advance directive, prepared when an individual is alive, competent, and able to make decisions, regarding that person's specific instructions about end-of-life care. Living wills allow people to specify whether they would want to be intubated, ventilated, treated with pressor drugs, shocked with electricity (to stop life-threatening heart rhythms), and fed or hydrated intravenously (if unable to take food or drink). Some also specify the person or persons who have power of attorney to make health care decisions on the patient's behalf, if the patient is no longer competent to make choices for himself or herself. SEE: *advance directive*.

**livor** (lí'vor) [L., a black-and-blue spot] Lividity (1).

**I. mortis** SYN: *Postmortem lividity*.

**lixiviation** (líks'iv-ē-á'shūn) [L. *lixivia*, lye] Leaching.

**LLE** *left lower extremity*.

**LLETZ** *large loop excision of the transformation zone*.

**LLQ** *left lower quadrant* (of abdomen).

**LMA** *left mentoanterior fetal position*. SEE: *presentation* for *illus*.

**LMP** *left mentoposterior fetal position; last menstrual period*. SEE: *presentation* for *illus*.

**LMT** *left mentotransverse fetal position*. SEE: *presentation* for *illus*.

**LOA** *left occipitoanterior fetal position*. SEE: *presentation* for *illus*.

**load** **1.** A weight supported or force imposed. **2.** A substance given to test body function, esp. metabolic function. SEE: *loading test*.

**glycemic I.** The glycemic index of a food multiplied by the its carbohydrate content (in grams) divided by 100.

**load-distributing band cardiopulmonary resuscitation** ABBR: LDB-CPR. An automated means of performing chest compressions during cardiopulmonary resuscitation, in which the thorax of the patient is wrapped in a compression belt that alternately squeezes the chest and allows it to return to its original shape.

**loading** The rapid or repeated adminis-

tration of a drug to quickly achieve a therapeutic level.

**loading, bicarbonate** The ingestion of sodium bicarbonate in an effort to neutralize excessive lactic acid produced in the muscles during exercise or to treat acidosis in chronic renal failure.

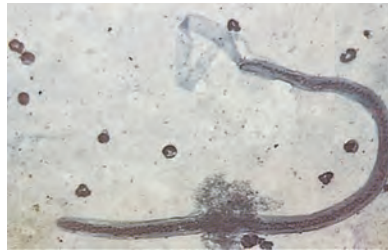
**loading, carbohydrate** SEE: *carbohydrate loading*.

**loading, glycogen** A dietary regimen used to fill the body's glycogen storage areas (i.e., the liver and muscles). SEE: *carbohydrate loading*.

**loading test** The administration of a substance to determine the individual's ability to metabolize or excrete it. Thus, a glucose tolerance test is one form of this test.

**loaiasis** (ló'á-í'sīs) Loiasis.

**Loa loa** (ló'á) [W. African] The African eyeworm, a species of filarial worm that infests the subcutaneous tissues and conjunctiva of humans. Its migration causes itching and a creeping sensation. Sometimes it causes itchy edematous areas known as Calabar swellings. It is transmitted by flies of the genus *Chrysops*. SEE: *illus*.



**LOA LOA IN BLOOD**

(Orig. mag. ×400)

**lobar** (ló'bār) [Gr. *lobos*, lobe] Pert. to a lobe.

**lobate** (ló'bāt) [L. *lobatus*, lobed]  
**1.** Pert. to a lobe. **2.** Having a deeply undulated border. **3.** Producing lobes.

**lobbying** Attempting to shape legislation, influence legislators, or mold public opinion.

**lobe** (lób) [Gr. *lobos*, lobe] **1.** A fairly well-defined part of an organ separated by boundaries, esp. glandular organs and the brain. **2.** A major part of a tooth formed by a separate calcification center.

**anterior I. of hypophysis** The anterior portion of the pituitary gland, consisting of the pars distalis and pars tuberalis.

**caudate I. of liver** The irregular quadrangular portion of liver behind the fissure for the portal vein and between the fissures for the vena cava and ductus venosus.

**central I.** The island of Reil, which

forms the floor of the lateral cerebral fossa.

**cerebellar lobe** One of the three major divisions of the cerebellum. The anterior lobe or paleocerebellum is largely concerned with coordinating posture and with the muscle tone of the trunk and limbs. The posterior lobe or neocerebellum is in a loop with the cerebral cortex and is concerned with muscle coordination and cybernetic adjustment of movements. The flocculonodular lobe or archicerebellum is part of the vestibular system and is concerned with balance.

**l. of cerebrum** The frontal, parietal, occipital, and temporal lobes and the insula or island of Reil (central lobe).

**flocculonodular l.** The lobe of the cerebellum consisting of the flocculi, nodulus, and their connecting peduncles.

**frontal l.** The anterior part of a cerebral hemisphere in front of the central fissure and above the lateral (Sylvian) fissure.

**hepatic l.** A lobe of the liver.

**limbic l.** The marginal section of a cerebral hemisphere on the medial aspect. SYN: *gyrus fornicatus*.

**l. of lungs** One of the large divisions of the lungs: superior and inferior lobes of the left lung; superior, middle, and inferior lobes of the right lung.

**l. of mammary gland** One of the 15 to 20 divisions of the glandular tissue of the breast separated by connective tissue and each possessing a duct (lobar duct) opening via the nipple.

**occipital l.** The posterior region of a cerebral hemisphere that is shaped like a three-sided pyramid.

**olfactory l.** The olfactory bulb and tract. SYN: *rhinencephalon*. SEE: *olfactory nerve* for illus.

**parietal l.** The division of each cerebral hemisphere lying beneath each parietal bone.

**posterior l. of hypophysis** The posterior portion of the pituitary gland, consisting of the pars intermedia and the processus infundibuli (pars nervosa).

**prefrontal l.** The frontal portion of the frontal lobe of the brain.

**pyramidal l. of thyroid** A portion of the thyroid gland extending upward from the isthmus. It is extremely variable in size.

**quadrate l. of liver** An oblong elevation on the lower surface of the liver.

**Riedel's l.** SEE: *Riedel's lobe*.

**temporal l.** The portion of the cerebral hemisphere lying below the lateral fissure of Sylvius. It is continuous posteriorly with the occipital lobe.

**lobectomy** (lō-bĕk'tō-mĕ) [Gr. *lobos*, lobe, + *ektome*, excision] The surgical removal of a lobe of any organ or gland.

**lobelia** Indian tobacco, also known collo-

quially as "puke weed." It is a perennial, flowering plant that is an expectorant and emetic. It has been used in complementary medicine as a treatment for asthma.

**lobeline** (lōb'ĕ-lĕn) The chief constituent of lobelia.

**lobi** (lō'bī) Pl. of lobus.

**lobitis** (lō-bī'tīs) [" + *itis*, inflammation] Inflammation of a lobe.

**lobo** Combining form meaning *lobe*.

**Loboa lobi** (lō-bō'ā lō'bī) Fungus that causes keloidal blastomycosis (lobomycosis). It has been identified in tissues but has not been cultured.

**Lobo's disease** (lō'bōz) [Jorge Lobo, 20th Cent. Brazilian physician] Lobomycosis.

**lobomycosis** (lō'bō-mī-kō'sis) ([*Lacazia*] lobi + "l") A fungal infection of the cutaneous and subcutaneous tissues in which nodules resembling keloids, plaques or warts form on the skin. It is caused by *Lacazia lobi* and typically found in tropical climes of South or Central America. Treatment is surgical. SYN: *Lobo's disease*.

**lobotomy** (lō-bōt'ō-mĕ) [Gr. *lobos*, lobe, + *tome*, incision] The incision of a lobe of the brain or the lung.

**Lobstein's disease** (lōb'stīnz) [John Georg Friedrich Lobstein, Ger. surgeon, 1777-1835] Osteogenesis imperfecta.

**lobular** (lōb'ū-lār) [L. *lobulus*, small lobe] Lobulate.

**lobular capillary hemangioma** The preferred term for the skin lesion that is more commonly referred to as a "pyogenic granuloma" or "proud flesh."

**lobulate, lobulated** (lōb'ū-lāt, -lāt-ĕd)  
**1.** Consisting of lobes or lobules. **2.** Pert. to lobes or lobules. **3.** Resembling lobes. SYN: *lobular*.

**lobule** (lōb'ūl) [L. *lobulus*, small lobe] A small lobe or primary subdivision of a lobe. It is typical of the pancreas and major salivary glands and may be represented on the surface by bumps or bulges as seen on the thyroid gland.

**l. of breast** Subdivisions of the lobes of the mammary glands. They are composed of multiple alveoli surrounding tiny ducts that secrete breast milk components. The lactiferous ducts are formed from the merging of the secretory ducts from several lobules.

**l. of kidney** Subdivision of the renal cortex consisting of a medullary ray and surrounding nephrons.

**l. of liver** A roughly hexagonal structure consisting of hepatic cells arranged in spoke-like plates around a central vein; sinusoids are between the cellular plates. At the periphery are branches of the hepatic artery, portal vein, and interlobular bile ducts.

**l. of lung** Physiological units of the lung consisting of a respiratory bronchiole and its branches (alveolar ducts, al-

veolar sacs, and alveoli). SYN: *primary pulmonary l.*

**paracentral l.** A cerebral convolution on the medial surface joining the upper terminations of the ascending parietal and frontal convolutions.

**parietal l.** One of two subdivisions of the parietal lobe of the brain. The superior parietal lobule is the posterior part of the upper portion, and the inferior parietal lobule is a lateral area continuous with temporal and occipital lobes.

**primary pulmonary l.** Lobules of lung.

**l. of testis** Pyramidal divisions separated from each other by incomplete partitions called septa. Each consists of one to three coiled seminiferous tubules.

**lobus** (lō'būs) *pl.* **lobi** [L.] Lobe.

**LOC** 1. *levels of consciousness.* 2. *loss of consciousness.*

**local** (lō'kāl) [L. *locus*, place] Limited to one place or part.

**localization** (lō-kāl-ī-zā'shūn) 1. Limitation to a definite area. 2. Determination of the site of an infection. 3. Relation of a sensation to its point of origin.

**cerebral l.** Determination of centers of various faculties and functions in particular parts of the brain.

**localized** (lō'kāl-īzd) Restricted to a limited region.

**localizer** (lō'kāl-ī-zēr) An apparatus used for finding foreign bodies or exact anatomical locations during radiography.

**local radiation injury** An acute radiation exposure involving a limited part of the body, esp. the hands, after picking up an unshielded radioactive element. The exposure usually results in delayed skin damage and frequently in underlying tissue injury. It may require local wound care, débridement, or in some instances amputation.

**local reaction** A reaction occurring at the point of stimulation or injection of foreign substances.

**locator** (lō'kā-tēr) A device for locating or discovering an object such as a foreign body.

**lochia** (lō'kē-ā) [Gr. *lochía*] The puerperal discharge of blood, mucus, and tissue from the uterus. The character of the discharge progresses through three stages as the normal autolytic healing process proceeds: 1) *lochia rubra* or *cruenta*: For the first 2 to 4 days, the discharge is distinctly blood-tinged. 2) *lochia serosa*: Between days 7 and 10, the woman usually exhibits a serous pink discharge. 3) *lochia alba* or *purulenta*: On or about the 10th postpartum day, the discharge becomes white. An offensive odor indicates contamination by saprophytic organisms. **lochial** (-āl), *adj.*

**l. alba** The white postpartum vaginal discharge that is no longer blood-tinged. SYN: *l. purulenta*.

**l. cruenta** The bloody postpartum vaginal discharge. SYN: *l. rubra*.

**l. purulenta** Lochia alba.

**l. rubra** Lochia cruenta.

**l. serosa** A thin, watery postpartum vaginal discharge.

**lochiometra** (lō'kē-ō-mē'trā) [l' + *metra*, uterus] Retention of lochia in the uterus.

**lochiometritis** (lō'kē-ō-mē-trī'tīs) [l' + itis, inflammation] Puerperal inflammation of the uterus.

**lochiorrhagia** (lō'kē-ō-rā'jē-ā) [l' + *rhegnynai*, to break forth] Excessive flow of lochia.

**lochiorrhea** (lō'kē-ō-rē-ā) [l' + *rhoia*, flow] Abnormal flow of lochia.

**lochioschesis** (lō'kē-ōs'kē-sīs) [l' + *schesis*, retention] Retention or suppression of the lochia.

**loci** [L.] Pl. of locus.

**lock, saline** An intravenous portal, usually placed and left in a vein in one of the patient's arms, that is used episodically for fluid or medication infusions. Salt water flushes are used to maintain its patency. Saline locks replaced heparin locks in the 1990s because of cost and efficacy, and the latter posed a rare but unacceptable risk of heparin-related allergies (esp. heparin-related thrombocytopenia).

**locked-in state** A paralytic condition, superficially resembling coma, in which a person has no voluntary control over somatic muscles but nonetheless remains awake and alert. The locked-in state is usually the result of a lesion of the brainstem, esp. the pons. Because in some patients eye blinking is preserved, communication with locked-in patients is occasionally possible. SYN: *locked-in syndrome*. SEE: *akinetic mutism*.

**locked-in syndrome** Locked-in state.

**Locke's solution, Locke-Ringer's solution** (lōks) [Frank S. Locke, Brit. physician, 1871–1949; Sydney Ringer, Brit. physiologist, 1835–1910] A solution used in experiments in physiology. It contains sodium, potassium, calcium, and magnesium chlorides; sodium bicarbonate, dextrose, and water.

**lockjaw** (lōk'jāw) Tonic spasm of muscles of jaw. SEE: *tetanus*; *trismus*.

**locomotion** (lō'kō-mō'shūn) [L. *locus*, place, + *movere*, to move] Movement or the capacity to move from one place to another.

**locomotor** (lō'kō-mō'tor) Pert. to locomotion.

**locoweed** (lō'kō-wēd) A poisonous plant from the bean family that causes behavioral, visual, and gait disturbances, usually in cattle.

**ocular** (lōk'ū-lār) [L. *oculus*, a small space] Loculated.

**loculated** (lōk'ū-lāt-ēd) Containing or divided into loculi.

**loculus** (lök'ū-lüs) *pl. loculi* [L.] A small space or cavity.

**locum tenens** (lō'kūm tēn'ēns) [L. *locus*, place, + *tenere*, to hold] A substitute; a physician who temporarily substitutes for another.

**locus** (lō'kūs) *pl. loci* [L. *locus*, a place] 1. A spot or place. 2. In genetics, the site of a gene on a chromosome.

**I. ceruleus** A central nervous system nucleus on either side of the midline under the fourth ventricle in the pontine part of the brainstem. This small nucleus contains pigmented neurons that send noradrenergic axons unusually widely, throughout the brain, and may play a key role in broad cortical activation from the reticular formation of the brainstem.

**I. of control** A term used in reference to an individual's sense of mastery or control over events. Persons with an internal locus of control are more apt to believe that they can influence events, whereas those with an external locus of control tend to believe that events are dictated by fate. These respective orientations can influence a person's practice of health-related behaviors.

**LOD** Limit of detection.

**Loeffler's bacillus** (lēf'lērz) [Friedrich August Johannes Loeffler (Löffler), Ger. bacteriologist, 1852–1915] *Corynebacterium diphtheriae*.

**Löffler's endocarditis** (lēf'lērz) [Wilhelm Löffler, Swiss physician, 1887–1972] Endocarditis associated with hyper eosinophilia and fibroplastic thickening of the endocardium.

**Löfgren's syndrome** (lēf'grēnz, löf') A type of sarcoidosis characterized by extensive involvement of hilar lymph nodes, erythema nodosum, and joint pains, esp. around the ankles. The syndrome has a better prognosis than other forms of sarcoidosis.

**log** A continuously kept record of important events, such as medical records or progress notes.

**-log** [Gr. *logos*, word, reason] Combining form meaning *words* or *speech*.

**logagnosia** (lōg'äg-nō'sē-ä) [Gr. *logos*, word, reason, + *a-*, not, + *gnosis*, knowledge] A type of aphasia in which words are seen but not identified with respect to their meaning. SEE: *aphasia*.

**logagraphia** (lōg'ä-gräf'ē-ä) [" + " + *graphein*, to write] Agraphia.

**logamnesia** (lōg'am-nē'zē-ä) [" + *amnesia*, forgetfulness] Inability to recognize or make sense of spoken or written words.

**logaphasia** (lōg'ä-fä'zē-ä) [" + *a-*, not, + *phasis*, speaking] Motor aphasia, usually the result of a cerebral lesion.

**logasthenia** (lōg'äs-thē'nē-ä) [" + " + *sthenos*, strength] Inability to understand the spoken word.

**log book** A diary; a register of important

names, places, dates, or other practical and useful information.

**logoklony** (lōg'ō-klōn-ē) [" + *klonein*, to agitate] Intermittent repetition of the last syllable of a word.

**logokophsis** (lōg'ō-kō-fō'sis) [" + *kophsis*, deafness] Wernicke's aphasia.

**logopathia** (lōg'ō-pāth'ē-ä) [" + *pathos*, disease, suffering] Any disorder of speech arising from derangement of the central nervous system.

**logoplegia** (lōg'ō-plē'jē-ä) [" + *plege*, stroke] Paralysis of the speech organs.

**logorrhea** (lōg'ō-rē'ä) [" + *rhoia*, flow] Repetitious, continuous and excessive speech. It may be a symptom of mania or some forms of intoxication.

**logospasm** (lōg'ō-spāzm) [" + *spasmos*, a convulsion] Spasmodic word enunciation.

**log phase** (lōg) [From *log(arithm)*] That portion of the bacterial growth curve at which bacteria are reproducing at an exponential rate.

**-logy** [Gr. *logos*, word, reason] Combining form used as a suffix meaning *science* or *study of*. SEE: *-ology*.

**loiasis** (lō-ī'ä-sis) Infection with the African eyeworm, *Loa loa*. SYN: *Loiasis*. SEE: *Loa loa* for illus.

**loin** (loyn) [O.Fr. *loigne*, long part] The lower part of the back and sides between the ribs and pelvis. SEE: *lumbus*.

**loneliness** The anxious, depressed, or dysphoric mood that occurs as a result of physical or psychic isolation.

**risk for I.** The risk for experiencing discomfort associated with a desire or need for more contact with others. SEE: *Nursing Diagnoses Appendix*.

**long-acting thyroid stimulator** ABBR: LATS. An IgG autoantibody that binds to the thyroid-stimulating hormone receptor, stimulating the excessive production of thyroid hormones and causing hyperthyroidism. This immunoglobulin is found in the blood of about 75% of patients with Graves' disease but is used rarely for diagnostic purposes, because the diagnosis usually can be established on clinical grounds, i.e., on finding a patient with hyperthyroidism with a diffuse, nontender goiter, exophthalmos, and/or pretibial myxedema.

**longevity** (lōn-jēv'ī-tē) [*longaevus*, aged] Long duration of life.

**longing** A persistent desire or craving for something, usually that which is remote or unattainable.

**longissimus** (lōn-jis'ī-mūs) [L.] An anatomical term indicating a long structure.

**longitudinal** (lōn'jī-tū'dī-nāl) [L. *longitudo*, length] Parallel to the long axis of the body or part.

**longsightedness** (lōng'sīt'ēd-nēs) Hyperopia.

**longus** (lōng'gūs) [L.] An anatomical term indicating a long structure.



**look-alike/sound-alike drugs** Medications with drug names that look similar in print or sound similar to other drugs when their names are spoken. Such agents carry a significant risk of being administered improperly, esp. when exchanged for one another.

**lookback** A colloquial term for retrospective research, that is, for any investigation that attempts to review the underlying causes of an event.

**loop** [ME. *loupe*] A curve or bend in a cord or cordlike structure, forming roughly an oval.

**l. of capillary** Minute blood vessels in the papillae of the dermis.

**cervical l.** The part of an enamel organ in which the inner enamel epithelium is continuous with the outer enamel epithelium. This establishes the limit of enamel formation and therefore represents the site of the cemento-enamel junction. The cells of the cervical loop become Hertwig's epithelial root sheath, induce dentinogenesis, and determine the number, size, and shape of the tooth roots.

**closed l.** 1. A biological system in which a substance produced affects the output of the substance by a feedback mechanism. 2. In the learning of motor skills, the process of using sensory feedback to modify fine motor control or skilled movements.

**flow-volume l.** A graphic record of lung function in which the amount of gas inhaled and exhaled is recorded on the horizontal axis and the rate at which the gas moves on the vertical axis. It is used to detect abnormalities in pulmonary function such as those accompanying restrictive or obstructive lung disease.

**Henle's l.** SEE: under *Henle, Friedrich G.J.*

**Lippes l.** SEE: *Lippes loop.*

**loop electrosurgical excision procedure** ABBR: LEEP. A technique for resecting abnormal tissue of the cervix. An electrical current is passed through a thin wire loop that acts as a scalpel, removing a thin layer of tissue suitable for histological evaluation.

**loose body** A fragment of bone or cartilage within the joint of a patient with severe degenerative or neuropathic arthritis.

**loosening** (loo's'in-ing) 1. Loss of linkage with or fixation to another structure. 2. In speech, loss of connection to the usual rules of grammar, diction, or reason.

**loosening of association** A sign of disordered thought processes in which the person speaks with frequent changes of subject, and the content is only obliquely related, if at all, to the subject matter. This may be seen in mania or schizophrenia.

**LOP** *left occipitoposterior* fetal position. SEE: *presentation for illus.*

**lophotrichous** (lōf-ōt'ri-kūs) Having bunches of flagella at one end.

**LOQ** *limit of quantitation.*

**lorazepam** (lō-rā'zē-pam) A relatively short-acting benzodiazepine used to treat anxiety, insomnia, seizures, and alcohol withdrawal.

**lordoscoliosis** (lor'dō-skō'lē-ō'sis) [Gr. *lordosis*, bending, + *skoliosis*, curvation] Forward curvation of the spine complicated by lateral curvature.

**lordosis** (lor-dō'sis) [Gr.] Abnormal anterior convexity of the lumbar spine.

**Lorenzo's oil** (lō-rēn'zōz) A mixture of two fats (glyceryl-trioleate and glyceryl-trierucate) used to treat neurological disorders, including adrenoleukodystrophy.

**losartan** (lō-sār'tān) An antihypertensive and angiotensin II receptor antagonist, administered orally to manage hypertension. SYN: *Cozaar.*

**loss** 1. The basis of claim on the part of a party to a lawsuit or an insurance carrier. 2. Destruction, degeneration, or the wasting of cells, tissues, organs, or capabilities.

**insensible l.** A loss of body fluid that is not easily measured (e.g., the moisture released in exhalation and perspiration).

**sensible l.** A measurable loss of body fluid (e.g., blood, diarrhea, urine, vomit). If sensible losses consistently exceed fluid intake, dehydration may result.

**loss, bone** Osteoporosis.

**loss of consciousness** Syncope.

**lost to follow-up** In clinical medicine and research, a person who has not returned for continued care or evaluation (e.g., because of death, disability, relocation, or drop-out).

**LOT** *left occipitotransverse* fetal position. SEE: *presentation for illus.*

**Lotensin** SEE: *benazepril.*

**lotion** (lō'shūn) [L. *lotio*] A liquid medicinal preparation for local application to, or bathing of, a part.

**lot number** An identifier assigned to a batch of medications. It facilitates drug manufacturing inventory control and tracing adverse incidents in a batch of contaminated medications.

**LOTR** *Licensed Occupational Therapist.*

**loudness** The perceived intensity of sound. It often reflects the amplitude and frequency of a sonic stimulus, but because it varies from person to person, it is a subjective, rather than a purely measurable entity. SEE: *decibel.*

**Louis-Bar syndrome** (loo-wē'bār) [Denise Louis-Bar, 20th century Belgian neuropathologist] Ataxia-telangiectasia.

**loupe** (loop) [Fr.] A magnifying lens

used in the form of a monocular or binocular lens. Surgeons, dentists, jewelers, and watchmakers frequently use this device.

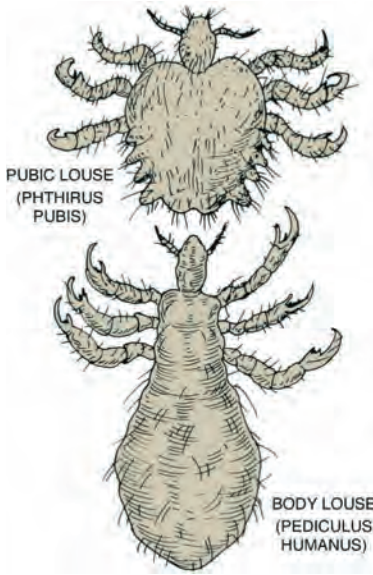
**louse** [AS. *lus*] Pediculus.

**body l.** *Pediculus humanus corporis*.

**crab l.** *Phthirus inguinalis* and *Phthirus pubis*; the louse that infests the pubic region and other hairy areas of the body. SEE: *pediculosis*.

**head l.** *Pediculus humanus capitis*.

SEE: *illus.*



LOUSE

**love** [ME.] 1. Profound concern and affection for another person. 2. In psychoanalysis, love may be equated with pleasure, particularly as it applies to the gratifying sexual experiences between individuals.

**Löven's reflex** (lō-vānz') [Otto Christian Loven, Swed. physician, 1835–1904] Vasodilation with a corresponding increase in blood pressure in an organ, resulting from stimulation of an afferent nerve.

**low birth weight** SEE: under *weight*.

**low-energy emission therapy** ABBR: LEET. An alternative treatment for sleep disorders in which the oral mucosa is stimulated by low-wattage electromagnetic fields.

**low intensity laser therapy** Any of several lasers that cause photochemical changes in body tissues without producing thermal changes.

**low-level radiation** SEE: *radiation*, *low-level*.

**lox** (lōks) *liquid oxygen*.

**loxarthron** (lōks-ār'thrōn) [Gr. *loxos*,

slanting, + *arthron*, joint] Oblique deformity of a joint without dislocation.

**loxia** (lōks'ē-ā) [Gr., slanting] Torticol-

lis.

**Loxosceles** (lōks-ōs'sē-lēz) A genus of spiders, family Loxoscelidae, which includes the brown recluse spider.

**loxoscelism** (lōk-sōs'sē-lizm) The disease produced by the bite of the brown recluse spider, *Loxosceles laeta* or *L. reclusa*. Symptoms include a painful red vesicle that eventually becomes necrotic, leaving a skin ulcer. Rarely, the spider bite may produce hemolytic anemia or renal failure.

**loxotomy** (lōks-ōt'ō-mē) [l' + *tome*, incision] Amputation by oblique section.

**lozenge** (lōz'ēnj) [Fr.] A small, dry, medicinal solid to be held in the mouth until it dissolves. SYN: *troche*.

**zinc gluconate l., zinc gluconate glycine** A dietary supplement marketed as a means of diminishing the duration of symptoms of the common cold (e.g., sore throat, nasal congestion). It is also used to alleviate stomach upset. Large doses may cause nausea or vomiting. It has a bitter, metallic taste.

**Lp(a)** *lipoprotein (a)*.  
**L-phase variants** L-forms.  
**LPO** *left posterior oblique position*.  
**Lr** Symbol for the element lawrencium.  
**LRF** *luteinizing hormone releasing factor*.  
**LSA** *left sacroanterior fetal position*. SEE: *presentation for illus*.  
**LScA** *left scapuloanterior fetal position*. SEE: *presentation for illus*.  
**LScP** *left scapuloposterior fetal position*. SEE: *presentation for illus*.  
**LSD** *lysergic acid diethylamide*.  
**LSI** *life satisfaction index*.  
**LSP** *left sacroposterior fetal position*.  
**L/S ratio** *lecithin/sphingomyelin ratio*.  
**LST** *left sacrotransverse fetal position*.  
**LTBI** An abbreviation for *latent tuberculosis infection*. Active tuberculosis may emerge in patients who have latent (inactive) infections when their immune systems fail, either because of malnutrition, or because they contract other co-morbid diseases. A goal of worldwide public health institutions is the eradication of latent tuberculosis infection from the more than 2 billion infected persons around the globe.

**LTC** *long-term care*.

**LTH** *luteotropic hormone*. SEE: under *hormone*.

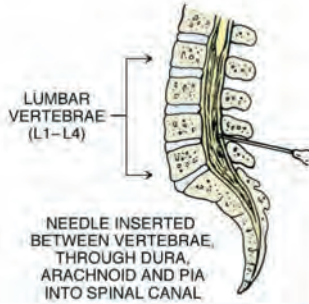
**Lu** Symbol for the element lutetium.

**lubb-dupp** (lūb-dūp') The two sounds heard in auscultation of the heart technically referred to as S<sub>1</sub> ("lubb") and S<sub>2</sub> ("dupp"). The pause following the sounds is slightly longer than that between the two sounds. SEE: *auscultation*.

**lubricant** (loo'brī-kānt) [L. *lubricans*] An agent, usually a liquid oil, that reduces friction between parts that brush



NEEDLE INSERTED WITH PATIENT IN UPRIGHT POSITION WITH HEAD AND SPINE BENT FORWARD



LUMBAR VERTEBRAE (L1-L4)  
NEEDLE INSERTED BETWEEN VERTEBRAE, THROUGH DURA, ARACHNOID AND PIA INTO SPINAL CANAL



NEEDLE INSERTED WHILE PATIENT IS ON FIRM SURFACE AND WITH HEAD AND SPINE BENT FORWARD

LUMBAR PUNCTURE

against each other as they move. Joints are lubricated by synovial fluid.

**lucent** (loo'sént) [L. *lucere*, to shine] Shining, translucent, clear.

**lucid** (lū'sid) [L. *lucidus*, clear] Clear, esp. applied to clarity of the mind.  
*l. interval* SEE: under *interval*.

**lucidity** (lū-sid'ī-tē) The quality of clearness or brightness, esp. with regard to mental conditions.

**luciferase** (loo-sif'ēr-ās) An enzyme that acts on luciferins to oxidize them and cause bioluminescence. It is present in certain organisms (e.g., fireflies, other insects) that emit light either continuously or intermittently.

**luciferin** (loo-sif'ēr-in) The general term for substances present in some organisms, which become luminescent when acted on by luciferase.

**lucifugal** (loo-sif'ū-gāl) [L. *lux*, light, + *fugere*, to flee from] Repelled by bright light.

**Lucilia sericata** (loo-sīl'ē-ā sēr-ī-kāt'ā) [NL] The sheep blowfly, also known as the *green bottlefly*. It is a cause of myiasis in humans. Sterile maggots of this species are necrophagous and have been used to debride wound infections.

**lucipetal** (loo-sīp'ī-tāl) [ʹ + *peter*, to seek] Attracted by bright light.

**Ludwig's angina** (lūd'vīgz) [Wilhelm F. von Ludwig, Ger. surgeon, 1790–1865] A suppurative inflammation of subcutaneous connective tissue adjacent to a submaxillary gland.

**L.U.E.** *left upper extremity*.

**lues** (lū'ēz) [L.] Syphilis.

**luetic** (lū-ēt'ik) Syphilitic.

**Lugol's solution** (lū'gōlz) [Jean G. A. Lugol, Fr. physician, 1786–1851] A strong iodine solution used in iodine therapy, consisting of iodine 5 g, potassium iodide 10 g, and water to make 100 ml.

**LUL** *left upper lobe* (of the lung).

**lumbago** (lūm-bā'gō) [L. *lumbus*, loin] A general nonspecific term for dull, aching pain in the lumbar region of the back. SYN: *lumbodynia*.

**lumbar** (lūm'bār) [L. *lumbus*, loin] Pert. to the loins (the part of the back between the thorax and pelvis).

**l. puncture** Gaining entry into the subarachnoid space of the meningeal sac below the end of the spinal cord, usually at the level of the fourth intervertebral space with a hollow needle. This procedure is done to obtain cerebrospinal fluid (CSF) for analysis (e.g., in the diagnosis of severe headache or in suspected central nervous system infection or bleeding); to administer drugs to the brain or spinal cord (e.g., anesthetics or chemotherapeutic agents); or to relieve the CSF of excess pressure or fluid (e.g., in pseudotumor cerebri). SYN: *puncture, spinal Quincke's puncture*. SEE: *illus.; cisternal puncture; headache; Queckenstedt's sign*.



Postprocedure headache occurs in about half of all patients who undergo lumbar puncture. Rarely reported



### LUMBAR PUNCTURE

complications of the procedure include cerebral herniation, epidural infection, epidural bleeding, paraparesis, and subdural bleeding.

**PROCEDURE:** Informed consent for the procedure is obtained, except in dire emergencies, when clinical judgment prevails. Appropriate equipment is gathered: sterile gloves and mask for the operator, skin antiseptic (povidine-iodine solution), local anesthetic (1% lidocaine), and a lumbar puncture tray containing sterile gauze sponges, fenestrated drape and towel, needles and syringe for anesthesia, spinal needles, 4 collection tubes, 3-way stopcock and manometer; and a small adhesive bandage.

The procedure and expected sensations are explained, and the patient is asked to remain still when positioned and to breathe normally. The patient is typically placed on his left side at the right edge of the bed or examining table with knees drawn up to the abdomen and chin down to the chest; or in a sitting position with legs over one side of the table and buttocks at the other, bending head and chest toward the knees. Either of these positions exposes the back to the operator and provides spinal flexion, allowing easy access to the lumbar subarachnoid space. The assisting nurse holds the patient appropriately to secure this position (one arm around the neck, the other around the knees, or holding both shoulders bent forward). Draping provides warmth and

privacy. Next, the patient's skin is prepared with antiseptic solution and a sterile fenestrated barrier placed over the proposed puncture site. Local anesthetic is injected, and then the spinal needle, with its stylet in place, is slowly advanced between the vertebra to and through the dura and arachnoid membranes. The stylet that fills the needle is removed and initial measurements are made of the opening intracranial pressure (ICP) with a manometer. When the procedure is performed for diagnosis, about 8 to 10 ml of fluid are collected and sent promptly to the clinical laboratory for analysis of cell count, glucose, protein levels, cultures stains and special studies. The closing pressure should then be read, the needle removed, and a small impervious adhesive dressing applied, sometimes with collodion to prevent CSF leakage. **SEE: illus.**

**COMPLICATIONS:** Pain at the puncture site, infection, bleeding, neurological injury, death, and post-spinal tap headaches are all potential complications. Of these, postural headache, caused by chronic leakage from the puncture site, is the complication most often brought to the attention of health care professionals. It may be treated with the injection of a small amount of the patient's own blood epidurally, to form a "blood patch." **SEE: fluid, cerebrospinal.**

**PATIENT CARE:** The nurse assists the operator as necessary throughout the procedure by numbering and cap-



ping specimen tubes for laboratory examination and by applying jugular vein pressure as directed. Reassurance and direction are provided to the patient throughout the procedure, and the patient is assessed for adverse reactions (elevated pulse rate, pain radiating into the limbs, pallor, clammy skin, or respiratory distress).

After the procedure, the nurse assesses vital signs and neurological status, particularly observing for signs of paralysis, weakness, or loss of sensation in the lower extremities. If CSF pressure is elevated, the patient's neurological status should be assessed every 15 min for 4 hr, if normal, every hour for 2 hr, then every 4 hr or as ordered. The puncture site should be checked hourly for 4 hr, then every 4 hr for 24 hr, assessing for redness, swelling, and drainage. To decrease the chance of headache, oral intake (for spinal fluid replacement and equalization of pressures) is encouraged, and the patient should remain in bed in a supine position or with the head elevated no more than 30° for 4 to 24 hr (per operator or institutional protocol). The patient should not lift his head but can move it (and himself) from side to side. Noninvasive pain relief measures and prescribed analgesia are provided if headache occurs.

**l. region** That area of the abdominal surface lateral to the umbilical region, above the iliac region, and below the hypochondriac region.

**lumbarization** (lŭm'bār-ī-zā'shŭn) Nonfusion of the first sacral vertebra with the sacrum, therefore functioning as an additional (sixth) lumbar vertebra.

**lumbo-** [L. *lumbus*, loin] Combining form meaning *loins*.

**lumbocostostomy** (lŭm'bō-kō-lōs'tō-mē) [" + Gr. *kolon*, colon, + *stoma*, mouth] Colostomy by lumbar incision.

**lumbocostal** (lŭm'bō-kōs'tāl) [" + *costa*, rib] Relating to the loins and ribs.

**lumbodynia** (lŭm'bō-dīn'ē-ă) [" + Gr. *odyne*, pain] Lumbago.

**lumbosacral** (lŭm'bō-sā'krāl) Pert. to the lumbar vertebrae and the sacrum.

**lumbrical** (lŭm'brī-kāl) [L. *lumbricus*, earthworm] Vermiform.

**lumbricalis** (lŭm'brī-kāl'is) One of the worm-shaped muscles of the hand or foot.

**lumbricide** (lŭm'brī-sīd) [" + *caedere*, to kill] An agent that kills lumbricoid worms (i.e., ascarides or intestinal worms).

**lumbricosis** (lŭm'brī-kō'sīs) [" + Gr. *osis*, condition] The state of being infested with lumbricoid worms.

**Lumbricus** (lŭm-brī'kŭs) A genus of worms that includes earthworms.

**lumbricus** (lŭm-brī'kŭs) 1. An obsolete

name for *Ascaris lumbricoides*. 2. An earthworm.

**lumen** (lŭ'mĕn) *pl.* **lumina** [L., light]

1. The space within an artery, vein, intestine, or tube. 2. A unit of light, the amount of light emitted in a unit solid angle by a uniform point source of one international candle. SEE: *light unit*; *candela*.

**luminal** (lŭ'mī-nāl) Relating to the lumen of a tubular structure, such as a blood vessel.

**luminescence** (loo'mī-nĕs'ĕns) 1. Production of light without production of heat. SEE: *bioluminescence*. 2. In radiology, the light produced by a fluorescent phosphor when exposed to radiation.

**luminiferous** (loo'mī-nīf'ĕr-ŭs) [L. *lumen*, light, + *ferre*, to bear] Producing or conveying light.

**luminometer** (loo-mīn-ŏm'ĕ-tĕr) A luminescence photometer used to assay chemiluminescent and bioluminescent reactions. It is used clinically to assay for bacteria and living cells.

**luminophore** (loo'mī-nŏ-for'ŏ) [" + Gr. *phoros*, bearing] A chemical present in organic compounds that permits luminescence of those compounds.

**luminous** (loo'mī-nŭs) Emitting light.

**lumirhodopsin** (loo'mī-rŏ-dŏp'sin) A chemical in the retina of the eye, intermediate between rhodopsin and all-trans-retinal plus opsin, formed during the bleaching of rhodopsin by exposure to light.

**lumpectomy** (lŭm-pĕk'tŏ-mĕ) [*lump* + Gr. *ektome*, excision] Surgical removal of a tumor from the breast, esp. to remove only the tumor and no other tissue or lymph nodes.

**lunar** (loo'n'ĕr) Pert. to the moon, a month, or silver.

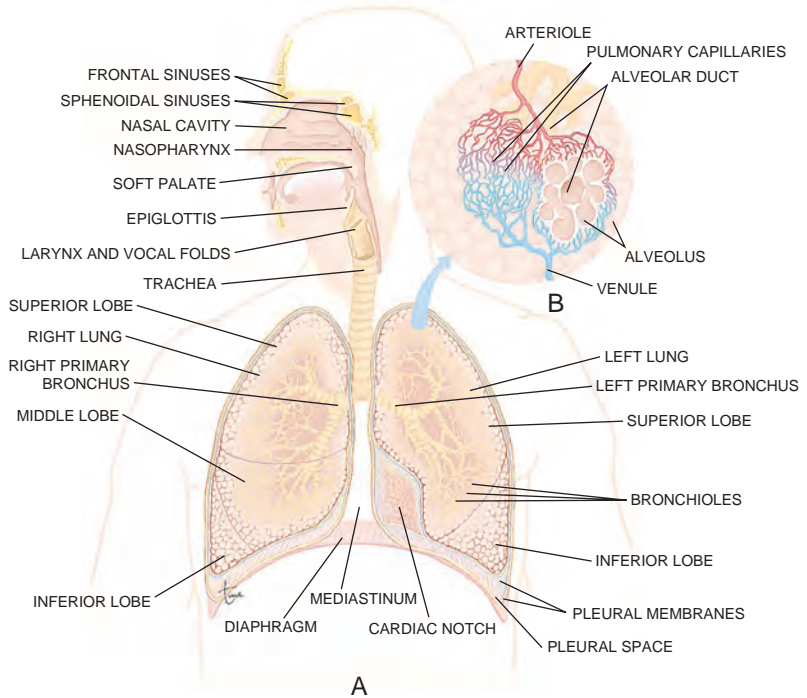
**lunate** (loo-nāt) 1. Moon-shaped or crescent. 2. A bone in the proximal row of the carpus. SYN: *semilunar bone*.

**lung** (lŭng) [AS. *lungen*] One of two cone-shaped spongy organs of respiration contained within the pleural cavity of the thorax. SEE: *illus.*; *alveolus* for *illus.*

**ANATOMY:** The lungs are connected with the pharynx through the trachea and larynx. The base of each lung rests on the diaphragm, and each lung apex rises from 2.5 to 5 cm above the sternal end of the first rib, the collarbone, supported by its attachment to the hilum or root structures. The lungs include the lobes, lobules, bronchi, bronchioles, alveoli or air sacs, and pleural covering.

The right lung has three lobes and the left two. In men, the right lung weighs approx. 625 g, the left 570 g. The lungs contain 300,000,000 alveoli and their respiratory surface is about 70 sq m. Respirations per minute are 12 to 20 in an adult. The total capacity of the lung





## LUNGS

(A) anterior view of upper and lower respiratory tracts, (B) alveoli and pulmonary capillaries

varies from 3.6 to 9.4 L in men and 2.5 to 6.9 L in women.

The left lung has an indentation, called the cardiac depression, for the normal placement of the heart. Behind this is the hilum, through which the blood vessels, lymphatics, and bronchi enter and leave the lung.

Air travels from the nasal passages to the pharynx, larynx, and trachea. Two primary bronchi, one on each side, extend from the trachea. The primary bronchi divide into secondary bronchi, one for each of five lobes. These further divide into a great number of smaller bronchioles. The pattern of distribution of these into the segments of each lobe is important in pulmonary and thoracic surgery. There are about 10 bronchopulmonary segments in the right lung and eight in the left, the actual number varying. There are 50 to 80 terminal bronchioles in each lobe. Each of these divides into two respiratory bronchioles, which in turn divide to form two to 11 alveolar ducts. The alveolar sacs and alveoli arise from these ducts. The spaces between the alveolar sacs and alveoli are called atria.

In the alveolus, blood and inspired air

are separated only by the cell of the alveolus and that of the pulmonary capillary. This respiratory membrane is thin ( $0.07$  to  $2.0\ \mu\text{m}$ ) and permits oxygen to diffuse into the blood and carbon dioxide to diffuse from the blood to the air.

**NERVE SUPPLY:** The lungs are innervated by parasympathetic fibers via the vagus nerve and sympathetic fibers from the anterior and posterior pulmonary plexuses to the smooth muscle in the walls of the bronchial tree.

**BLOOD VESSELS:** The bronchial arteries and veins circulate blood to the bronchial tree. The pulmonary arteries and veins circulate the blood involved in gas exchange.

**FUNCTION:** The primary purpose of the lung is to bring air and blood into intimate contact so that oxygen can be added to the blood and carbon dioxide removed from it. This is achieved by two pumping systems, one moving a gas and the other a liquid. The blood and air are brought together so closely that only approx.  $1\ \mu\text{m}$  ( $10^{-6}\ \text{m}$ ) of tissue separates them. The volume of the pulmonary capillary circulation is 150 ml, but this is spread out over a surface area of approx.

750 sq ft (69.68 sq m). This capillary surface area surrounds 300 million air sacs called alveoli. The blood that is low in oxygen but high in carbon dioxide is in contact with the air that is high in oxygen and low in carbon dioxide for less than 1 second. SEE: *respiratory defense function*.

**PHYSICAL EXAMINATION:** *Inspection:* The examiner determines the respiratory rate by unobtrusively watching the patient's chest rise and fall and counting the number of breaths per minute. In adults a normal respiratory rate at rest is about 12 breaths per minute. While counting the respiratory rate, the examiner can observe other breathing characteristics. Dyspneic patients breathe rapidly, often laboring to draw breath even when at rest. Retractions of the intercostal and supraclavicular spaces are visible during inspiration. Sleep apnea is characterized by episodes of stalled breathing followed by periods of respiratory compensation. Regular slow breathing is normal.

*Palpation:* In health, the chest and lung transmit a vibration, called fremitus, during speech. Fremitus abnormalities may be felt in chronic obstructive lung diseases or obesity, in which the vibration is diminished, and in pneumonia, in which it is increased over the infected lobe.

*Percussion:* Tapping on the chest wall over healthy lung results in a hollow resonant sound. The hollow character of the resonance sometimes is exaggerated in emphysematous lungs or in pneumothorax, and muffled by pleural effusions or pulmonary consolidation.

**AUSCULTATION:** *Normal breath sounds:* In the healthy person, breath sounds are low-pitched and have a frequency of 200 to 400 cycles per second (cps); frequency rarely exceeds 500 cps. These sounds are called vesicular breath sounds when heard over the lungs. They are produced by air passing in and out of the airways.

*Bronchial and tracheal breath sounds:* These are higher-pitched and louder than vesicular sounds, and are produced by air passing over the walls of the bronchi and trachea. These sounds are normally heard only over the bronchi and trachea.

*Amphoric and cavernous breathing:* These two nearly identical sounds are loud, with a prolonged, hollow expiration. The pitch of amphoric breathing is slightly higher than that of the cavernous type, and may be imitated by blowing over the mouth of an empty jar. It is heard in bronchiectatic cavities or pneumothorax when the opening to the lung is patulous; in the consolidation area near a large bronchus; and some-

times over a lung compressed by a moderate effusion.

Harsh inspiratory sounds are typical of stridor, a medical emergency. Expirations that are prolonged and musical are characteristic of wheezing.

*Friction:* This sound is produced by the rubbing together of roughened pleural surfaces. It may be heard in both inspiration and expiration. Friction often resembles crackle, but is more superficial and localized than the latter and is not modified by cough or deep inspiration.

*Metallic tinkling:* A silvery bell-like sound heard at intervals over a hydropneumothorax or large cavity. Speaking, coughing, and deep breathing usually induce this sound. It must not be confused with a similar sound produced by liquids in the stomach.

*Crackles:* Abnormal bubbling sounds heard in air cells or bronchi.

*Succession-splash or hippocratic succussion:* A splashing sound produced by the presence of air and liquid in the chest. It may be elicited by gently shaking the patient during auscultation. This sound nearly always indicates either a hydropneumothorax or a pyopneumothorax, although it has also been detected over very large cavities. The presence of air and liquid in the stomach produces similar sounds.

**bird breeder's I.** An allergic (hypersensitivity) inflammation of the lung caused by exposure to bird excreta. In some patients the onset is slow rather than acute. Symptoms, which include chills, fever, cough, and shortness of breath, usually subside when exposure to the antigen ceases. SYN: *pigeon breeder's disease*. SEE: *psittacosis*.

**black I.** Lay term for the chronic lung disease or pneumoconiosis found in coal miners. SYN: *coal worker's pneumoconiosis*.

**blast I.** The shredding-type effect that takes place in the alveolar surfaces of the lung caused by the shock of an explosion or blast, which can cause alveolar contusion.

**brewer's I.** An allergic respiratory condition caused by the mold *Aspergillus*.

**cobalt I.** Hard metal disease.

**compliance of I.** A measure of the distensibility of the lungs. It is expressed as the change in volume of the lungs in liters when the transpulmonary pressure is changed by 1 cm of water pressure. Normally this measure is between 0.08 and 0.33 L/cm of water. It is reduced by abnormalities that stiffen the lungs or chest wall.

**flock worker's I.** Interstitial lung disease that results from the inhalation of airborne nylon fibers at work. Nylon fibers, which can cause inflammatory

damage to the lungs, are used in making products for upholstery, automobiles, carpet, and apparel.

***l. inflammation*** Pneumonia.

***honeycomb l.*** An abnormal appearance of the lungs seen on chest x-ray exam, in which small cystic spaces alternate with coarsely increased interstitial markings. This pattern is typical of pulmonary injury caused by inhalation of dusts, minerals, toxic gases, or fibers; rheumatological diseases; and interstitial pneumonitis.

***humidifier l.*** Humidifier fever.

***iron l.*** Drinker respirator.

***oblique fissure of l.*** In each lung, the deep groove separating the bottom and side of the upper lobe from the top and side of the lower lobe.

***shock l.*** A diffuse lung injury, causing reduced perfusion, pulmonary edema, and alveolar collapse, associated with acute respiratory distress syndrome. SYN: *wet lung*.

***l. surfactant*** Pulmonary surfactant.

***l. transplantation*** Grafting of a donor lung into a recipient with end-stage lung disease, usually caused by pulmonary fibrosis, chronic obstructive lung disease, or pulmonary hypertension. Lung transplantation may be performed as a single-organ operation or as part of a combined heart-lung transplantation (e.g., in congenital heart disease). Immunosuppressive therapy with cyclosporine or tacrolimus, azathioprine, and corticosteroids is necessary to minimize the risk of rejection, which is caused by T lymphocyte activity against the donor tissue. Rejection is diagnosed through the use of bronchial biopsies and pulmonary function tests. Acute rejection, characterized by dyspnea, fever, hypoxemia, rales, and tachypnea, must be differentiated from infection. Chronic rejection, a problem in 25% to 50% of cases, presents as bronchiolitis obliterans and occurs 6 to 14 months after the transplant. Flow rates progressively decrease, with few additional symptoms; bronchodilator therapy is not effective, and giving higher doses of immunosuppressives has mixed success. Sixty percent of lung transplant recipients live 2 years.

***wet l.*** Shock l.

**lung collapse** 1. Atelectasis. 2. Compression of lung caused by pneumothorax, hydrothorax, or hemothorax.

**TREATMENT:** Bronchial hygiene, postural drainage, and percussion are used to assist in mucus removal for those patients with atelectasis due to mucus plugging. Bronchoscopy may also be useful in these patients. Chest tubes are inserted to drain air or fluid from the pleural cavity when present.

**lungworm** (lŭng'wĕrm) Any of the nem-

atodes that infest the lungs of humans and animals.

**lunula** (lŭ'nŭ-lă) *pl.* **lunulae** [L., little moon] 1. A crescent-shaped area. 2. An active area of nailbed growth at the base of the fingernails and toenails. The cells develop and keratinize to form nails.

***l. of valves of heart*** One of two narrow portions on the free edges of the semilunar valves on each side of the nodulus.

**lupiform** (lŭ'pĭ-form) [L. *lupus*, wolf, + *forma*, shape] Resembling lupus.

**lupoid** (loo'poyd) [ʹ + Gr. *eidōs*, form, shape] 1. Resembling lupus. 2. Boeck's sarcoid.

**lupous** (lŭ'pŭs) 1. Pert. to lupus. 2. Affected with lupus.

**lupus** (lŭ'pŭs) [L., wolf] Originally any chronic, progressive, usually ulcerating, skin disease. In current usage, when the word is used alone, it has no precise meaning.

***discoid l. erythematosus*** ABBR:

DLE. A chronic skin disease characterized by periodic acne appearances of a scaling, red, macular rash. DLE is caused by an autoimmune process involving both B-cell- and T-cell-mediated mechanisms that destroy the skin's basal cells. DLE is treated with topical corticosteroids. It is found in about 5% to 30% of patients who have systemic lupus erythematosus (SLE) (esp. those who smoke) but also may occur alone (without other findings of SLE). SEE: *autoimmune disease; systemic l. erythematosus*.

**TREATMENT:** The patient should avoid exposure to the sun. Skin lesions should be treated with topical corticosteroids, but overuse of these preparations should be avoided.

***drug-induced systemic l. erythema-***

***tosus*** A group of signs and symptoms similar to those of systemic lupus erythematosus, caused by an adverse reaction to drugs, esp. procainamide, hydralazine, and isoniazid. Joint inflammation and pain, skin rash, pleurisy, and fever are the most common manifestations; kidney and central nervous system involvement are rare. Antinuclear antibodies, specifically against the histones that fold DNA, are common. Some patients develop antinuclear antibodies but do not develop lupus-like symptoms. The lupus-like syndrome usually disappears when the drug causing it is discontinued. SEE: *antinuclear antibodies; systemic lupus erythematosus*.

***neonatal l.*** Rash, abnormally low platelet counts, liver and brain disease, and congenital heart block occurring in an infant whose mother has systemic lupus erythematosus. The disease results from the passage of maternal autoantibodies to the developing fetus. Although

most of the findings resolve spontaneously, congenital heart block does not, and it may require the insertion of a pacemaker.

***l. panniculitis*** Lupus profundus.

***l. pernio*** Noncaseating granulomas occurring on the face, esp. around the nose, eyes, cheeks, lips, and ears. "Lupus" in lupus pernio is misleading because it suggests a connection with systemic lupus erythematosus; lupus pernio is actually a finding of the skin in sarcoidosis.

***l. profundus*** A deeply scarring, atrophic rash occasionally found in patients with systemic lupus erythematosus, caused by inflammation of subcutaneous fatty tissue. SYN: *l. panniculitis*.

***systemic l. erythematosus*** ABBR:



**SLE.** A chronic autoimmune inflammatory disease of connective tissue involving multiple organ systems and marked by periodic acute episodes. Its name is derived from the characteristic erythematous "butterfly" rash over the nose and cheeks, which resembles a wolf's snout, although this is present in less than 50% of patients. The disease is most prevalent in women (ratio of 8:1 women:men) of childbearing age (ratio of 15:1). Although it occurs worldwide, it is most prevalent among black and Asian peoples. SEE: *Nursing Diagnoses Appendix*.

**ETIOLOGY AND PATHOLOGY:** SLE is classified as an autoimmune disease in which the body seems to be unable to maintain normal mechanisms of tolerance to self-antigens. Activation of T helper cells and B cells results in the production of autoantibodies that attack antigens in the cytoplasm and nucleus of cells and on the surface of blood cells. The exact cause of SLE is unknown: genetic defects, hormonal changes, infection, physical or mental stress, some drugs, immunizations, and environmental triggers (sunlight, UV light exposure) are possible predisposing factors. SEE: *autoimmune disease; glomerulonephritis*.

Autoantibodies can react with self-antigens to form immune complexes in such large numbers that they cannot be completely excreted; the immune complexes may precipitate within blood vessels, producing inflammation at the site and disrupting the flow of blood and oxygen to tissues. These deposits are particularly damaging in the glomeruli. Autoantibodies also promote the destruction of cells by stimulating neutrophil and macrophage phagocytic activity, which increases cell destruction from trauma, infection, or drugs.

**DIAGNOSIS:** In 1997, revised criteria for diagnosis of SLE were established. The diagnosis can be made if four or

more of the following criteria are present, either at one time or sequentially:

- 1 butterfly rash;
- 2 raised, scaly discoid skin lesions;
- 3 abnormal titer of antinuclear antibodies seen by immunofluorescence;
- 4 other autoantibodies (anti-Sm; serological tests for syphilis);
- 5 pleuritis or pericarditis (together referred to as "serositis");
- 6 hemolytic anemia, leukopenia (white blood cell count less than 4,000/mm<sup>3</sup>), lymphopenia (lymphocyte count less than 1,500/mm<sup>3</sup>), or thrombocytopenia of less than 100,000/mm<sup>3</sup>;
- 7 oral or nasopharyngeal ulcers;
- 8 nonerosive arthritis;
- 9 psychosis or seizures without other clear cause;
- 10 photosensitivity skin rash;
- 11 proteinuria greater than 0.5 g/day or cellular casts in the urine.

Some drugs can cause a lupus-like syndrome; the most common of these are procainamide, isoniazid, and hydralazine. SEE: *drug-induced systemic l. erythematosus*.

**SYMPTOMS:** The onset of the disease may be acute or insidious. Patients have a wide variety of clinical symptoms, signs, and laboratory findings, but anemia, thrombocytopenia, polyarthritis, (polyarthralgia) skin rashes, glomerulonephritis, fever, malaise, weight loss, fatigue, and low blood levels of complement are the most common. Other signs include pleuritis, pericarditis, myocarditis, neurological changes including behavioral changes and seizure activity (neural lupus), gastrointestinal ulcerations, Raynaud's phenomenon (present in about 20% of patients), and other problems caused by inflammatory changes of the blood vessels or connective tissue. Most patients are prone to infection.

**TREATMENT:** No cure for SLE exists, and complete remission is rare. About 25% of patients have mild disease, demonstrating only minor skin and hematological signs, and can be treated with nonsteroidal anti-inflammatory drugs for their arthritis symptoms and topical treatment (sometimes with corticosteroid creams) for skin lesions. Rashes may respond to antimalarials (e.g., hydroxychloroquine), but patients must be observed closely for the possibility of drug-induced retinal damage. Other treatments for skin rash include quinacrine, retinoids, and dapsone. Life-threatening and severely disabling conditions should be treated with high doses of corticosteroids and supplemental calcium to minimize osteoporosis, which may be an undesired side effect of long-term glucocorticoid use. Immunosuppressive drugs are used for severe

exacerbations and to reduce steroid dosage.

**PROGNOSIS:** The prognosis depends on which organ systems are involved, how severely they are damaged, and how rapidly the disease progresses. Ten-year survival rates are high (80%). Renal failure and infections are the most common causes of death.

**PATIENT CARE:** Patient education related to the disease, diagnostic procedures, and treatment is essential in lupus, as in any chronic disease. Ongoing assessment is carried out to assess flares of the illness. The purpose, proper dosage, use, and side effects of drugs is taught. Patients need emotional support to help cope with changes in appearance. Patients should be taught to wear clothing and hats that block direct sunlight, use a sunscreen with a 15 or higher protection factor, and to maintain a diet appropriate for their renal functional status. The health care professional should help establish a regimen for adequate relief of both the musculoskeletal pain and chronic fatigue experienced by most patients, encouraging adequate rest. Heat packs relieve joint stiffness and pain, and regular gentle exercise helps to maintain full range of motion. Physical and occupational therapy consultations are provided as appropriate. Additional support and teaching depend on the organ system most affected by the disease. If the female patient of childbearing age has no renal or neurologic impairment, she can have a safe, successful pregnancy if desired. Over time, patients with severe progressive disease need assistance in coping with chronic illness and the possibility of mortality. Referrals to the Lupus Foundation of America (202-349-1155; www.lupus.org) and the Arthritis Foundation (800-283-7800; www.arthritis.org) are helpful.

**SEE:** *illus*.

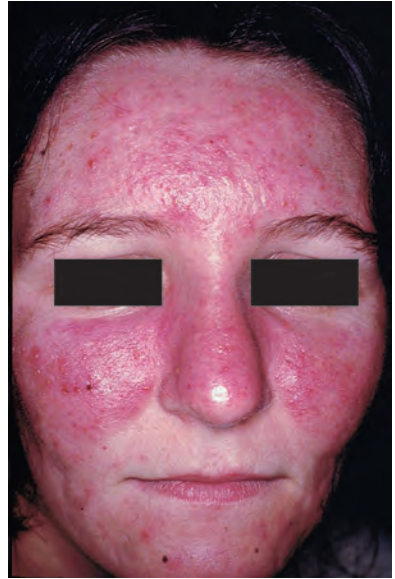
***l. vulgaris*** Tuberculosis of the skin; characterized by patches that break down and ulcerate, leaving scars on healing.

**lupus-like syndrome** A cluster of symptoms resembling an autoimmune disease (including arthritis, pleural or pericardial effusions, and rashes) sometimes seen in patients with widespread malignancy.

**LUQ** *left upper quadrant* of abdomen.

**Luque wires** (look) Wires used in the surgical stabilization of scoliosis. Transverse traction on each vertebra is accomplished by wrapping flexible wires around the affected vertebrae and attaching the wires to flexible rods.

**Lust's reflex** (lūsts) [Franz Alexander Lust, Ger. pediatrician, b. 1880] Dorsal flexion and abduction of the foot result-



#### SYSTEMIC LUPUS ERYTHEMATOSUS

Facial manifestations of systemic lupus erythematosus.

ing from percussion of the external branch of the sciatic nerve.

**lute, luting agent** (loot) A compound used in dentistry to bond surfaces together and make them impermeable. Compounds identified as luting agents may be cements, resins, or glass ionomers.

**luteal** (loo'tē-āl) [*L. luteus*, yellow] Pert. to the corpus luteum, its cells, or its hormones.

**luteal phase defect** A deficiency in either the amount or the duration of postovulatory progesterone secretion by the corpus luteum. Insufficient hormonal stimulation results in inadequate preparation of the endometrium for successful implantation and support of the growing embryo. This rare condition is associated with infertility or habitual spontaneous first-trimester abortion. **SEE:** *menstrual cycle*.

**lutein** (lū'tē-in) A yellow, antioxidant pigment (a "carotenoid") derived from leafy green vegetables, the corpus luteum, egg yolk, and fat cells or lipochromes. Its consumption in the diet has been linked to a decreased risk of age-related macular degeneration.

**luteinic** (loo'tē-in'ik) Concerning the corpus luteum of the ovary.

**luteinization** (lū'tē-in-i-zā'shūn) The process of development of the corpus luteum within a ruptured graafian follicle.

**Lutembacher's syndrome** (loo'tēm-bāk'ērz) [René Lutembacher, Fr. phy-



sician, 1884–1916] Atrial septal defect of the heart with mitral stenosis.

**luteolysin** (loo'tē-ō-lī'sin) [L. *luteus*, yellow, + Gr. *lysis*, dissolution] Something that promotes disintegration of the corpus luteum.

**luteoma** (lū'tē-ō'mā) [L. *luteus*, yellow, + Gr. *oma*, tumor] An ovarian tumor containing lutein cells.

**luteotropin** (loo'tē-ō-trō'pīn) Luteinizing hormone.

**lutetium** (lū-tē'shē-ūm) SYMB: Lu. A rare element; atomic weight 174.97; atomic number 71.

**luteum** (lū'tē-ūm) [L.] Yellow.

**luting** Cementation.

**LUTS** A commonly used abbreviation for "lower urinary tract symptoms," that is, for symptoms such as difficulty initiating or maintaining a strong and comfortable urinary stream.

**Lutzomyia** A genus of bloodsucking sandflies. They are vectors of leishmaniasis and Oroyo fever.

**Lutz-Splendore-Almeida disease** (lūts) [A. Lutz, Brazilian physician, 1855–1940; A. Splendore, contemp. Italian physician; Floriano P. de Almeida, Brazilian physician, b. 1898] South American blastomycosis.

**lux** (lūks) [L., light] A unit of light intensity equivalent to 1 lumen/m<sup>2</sup>.

**luxatio erecta** (lūks-ā'sē-ō ē-rēk'tah) Subglenoid displacement of the head of the humerus associated with disruption of the rotator cuff.

**luxation** (lūks-ā'shūn) [L. *luxatio*, dislocation] 1. Displacement of organs or articular surfaces; complete dislocation of a joint. SEE: *subluxation*. 2. In dentistry, injury to supporting tissues that results in the loosening of the teeth with rotation or partial displacement.

**Luxol fast blue** (lūks'ōl") An alcohol-soluble sulfonated copper phthalocyanine stain, used primarily in neuropathology. It is taken up by phospholipids and choline and stains myelin blue.

**LV** left ventricle.

**LVDP** left ventricular end-diastolic pressure.

**lyase** (lī'ās) The class name for enzymes (such as decarboxylase, aldolase, and synthases) that remove organic bonds between carbon atoms, carbon and oxygen atoms, or carbon and nitrogen atoms without hydrolysis or oxygenation. One of the molecules that is created has a double bond.

**lycanthropy** (lī-kān'thrō-pē) [Gr. *lykos*, wolf, + *anthropos*, man] A mania in which one believes oneself to be a wild beast, esp. a wolf.

**lycopene** (lī'kō-pēn) An antioxidant red carotenoid pigment found in tomatoes and other red fruits and berries.

**lycopenemia** (lī'kō-pē-nē'mē-ā) [*lycopene* + Gr. *haima*, blood] A type of

carotenemia caused by eating excessive amount of foods that contain lycopene.

**lycoperdonosis** (lī'kō-pēr'dōn-ō'sis) [Gr. *lykos*, wolf, + *perdesthai*, to break wind, + *osis*, condition] A respiratory disease caused by inhaling large quantities of spores from the mature mushroom commonly called puffball. *Lycoperdon* is the genus of fungi to which most puffballs belong.

**lycopodium** (lī-kō-pō'dē-ūm) A yellow powder formed from spores of *Lycopodium clavatum*, a club moss. It is used as a dusting powder and as a desiccant and absorbent.

**lye** (lī) [AS. *leag*] 1. Liquid from leaching of wood ashes. 2. Any strong alkaline solution, esp. sodium or potassium hydroxide. SEE: *alkali*; *potassium hydroxide*; *sodium hydroxide*.

**Lyell disease** (lī'ēlz) Toxic epidermal necrolysis.

**lying-in** 1. Historical term for the puerperal state. 2. Being hospitalized for the purpose of childbearing.

**Lyme disease** (līm) [Lyme, CT, where a cluster of cases was reported in 1975] ABBR: LD. A multisystem disorder caused by the spirochete *Borrelia burgdorferi* and the most common tick-borne disease in the U.S. The disease is endemic in New England, but cases have been reported in all 50 states and in 20 other countries, including Germany, Switzerland, France, and Australia. It occurs most often in the spring and summer, when its deer tick vectors (of the genus *Ixodes*) are most active. Prompt removal of visible ticks from the skin before they become attached or gain access to the bloodstream (i.e., in the first 24 to 48 hr) decreases the risk of transmission. SEE: *Nursing Diagnoses Appendix*.

**ETIOLOGY:** The infected tick injects its spirochete-laden saliva into the bloodstream, where they incubate for 3 to 32 days and then migrate to the skin, causing the characteristic erythema migrans (EM) rash.

**DIAGNOSIS:** The disease is best diagnosed by the presence of EM, which begins as a red macule or papule at the site of the tick bite and expands in a red ring, leaving a clear center like a target or bull's eye. The lesion usually feels hot and itchy and may grow to over 20 in (50.8 cm) as more lesions erupt. The lesion is later replaced by red blotches or diffuse urticaria. Conjunctivitis, malaise, fatigue, and flulike symptoms and lymphadenopathy may occur. Antibody tests for *Borrelia burgdorferi* with an enzyme-linked immunosorbent assay (ELISA) test are also used for diagnosis in patients with a history of exposure and signs and symptoms of Lyme disease but with no evidence of rash. The antibodies are developed against flagel-

lar and outer surface proteins on the spirochete. **SEE: illus.**



### LYME DISEASE

Classic rash with central clearing

**SYMPTOMS:** The course of Lyme disease is divided into three stages.

1 localized infection: begins with the tick bite and proceeds as above.

2 disseminated infection: begins weeks to months later. The spirochetes spread to the rest of the body through the blood, in some cases causing arthritis (esp. of the knee joints), muscle pain, cardiac dysrhythmias, pericarditis, lymphadenopathy, or meningoencephalitis. Nonprotective antibodies develop during this stage.

3 chronic infection: begins weeks to years after the initial bite. Patients develop mild to severe arthritis, encephalitis, or both, which rarely are fatal.

**TREATMENT:** Oral doxycycline or ampicillin (14–21 or –28 day course) effectively eradicates early uncomplicated Lyme disease. Erythromycin or cefuroxime axetil may be administered to patients allergic to penicillin. Patients with cardiac and neurological involvement may need to be treated with intravenous cephalosporins.

**PROGNOSIS:** When the disease is treated early, results are good. If treated late, convalescence is prolonged, but complete recovery is the usual outcome in most patients.

**PREVENTION:** The Centers for Disease Control recommends that people should discuss with their health care providers the possibility of getting a Lyme disease vaccination if they are between 15 and 70 years old; live, work, or vacation in endemic areas; or frequently go into wooded or grassy areas. The vaccine is not recommended for children, pregnant women, and those who do not live in or visit endemic areas.

When planning to spend time in

places where ticks may be located, people should wear clothing impregnated with insect repellents, hats, long sleeves, pants tucked into socks, heavy shoes, and a tick repellent containing DEET (N,N-diethyltoluamide). Tick repellent should not be directly applied to an infant or toddler's skin because of the danger of neurotoxicity. If possible, people should stay on paths and away from high grass or brush. They should check clothing carefully for ticks when leaving those areas although tick nymphs, which are smaller than 1 mm in length, may not be easily seen. Once home, people should remove and wash clothing and check their entire body, esp. the hairline and ankles, for ticks or nymphs. If a tick or nymph is found, it should be carefully removed with tweezers, esp. the head and mouth parts, but the body of the tick or nymph must not be squeezed. The site may then be cleaned with an antiseptic, but should be observed for signs of infection (redness, swelling, pain, rash), and the primary health care provider contacted if infection is suspected. Some people make the mistake of trying to remove ticks or nymphs with alcohol, a lighted match, or petroleum jelly. These measures are ineffective and may increase the risk of transmission of tick-borne diseases. Prophylactic antibiotics generally should not be requested (or given). Although pet dogs may receive Lyme vaccine, they should still be checked to prevent them from bringing ticks into the house.

**PATIENT CARE:** The patient is checked for any drug allergies. Prescribed pharmacologic therapy is explained to the patient, including dosing schedule, the importance of completing the course of therapy even if he feels better, and adverse effects. Patients being treated for Lyme disease often require antibiotics for a prolonged period, esp. in advanced stages, which increases their risk for developing adverse effects (e.g., diarrhea). Methods for dealing with these problems are explained. Patients with chronic Lyme disease often require assistance to deal with changes in lifestyle, family interactions, and ability to perform daily activities. Available local and national support groups can assist with such problems. Patients should be made aware that one occurrence of Lyme disease does not prevent recurrences. The U.S. Department of Health and Human Services has made Lyme disease prevention a priority under its program "Healthy People 2010." Patients can be referred to the Lyme Disease Foundation (860-870-0070; <http://www.lyme.org>) or the American Lyme Disease Foundation (<http://www.aldf.com>) for information and support.

**lymph** (lĭmf) [*L. lymphā*] The name given to tissue fluid that has entered lymph capillaries and is found in larger lymph vessels. It is alkaline, clear, and colorless, although lymph from the small intestine appears milky from the absorbed fats (chyle). The protein content of lymph is lower than that of plasma, osmotic pressure is slightly higher, and viscosity slightly less. Specific gravity is 1.016 to 1.023.

Lymph is mostly water, and contains albumin, globulins, salts, urea, neutral fats, and glucose. Its cells are mainly lymphocytes and monocytes, formed in the lymph nodes and nodules.

Lymph capillaries, found in most tissue spaces, collect tissue fluid, which is then called lymph. Lymph from the lower body flows to the cisterna chyli in the abdomen and continues upward through the thoracic duct, which receives intercostal lymph vessels, the left subclavian trunk from the left arm, and the left jugular trunk from the left side of the head. The thoracic duct empties lymph into the blood in the left subclavian vein near its junction with the left jugular vein. The right lymphatic duct drains lymph from the upper right quadrant of the body and empties into the right subclavian vein. SEE: *lymphatic system* for illus.

As lymph flows through the lymph vessels toward the subclavian veins, it passes through lymph nodes, which contain macrophages to phagocytize bacteria or other pathogens that may be present.

**l. channel** Lymph sinus.

**inflammatory l.** An exudate due to inflammation.

**l. node** One of thousands of small kidney-shaped organs of lymphoid tissue that lie at intervals along the lymphatic vessels. SYN: *lymph gland*. SEE: **illus.**; *immune response*; *inflammation*; *lymph*; *lymphocyte*.

**ANATOMY AND PHYSIOLOGY:** It contains large numbers of lymphocytes and macrophages connected by a network of reticular fibers and grouped into follicles. Lymph enters a node through the afferent vessels along the larger outer rim and passes through the subcapsular sinus lined with macrophages and into the follicles of the cortex. Follicles contain leukocytes that respond to foreign antigens present in the lymph.

As lymph flows through channels between and within the follicles, macrophages destroy microorganisms and abnormal cells by direct lysis or phagocytosis, activated T lymphocytes multiply, and B lymphocytes proliferate and manufacture antigen-specific antibodies. Lymph then passes through the paracortex and the medulla of the node, which contain mature T and B cells, B

memory cells, and macrophages, before exiting through the efferent vessel. Antibodies produced in the node travel via the lymph to the blood for distribution throughout the body.

An increase in the size of the node (lymphadenopathy) indicates a high level of activity (e.g., while combating infection or cancer or when participating in local inflammatory reactions).

Lymph nodes occur singly or in closely connected chains, which receive lymph from a single organ or region of the body. Prominent chains in the neck, axilla, groin, and mesentery remove foreign antigens from the lymph coming from the head, arms, legs, and the gastrointestinal tract, respectively.

**lymph-, lympho-** Combining forms meaning *lymph*.

**lymphadenectasis** (lĭm-fād"ĕ-nĕk'tā-sĭs) [*L. lymphā*, lymph, + Gr. *aden*, gland, + *ektasis*, dilatation] Dilatation or distention of a lymph node.

**lymphadenectomy** (lĭm-fād"ĕ-nĕk'tō-mĕ) [" + " + *ektome*, excision] Surgical removal of a lymph node, as in a biopsy.

**lymphadenitis** (lĭm-fād"ĕn-ĭ'tĭs) [" + " + *itis*, inflammation] Inflammation of lymph nodes, caused by the activation of phagocytes and lymphocytes, which encounter large numbers of microorganisms, cancer cells, or other antigenic material. Local swelling and pain are common symptoms and often help clinicians diagnose regional diseases (e.g., the anterior cervical lymph nodes become tender and enlarged in people with strep throat; the inguinal lymph nodes enlarge and hurt in some sexually transmitted diseases).

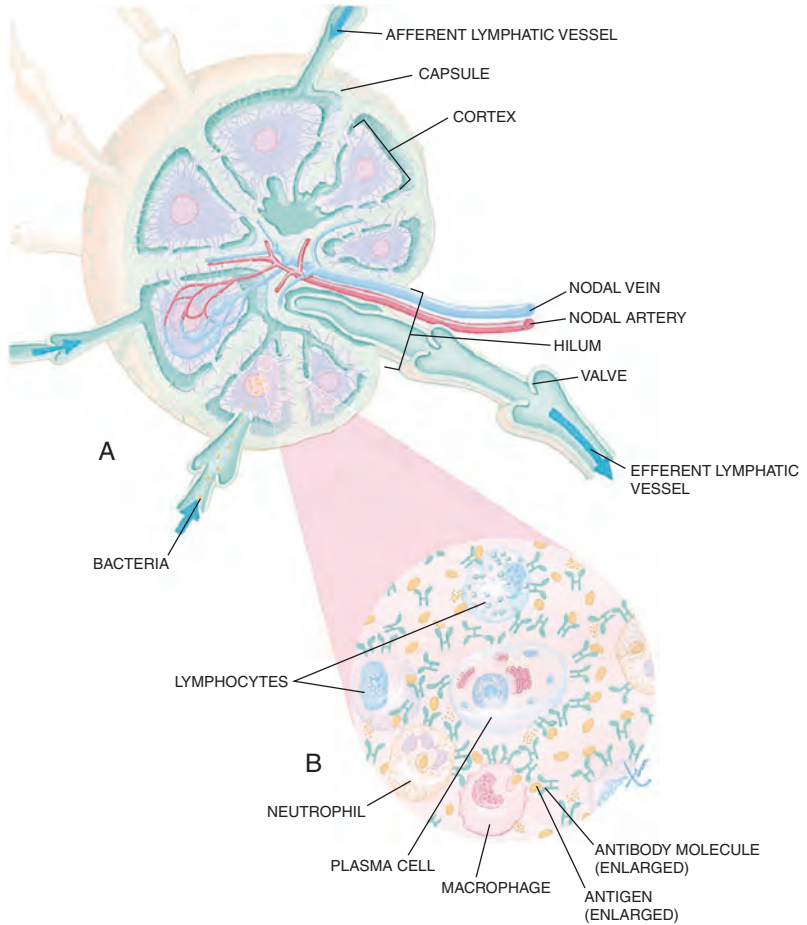
Lymph node inflammation sometimes is associated with inflammation of the lymphatic vessels (lymphangitis) leading into the node. Lymphatic inflammation subsides when the underlying infection is treated. Lymphadenitis of unknown cause may require lymph node biopsy (e.g., excisional or needle biopsies) or aspiration. SEE: *inflammation*; *lymphangitis*.

**SYMPTOMS:** The disease is characterized by a marked increase of tissue, with possible suppuration. Swelling, pain, and tenderness are present. The disease usually accompanies lymphangitis.

**ETIOLOGY:** The condition is caused by drainage of bacteria or toxic substances into the lymph nodes. The etiology may be specific, as when caused by the organisms of typhoid, syphilis, or tuberculosis, or nonspecific, in which the causative organism is not identified.

**TREATMENT:** Hot, moist dressings should be applied. Incision and drainage are necessary if abscesses occur. Antibiotics should be given as indicated.

**tuberculous l.** Lymph node inflam-



### LYMPH NODE

(A) section through a lymph node, (B) microscopic detail of destruction of bacteria

mation caused by *Mycobacterium tuberculosis* (MTB), with granuloma formation and caseating necrosis within the node. The most common presentation is the finding of a neck mass in a febrile patient (a condition called "scrofula"), although MTB and other mycobacteria also can invade lymph nodes in other parts of the body. **SEE:** *tuberculosis*.

**lymphadenocoele** (līm-fād'ē-nō-sēl') [" + " + *kele*, tumor, swelling] A cyst of a lymph node.

**lymphadenogram** (līm-fād'ē-nō-grām") [" + " + *gramma*, something written] A radiograph of a lymph gland.

**lymphadenography** (līm-fād'ē-nōg'rā-fē) [" + " + *graphein*, to write] Radiography of the lymph glands after injection of radiopaque material.

**lymphadenoid** (līm-fād'ē-noyd) [" + "

+ *eidos*, form, shape] Resembling a lymph node or lymph tissue.

**lymphadenopathy** (līm-fād'ē-nōp'ā-thē) [" + " + *pathos*, disease] Enlargement of lymph nodes (LN), typically to greater than 1.5 cm. The increased size is caused by activation and proliferation of lymphocytes and phagocytic white blood cells within the node or by invasion of the node by tumor. Most often, lymphadenopathy is found in nodes involved in local, regional, or systemic infections; it results occasionally from cancers. Lymphadenopathy may also be found in an array of other, less common illnesses, including thyroiditis, thyrotoxicosis, autoimmune diseases (e.g., rheumatoid arthritis), sarcoidosis, and drug reactions (e.g., phenytoin). **SEE:** *il-lus*.



### CERVICAL LYMPHADENOPATHY

Squamous cell carcinoma of the neck

Enlarged LNs may be tender or not; tenderness often is present when lymph nodes swell rapidly (e.g., in response to infections, hypersensitivity reactions, or some fulminant lymphomas). Rock-hard, enlarged, and immobile LNs are typical of metastatic cancer, whereas rubbery LNs are found in lymphomas. LNs that do not resolve spontaneously within 4 to 6 weeks, or for which no obvious explanation exists, usually are sampled by biopsy or aspiration.

**dermatopathic I.** Widespread lymphadenopathy secondary to various skin disorders.

**lymphadenosis benigna cutis** (līm-fād"ē-nō'sis bē-nī'nā cū'tis) A benign collection of lymphocytes in the skin.

**lymphadenotomy** (līm-fād"ē-nōt'ō-mē) [" + " + *tome*, incision] Surgical incision of a lymph node.

**lymphadenovarix** (līm-fād"ē-nō-vā'riks) [" + " + *L. varix*, a twisted vein] Enlargement of lymph nodes due to increased pressure in the lymph vessels.

**lymphangial** (līm-fān"jē-āl) [" + *Gr. angeion*, vessel] Concerning lymph vessels.

**lymphangiectasis** (līm-fān"jē-ēk'tā-sīs) [" + " + *ektasis*, dilatation] Benign swelling in all or part of an extremity, as the result of dilation of the subcutaneous and deep lymphatic vessels. It occurs mostly in children and may be severe enough to cause deformity. Acquired lymphangiectasis can occur as a complication of surgery or radiation therapy for cancer. SYN: *lymphectasia*.

**lymphangiectomy** (līm-fān"jē-ēk'tō-mē) [" + " + *ektome*, excision] Surgical removal of lymph vessels.

**lymphangiitis** (līm-fān"jē-ī'tis) [" + " + *itis*, inflammation] Inflammation of lymph vessels. SYN: *angiolympheitis*.

**lymphangioendothelioma** (līm-fān"jē-ō-ēn'dō-thē-lē-ō'mā) [" + " + *endon*, within, + *thelē*, nipple, + *oma*, tumor] Endothelioma originating from lymph vessels.

**lymphangiofibroma** (līm-fān"jē-ō-fī-brō'mā) [" + *Gr. angeion*, vessel, +

*L. fiber*, fiber, + *Gr. oma*, tumor] Fibroma and lymphangioma combined.

**lymphangiography** (līm-fān"jē-ōg'rā-fē) [" + " + *graphein*, to write] Immediate radiological investigation of the lymphatic vessels after injection of a contrast medium via cutdown, usually on the dorsum of the hand or foot. Delayed films are taken to visualize the nodes. This technique has been replaced by computed tomography and magnetic resonance imaging. SYN: *lymphography*.

**lymphangiology** (līm-fān"jē-ōl'ō-jē) [" + " + *logos*, word, reason] The branch of medical science concerned with the lymphatic system.

**lymphangioma** (līm-fān"jē-ō'mā) [" + " + *oma*, tumor] A tumor composed of lymphatic vessels.

**cavernous I.** Dilated lymph vessels filled with lymph.

**cystic I.** Multilocular cysts filled with lymph. The condition is usually congenital.

**lymphangiophlebitis** (līm-fān"jē-ō-flē-bī'tis) [" + " + *phleps*, vein, + *itis*, inflammation] Inflammation of the lymphatic vessels and veins.

**lymphangioplasty** (līm-fān"jē-ō-plās'tē) [" + *Gr. angeion*, vessel, + *plassein*, to form] The formation of artificial lymphatics or the use of microsurgical technique to reestablish lymphatic or lymphogenous continuity. SYN: *lymphoplasty*.

**lymphangiosarcoma** (līm-fān"jē-ō-sār-kō'mā) [" + " + *sarx*, flesh, + *oma*, tumor] A malignant neoplasm that develops from the endothelial lining of lymphatics.

**lymphangiotomy** (līm-fān"jē-ōt'ō-mē) [" + " + *tome*, incision] Incision into a lymphatic vessel.

**lymphangitis** (līm-fān"jī'tis) [" + *Gr. angeion*, vessel, + *itis*, inflammation] Inflammation of the lymphatic vessels draining a body part that is inflamed or infected. Red streaks are present along the inflamed vessels and are accompanied by heat, pain, and swelling; lymph nodes in the area are enlarged and tender. Treatment consists of antibiotics specific to the organism causing the infection, most commonly group A beta-hemolytic streptococci (occasionally staphylococci). If the infection is not contained it can produce septicemia.

**SYMPTOMS:** The condition is characterized by the onset of chills and high fever, with moderate swelling and pain.

**PATIENT CARE:** Elevating the affected part of the body so that local lymphatics can drain reduces pain and helps the underlying infection to resolve. Antibiotics, and often, antipyretic and analgesic drugs are administered.

**lymphatic** (līm-fāt'ik) [*L. lymphaticus*]



Pert. to lymph and to the system of endothelial vessels that carry it.

**ANATOMY:** A lymph vessel carries lymph toward a subclavian vein. Plasma that leaves blood capillaries and becomes tissue fluid is collected by lymph capillaries. The larger lymph vessels resemble veins in that they have valves to prevent backflow of lymph. These larger vessels unite to form either the thoracic duct or the right lymphatic duct, which empty lymph into the blood in the left and right subclavian veins, respectively. The lymph capillaries within the villi of the small intestine (lacteals) absorb the fat-soluble end products of digestion, which are transported in the form of chylomicrons to the blood by the larger lymphatic vessels. **SEE: lymphatic system.**

**afferent l.** Any of the small vessels carrying lymph toward a lymph node.

**l. capillary** One of the smallest lymphatic vessels. These thin-walled tubes consist of a single layer of endothelium ending blindly in a swollen or rounded end, and form a dense network in most tissues of the body. They are generally slightly larger in diameter than blood capillaries. Because they collect interstitial fluid, the composition of the lymph varies according to the tissue being drained. Intestinal lymphatics contain fatty materials during digestion; those from the liver contain proteins. **SEE: illus.**

**efferent l.** Any of the small vessels

carrying lymph away from a lymph node.

**lymphaticostomy** (līm-fāt'ī-kōs'tō-mē) [L. *lymphaticus*, lymphatic, + Gr. *stoma*, mouth] The making of a permanent aperture into a lymphatic duct, e.g., thoracic duct shunt.

**lymphatic system** The system that includes all the lymph vessels that collect tissue fluid and return it to the blood (lymph capillaries, lacteals, larger vessels, the thoracic duct, and the right lymphatic duct), the lymph nodes and nodules, the spleen, and the thymus. **SEE: illus.; lymph.**

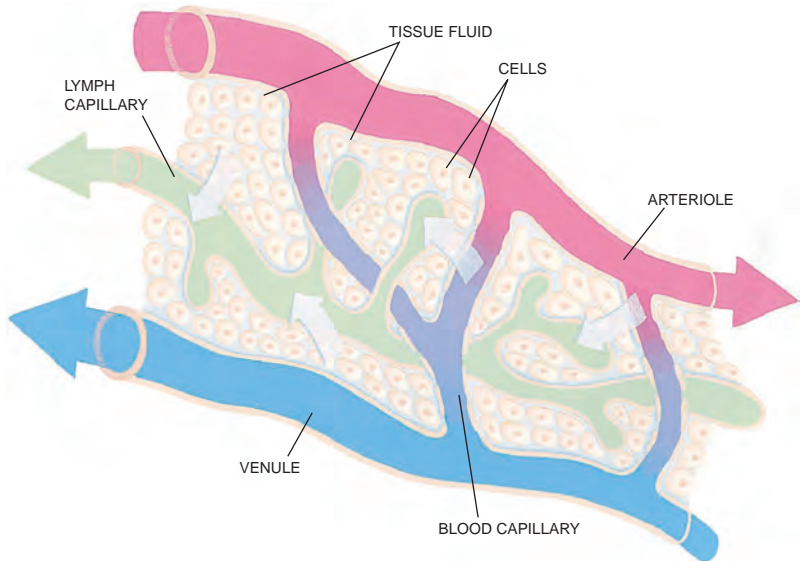
**lymphatitis** (līm'fā-tī'tīs) [" + Gr. *itis*, inflammation] An inflammation of the lymphatic system.

**lymphatolysis** (līm'fā-tōl'ī-sīs) [" + Gr. *lysis*, dissolution] Destruction of lymphatic vessels or tissue.

**lymphatolytic** (līm'fā-tō-līt'īk) Destructive to lymphatics.

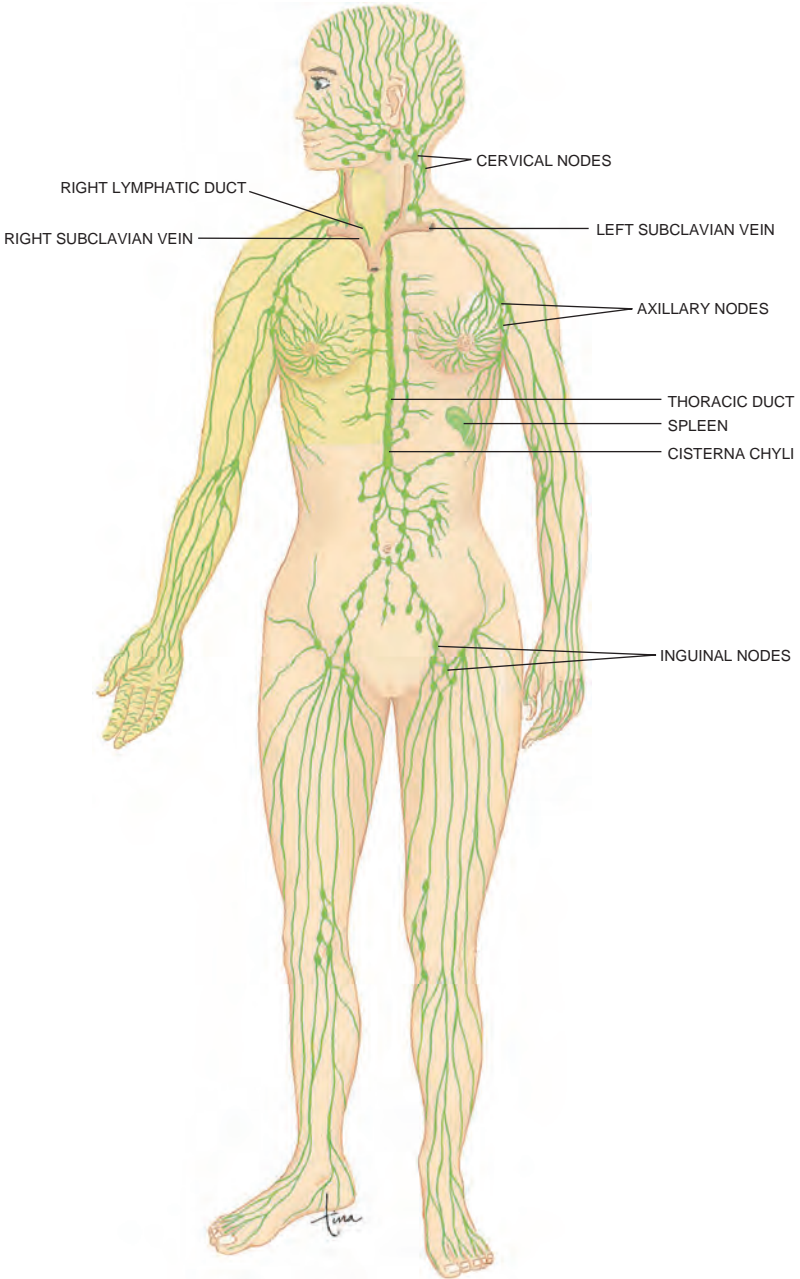
**lymphectasia** (līm'fē-tā'zē-ā) [L. *lymphā*, lymph, + Gr. *ektasis*, dilatation] Lymphangiectasis.

**lymphedema** (līm'fē-dē'mā) [" + Gr. *oidema*, swelling] An abnormal accumulation of tissue fluid (potential lymph) in the interstitial spaces. The mechanism for this is either impairment of normal uptake of tissue fluid by the lymphatic vessels or the excessive production of tissue fluid caused by venous obstruction that increases capillary blood pressure. Stagnant flow of tissue fluid through body structures may



#### LYMPHATIC CAPILLARIES

Arrows indicate movement of plasma, lymph, and tissue fluid



**THE LYMPHATIC SYSTEM**

make them prone to infections that are difficult to treat; as a result lymphedematous limbs should be protected from cuts, scratches, burns, and blood drawing.

Common causes of lymphedema include neoplastic obstruction of lymphatic flow (e.g., in the axilla, in metastatic breast cancer); postoperative interference with lymphatic flow (e.g.,

after axillary dissection); infectious blockade of lymphatics (e.g., in filariasis); radiation damage to lymphatics (e.g., after treatment of pelvic, breast, or lung cancers). All of these are secondary (acquired) lymphedemas. Rarely, lymphedema also may occur congenitally (Milroy's disease), or develop at the onset of puberty or during adulthood from an unknown cause that may be related to vascular anomalies (primary lymphedema). In the U.S. and other developed countries, the leading cause of secondary lymphedema is surgical or radiation therapy for cancer, esp. if accompanied by lymph node dissection. SEE: *blockade, lymphatic; elephantiasis; pump, lymphedema.*

Lymphedema occurs in four stages (0 to 3):

0. Subclinical stage in which lymph transport is known to be impaired but no signs or symptoms are obvious (may last for years);

1. Tissue is soft with pitting edema; swelling decreases with elevation;

2. Tissue is swollen, but firmer and thus may not show pitting; edema does not resolve completely with elevation; and

3. The affected limb is grossly enlarged and misshapen; skin breakdown and infection often occur.

**SYMPTOMS:** Symptoms of lymphedema may include a feeling of heaviness, tiredness, aching, weakness, and fullness in a limb impairing flexibility or interfering with the wearing of jewelry, watches, or clothing.

**TREATMENT:** Treatment goals include maintaining use of the affected limb and preventing complications.

**PATIENT CARE:** A combination of manual lymphatic drainage, compression devices, and protection of the affected limb can make a positive difference in a patient's quality of life. Patient management by physiatrists, other physicians experienced in lymphedema care, certified nurses, and therapists is crucial. Careful measurement of the affected limb with comparison to its opposite and diagnostic testing help to rule out other causes. If necessary, lymphangiography can be used to examine the anatomy and functioning of the lymph system. Patients and their partners can be taught effective techniques to use at home. Compression devices are fitted over the affected limb to help maintain or reduce swelling. Compression pumps use air or fluid pressure to mimic massage's beneficial effects. They are designed to move lymphatic fluid back toward functional nodes by providing sequential, even pressure from the distal to the proximal portions of the affected limb. Compression sleeves or stockings should be fitted by

a professional, as an improperly fitted device may irritate skin and other tissues, resulting in additional swelling.

Sensible weight reduction programs based on mild caloric restriction and gentle exercise help to alleviate symptoms. Overexertion of affected limbs should be avoided. Using the affected limb for activities of daily living (bathing, hair-brushing) helps to drain lymph fluid. Supporting the arm on the back of a chair or couch provides helpful elevation for lymph drainage. In acute care settings, the affected limb should be identified by the patient and by health care providers using a loose-fitting, colored (bright pink) armband to ensure that blood drawings, injections, and blood pressure readings are not done on that limb. Skin should be kept clean and moisturized to limit chapping or chafing leading to breakdown. The patient is taught to avoid cuts and abrasions, as when using kitchen knives or other implements, to wear gloves when gardening and to wash and inspect skin after such activities, and to clean any skin breaks that occur, treating them with an antibacterial cream or ointment and a sterile dry dressing. In cases of lower extremity edema, sitting with the legs in a dependent position, crossing the legs, or standing for prolonged periods should be avoided. Extremes of heat and cold exposure should be avoided. The health care provider should be notified if the limb develops a rash or itching or pain or if the patient develops fever or flu-like symptoms. Local support groups can assist patients in dealing with body image issues, and fitting clothing to asymmetrical limbs. Resources for further information on lymphedema management include The National Lymphedema Network and other support organizations such as the American Cancer Society.

**congenital I.** Chronic pitting edema of the lower extremities. SYN: *Milroy's disease.*

**lymphedema praecox** Obstruction of the lymphatic channels, producing edema, which occurs primarily in women between the ages of 10 and 25; its cause is unknown. The interstitial fluid that accumulates first appears in the feet but can travel proximally to the trunk; it continues to accumulate throughout life. When the edema becomes severe, it predisposes the patient to chronic ulcers and superimposed infections of the legs.

**lymph node basin** The collected lymph nodes into which lymph channels drain from a particular region of the body. Lesions on an arm, for example, drain into the axillary basin, while those on a leg drain into the groin. Similarly, prostate cancers drain into pelvic and periaortic basins.

**lymphoblast** (līm'fō-blāst) [l' + Gr. *blastos*, germ] An immature cell that gives rise to a lymphocyte. SYN: *lymphocytoblast*. **lymphoblastic**, *adj.*

**lymphoblastoma** (līm'fō-blāst-ō'mā) [l' + " + *oma*, tumor] Lymphosarcoma.

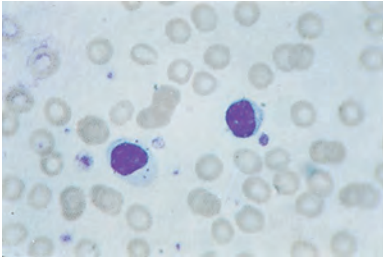
**lymphoblastomatosis** (līm'fō-blās'tō-mā-tō'sīs) [l' + " + *oma*, tumor, + *osis*, condition] A condition produced by lymphoblastomas.

**lymphoblastosis** (līm'fō-blās-tō'sīs) [l' + " + *osis*, condition] An excessive number of lymphoblasts in the blood.

**lymphocele** (līm'fō-sēl) [L. *lymphā*, lymph, + Gr. *kele*, tumor, swelling] A cyst that contains lymph.

**lymphocytapheresis** (līm'fō-sī-tā-fā-rē'sīs) [l' + Gr. *aphairesis*, removal] Removal of lymphocytes from the blood after it has been withdrawn. The blood is then returned to the donor.

**lymphocyte** (līm'fō-sīt) [L. *lymphā*, lymph, + Gr. *kytos*, cell] A white blood cell responsible for much of the body's immune protection. Fewer than 1% are present in the circulating blood; the rest lie in the lymph nodes, spleen, and other lymphoid organs, where they can maximize contact with foreign antigens. SEE: *illius*; *B cell*; *T cell*; *blood for illius*; *cell*, *natural killer*; *cell*, *plasma*; *immunity*, *cell-mediated*; *immunity*, *humoral*.



**NORMAL LYMPHOCYTES**

(Orig. mag. ×1000)

Lymphocytes vary from 5 to 12  $\mu\text{m}$  in diameter; subpopulations can be identified by unique protein groups on the cell surface called clusters of differentiation. T cells, derived from the thymus, make up approx. 75% of all lymphocytes; B cells, derived from the bone marrow, 10%. A third classification is natural killer cells. In the blood, 20% to 40% of the white cells are lymphocytes.

**activated I.** A lymphocyte that has been stimulated by exposure to a specific antigen or by macrophage processing so that it is capable of responding to a foreign antigen by neutralizing or eliminating it.

**I. activation** The use of an antigen (or mitogen in vitro) to stimulate lymphocyte metabolic activity.

**autoreactive I.** Lymphocytes that react with "self"-antigens. Most of these cells are eliminated during lymphocyte maturation or by activation-induced cell death. SYN: *self-reactive lymphocyte*.

**B I.** A lymphocyte formed from pluripotent stem cells in the bone marrow that migrates to the spleen, lymph nodes, and other peripheral lymphoid tissue where it comes in contact with foreign antigens and becomes a mature functioning cell. Mature B cells are able to independently identify foreign antigens and differentiate into antibody-producing plasma cells or memory cells; their activity also may be stimulated by IL-2 (previously called B-cell growth factor). Plasma cells are the only source of immunoglobulins (antibodies). Memory cells enable the body to produce antibodies quickly when it is invaded by the same organism at a later date. SYN: *B cell*. SEE: *humoral immunity*; *immune response*.

**self-reactive I.** Autoreactive lymphocyte.

**T I.** T cell.

**tumor-infiltrating I.** Lymphocytes found in solid tumors (e.g., lung cancers, melanomas, and renal cell carcinomas). Tumor-infiltrating lymphocytes include helper T cells and cytotoxic T cells; they participate in tumor recognition and, in some cases, tumor destruction.

**lymphocyte immune therapy** ABBR: LIT. A purported treatment for recurrent miscarriage, in which cells from a potential father are infused into a woman who has had previous loss of pregnancy after intercourse with this partner.



LIT has not been shown to prevent spontaneous abortion and may be hazardous to the recipient of the infused cells. In the U.S., the Food and Drug Administration (FDA) permits research on LIT but not its use in everyday medical practice.

**lymphocytic colitis** (līm'fā-sīt'ik) ABBR: LC. Chronic watery diarrhea of unknown cause, in which the endoscopic and radiological appearance of the bowel wall is normal. Biopsies of the bowel wall reveal excessive numbers of lymphocytes within the intestinal epithelium. LC is equally common in men and women. It is usually diagnosed in people aged 40 to 60.

**lymphocytoblast** (līm'fō-sī'tō-blāst) [l' + " + *blastos*, germ] Lymphoblast.

**lymphocytopenia** (līm'fō-sīt'ō-pē-nē-ā) [l' + " + *penia*, lack] Lymphopenia.

**lymphocytopenia** (līm'fō-sīt'ō-pōy-ē'sīs) [l' + " + *poiesis*, production] Lymphocyte production.

**lymphocytosis** (līm'fō-sī-tō'sīs) [l' + "

+ *osis*, condition] An excess of lymph cells in the blood.

**lymphoepithelioma** (līm'fō-ēp'ī-thē-lē-ō'mā) [" + Gr. *epi*, at, + *thele*, nipple, + *oma*, tumor] A poorly differentiated squamous cell carcinoma, usually found in the nasopharynx. The tumor is infiltrated by massive numbers of lymphocytes.

**lymphogenesis** (līm'fō-jēn'ē-sis) [" + Gr. *genesis*, generation, birth] Production of lymph.

**lymphogenous** (līm-fōj'ēn-ūs) [" + Gr. *gennan*, to produce] 1. Forming lymph. 2. Derived from lymph.

**lymphogranuloma inguinale** (līm'fō-grān'ū-lō'mā) Lymphogranuloma venereum.

**lymphogranulomatosis** (līm'fō-grān-ū-lō'mā-tō'sis) [" + *granulum*, granule, + Gr. *oma*, tumor, + *osis*, condition] 1. Infectious granuloma of the lymphatics. 2. Hodgkin's disease.

**lymphogranuloma venereum** (līm'fō-grān'ū-lō'mā) [" + " + Gr. *oma*, tumor] ABBR: LGV. A sexually transmitted disease, affecting about 300 patients per year in the U.S., caused by *Chlamydia* species. It has an incubation period of about 3 to 30 days. Its hallmarks are a painless, red erosion on the genitals or rectum, followed 1 to 2 weeks later by inguinal lymph node enlargement (historically called "buboes"). These may cause fistulous tracts or obstruct lymphatic channels if the infection is left untreated. Perirectal lymph nodes may scar and produce late rectal obstruction. Tetracyclines cure the disease in its initial stages but do not resolve complications brought on by scarring or lymphatic obstruction. SYN: *lymphogranuloma inguinale*; *lymphopathia venereum*. SEE: *pelvic inflammatory disease*; *sexually transmitted disease*.

**SYMPTOMS:** Because up to 75% of women and 50% of men have no symptoms, patients do not know they have the disease, continue to spread it, and develop more severe infection. Symptomatic patients may develop ulcerating vesicles on the genitals, urethral inflammation, abdominal pain, and swollen lymph nodes in the groin and rectum; men often have swollen testicles. Approx 40% of women develop pelvic inflammatory disease (PID), leading to chronic pain, infertility, and an increased risk of having a tubal pregnancy.

The Centers for Disease Control recommend that all sexually active women under 20 years of age should be screened yearly for *Chlamydia*; sexually active women over age 20 with multiple sex partners who do not use condoms also should be screened yearly. The infection is diagnosed using fluorescent

anti-*Chlamydia* antibodies. Women, rather than men, are targeted for screening because of their increased use of health care and the risk of developing PID associated with this disease.

**TREATMENT:** The disease can be treated effectively with a 3-week course of doxycycline; erythromycin is used in pregnant women. Recurrent infection is common if barrier contraception is not used during intercourse.

**lymphography** (līm-fōg'rā-fē) [L. *lymph*, lymph, + Gr. *graphein*, to write] Lymphangiography.

**lymphoid** (līm'fōyd) [" + Gr. *eidōs*, form, shape] 1. Consisting of lymphocytes. 2. Resembling lymphatic tissue.

**I. cell** A term formerly used to designate a lymphocyte.

**lymphoidectomy** (līm'fōyd-ēk'tō-mē) [" + " + *ektome*, excision] Surgical removal of lymphoid tissue.

**lymphokine** (līm'fō-kin) A cytokine released by lymphocytes, including many of the interleukins, gamma interferon, tumor necrosis factor beta, and chemokines. SEE: *cytokine*.

**lymphokinesis** (līm'fō-kī-nē'sis) [" + Gr. *kinesis*, motion] 1. Circulation of lymph in the lymphatic system. 2. Movement of lymph in the semicircular canals of the inner ear.

**lymphology** (līm-fōl'ō-jē) [" + Gr. *logos*, word, reason] The science of the lymphatics.

**lymphoma** (līm-fō'mā) A malignant neoplasm originating from lymphocytes. Common forms of lymphoma are listed in the subentries, below. These include Hodgkin's disease, mycosis fungoides, non-Hodgkin's lymphoma. SEE: *Hodgkin's disease*.

**STAGING:** Staging of both Hodgkin's and non-Hodgkin's lymphoma is as follows: Stage I: involvement of a single lymph node or localized involvement. Stage II: Involvement of two or more lymph node regions on the same side of the diaphragm. Stage III: Involvement of several lymph node regions on both sides of the diaphragm. Stage IV: Involvement of extra lymphatic tissue, such as the bone marrow.

**Burkitt's I.** SEE: *Burkitt's lymphoma*.



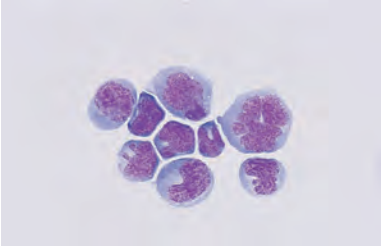
**cutaneous T cell I.** ABBR: CTCL. A malignant non-Hodgkin's lymphoma, with a predilection for infiltrating the skin. In its earliest stages, it often is mistaken for a mild, chronic dermatitis because it appears as itchy macules and patches, often on the chest or trunk. Later, the lesions may thicken, become nodular, or spread throughout the entire surface of the skin, the internal organs, or the bloodstream.

**follicular I.** A B-cell, non-Hodgkin's lymphoma found in adult and elderly patients. It results from a translocation



of an oncogene from chromosome 14 to chromosome 18 [t(14;18)]. Most instances of this lymphoma are indolent, that is, slowly growing.

**Hodgkin's I.** SEE: *Hodgkin's disease, non-Hodgkin's I.* ABBR: NHL. A group of malignant tumors of B or T lymphocytes. In 2008, the American Cancer Society estimated that about 66,100 Americans would be newly diagnosed with the disease. SEE: *illius; Hodgkin's disease.*



#### NON-HODGKIN'S LYMPHOMA

Bizarre-appearing lymphocytes revealing active mitosis (orig. mag.  $\times 1000$ )

**SYMPTOMS:** Painless lymphadenopathy in two thirds of patients is the most frequent presenting symptom. Others have fever, night sweats, loss of 10% or more of body weight in the 6 months before presenting with symptoms of infiltration into nonlymphoid tissue. Additional involvement is in peripheral areas such as epitrochlear nodes, the tonsillar area, and bone marrow. NHL is 50% more frequent in men than in women of similar age. In most cases the cause of NHL is unknown, but patients who have received immunosuppressive agents have a more than 100 times greater chance of developing NHL, probably owing to the immunosuppressive agents activating tumor viruses.

**TREATMENT:** Specific therapy depends on the type, grade, and stage of the lymphoma. Combination chemotherapies, bone marrow transplantation, radiation therapy, and photochemotherapy may be given, depending on the specific diagnosis.

**lymphomatoid** (līm'fō-mā-toyd) [L. *Lympha*, lymph, + Gr. *oma*, tumor, + *eidos*, form, shape] Resembling lymphoma.

**lymphomatosis** (līm'fō-mā-tō'sis) [" + *osis*, condition] Dissemination of lymphoma throughout the body.

**lymphomatous** (līm'fō-mā-tūs) 1. Pert. to a lymphoma. 2. Affected with lymphomata.

**lymphomyxoma** (līm'fō-mik-sō'mā) [" + Gr. *mys*, muscle, + *oma*, tumor] A soft, nonmalignant tumor that contains lymphoid tissue.

**lymphopathia venereum** (līm'fō-pāth'ē-ā) Lymphogranuloma venereum.

**lymphopathy** (līm'fōp'ā-thē) [" + Gr. *pathos*, disease] Any disease of the lymphatic system.

**lymphopenia** (līm'fō-pē'nē-ā) [" + Gr. *penia*, a lack] A deficiency of lymphocytes in the blood. SYN: *lymphocytopenia*.

**lymphoplasmapheresis** (līm'fō-plāz'mā-fār-ē'sis) [" + Gr. *aphairesis*, removal] The removal of lymphocytes and plasma from the blood after it has been withdrawn. The blood is then returned to the donor.

**lymphoplasty** (līm'fō-plās'tē) [" + Gr. *plassein*, to form] Lymphangioplasty.

**lymphopoiesis** (līm'fō-poy-ē'sis) [" + Gr. *poiesis*, production] The formation of lymphocytes or of lymphoid tissue.

**lymphopoietic** (līm'fō-poy-ēt'ik) [" + Gr. *poiein*, to produce] Forming lymphocytes.

**lymphopoietin** (līm'fō-pōy-ē'tin) [" + "] Any growth factor that stimulates lymphocytes to multiply or differentiate.

**lymphopoietin 1** (līm'fō-poy-ēt-in) Interleukin-7.

**lymphoproliferative** (līm'fō-prō-lif'ēr-ā-tiv) Concerning the proliferation of lymphoid tissue.

**lymphoreticular** (līm'fō-rē-tik'ū-lār) [" + *reticular*, net] Pert. to the lymphocyte, to the mononuclear phagocyte system, and to the tissues that support their growth.

**I. disorder** Any benign or malignant disease in which lymphocytes or lymphatic tissues proliferate. Included are self-limited proliferation of lymph glands, lymphocytes, and monocytes; infectious mononucleosis; benign abnormalities of immunoglobulin synthesis; leukemias; lymphomas such as Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma, and mycosis fungoides; malignant proliferative response or abnormal immunoglobulin synthesis such as plasma cell myeloma, macroglobulinemia, and amyloidosis; histiocytosis; and lipid storage disease.

**lymphoreticulosis, benign, of inoculation** (līm'fō-rē-tik'ū-lō'sis) [" + " + Gr. *osis*, condition] Cat scratch disease.

**lymphorrhagia** (līm'fō-rā'jē-ā) [" + Gr. *rhegnynai*, to burst forth] Flow of lymph from ruptured lymph vessels. SYN: *lymphorrhoea*.

**lymphorrhoea** (līm'fō-rē-ā) [" + Gr. *rhoia*, flow] Lymphorrhagia.

**lymphorrhoid** (līm'fō-royd) Dilated lymph channels that resemble hemorrhoids.

**lymphosarcoma** (līm'fō-sār-kō'mā) [" + Gr. *sarx*, flesh, + *oma*, tumor] An infrequently used term for lymphoma, used most often in veterinary medicine. SYN: *lymphoblastoma*.

**lymphoscintigraphy** (līm'fō-sin-tī'grā-fē)

The use of radioactive tracers to identify the lymphatic drainage basin of a tumor. The technique is used to guide the surgeon in performing biopsies and in the removal of tumors.

**lymphostasis** (līm'fōs'tā-sīs) [l' + Gr. *stasis*, a stoppage] Stoppage of the flow of lymph.

**lymphotaxis** (līm'fō-tāk'sīs) [l' + Gr. *taxis*, arrangement] The effect of attracting or repelling lymphocytes.

**lymphotrophy** (līm-fōt'rō-fē) [l' + Gr. *trophe*, nourishment] Lymph nourishment of cells in regions devoid of blood vessels.

**lymphotropic** (līm'fō-trōp'īk) Attracted to lymph cells. For example, human immunodeficiency virus and human T-cell leukemia-lymphoma virus are lymphotropic for CD4+ lymphocytes and Epstein-Barr virus is lymphotropic for B lymphocytes.

**lymphuria** (līm-fū'rē-ā) [l' + Gr. *ouron*, urine] Lymph in the urine.

**Lynch syndrome** (līnch) An autosomal dominant predisposition to colon cancer and other solid tumors. People with Lynch I syndrome are susceptible to colon cancer alone, whereas those with Lynch II syndrome have an additional tendency to get cancers of the colon, ovaries, breasts, and/or uterus. It is also known as *hereditary nonpolyposis colorectal cancer*.

**lyo-** [Gr. *lyein*, a loosening or dissolution] Combining form meaning to *loosen* or *dissolve*.

**lyoenzyme** (lī'ō-ēn'zīm) [l' + *en*, in, + *zyme*, leaven] An extracellular enzyme.

**Lyon hypothesis** (lī'ōn) [Mary Lyon, Brit. geneticist, b. 1925] The idea that one of the X chromosomes of the female is inactivated during embryogenesis and becomes hyperpyknotic. This chromosome forms, in the cell nucleus, the sex chromatin mass, or Barr body. This X chromosome remains in this state throughout the cell's progeny so that in the adult only one X chromosome is active in each cell.

**Lyons Heart Study** A study of the impact of diet on cardiovascular health. It documented that people who had suffered a heart attack could reduce their risk of a second heart attack by following a Mediterranean diet.

**lyophilization** (lī-ōf'ī-lī-zā'shūn) The process of rapidly freezing a substance at an extremely low temperature and then dehydrating the substance in a high vacuum. SYN: *freeze-drying*.

**lyosorption** (lī'ō-sorp'shūn) [l' + *sorbere*, to suck in] The absorption, in a colloid, of a substance on the surface of the particles in the dispersed phase.

**lys** lysine.

**lysate** (lī'sāt) **1.** The products of hydrolysis. **2.** The material that remains when

cells are lysed by enzymes, inorganic chemicals, or physical means.

**lyse** (līz) [Gr. *lysis*, dissolution] **1.** To kill. **2.** To dissolve; to destroy or fragment.

**lysergic acid diethylamide** (lī-sēr'jīk) ABBR: LSD. A hallucinogenic derivative of an alkaloid in ergot. LSD is used legally only for experimental purposes.

**lysimeter** (lī-sīm'ē-tēr) [Gr. *lysis*, dissolution, + *metron*, measure] An apparatus for determining solubilities of various substances.

**lysin** (lī'sīn) A substance that causes cell destruction and death. SEE: *antibody*.

**lysine** (lī'sēn) ABBR: lys. An amino acid that is a hydrolytic cleavage product of digested protein. It is essential for growth and repair of tissues.

**l. acetate** An amino acid.

**l. hydrochloride** An amino acid.

**lysis** (lī'sīs) [Gr., dissolution] **1.** The gradual decline of a fever or disease; the opposite of crisis. **2.** The death of cells or microorganisms, caused by antibodies, complement, enzymes, or other substances.

**-lysis** **1.** Suffix meaning to *loosen* or *dissolve*. **2.** In medicine, combining form indicating *reduction* or *relief* of.

**lysis-centrifugation** A technique for detecting microorganisms in a specimen of body fluid, in which the cells in the fluid are mixed in a tube, and then allowed to stand (usually for an hour) to allow its cellular components to break down. After cellular breakdown ("lysis") the tube is centrifuged to concentrate its sediment. The sediment is subsequently spread on culture media.

Lysis-centrifugation is used to detect bacteria, fungi, mycobacteria, and other microorganisms in blood or body fluids.

**lysogen** (lī'sō-jēn) [l' + *gennan*, to produce] Something capable of producing a lysin.

**lysogenesis** (lī'sō-jēn'ē-sīs) [l' + *genesis*, generation, birth] The production of lysin, a cell-destroying antibody.

**lysogenic** (lī'sō-jēn'īk) [l' + Gr. *gennan*, to produce] Producing lysins.

**lysogenic** (lī-sōj'ē-nē) A special type of virus-bacterial cell interaction maintained by a complex cellular regulatory mechanism. Bacterial strains freshly isolated from their natural environment may contain a low concentration of bacteriophage. This phage will lyse other related bacteria. Cultures that contain these substances are said to be lysogenic.

**lysolecithin** (lī'sō-lēs'ī-thīn) A substance obtained from lecithin through the action of an enzyme present in cobra venom. It demyelinates nerves and destroys red blood cells.

**lysosomal storage disease** (lī'sō-sō'māl) A disease caused by deficiency of specific lysosomal enzymes that normally de-

grade glycoproteins, glycolipids, or mucopolysaccharides. The substances that cannot be catabolized accumulate in lysosomes. Specific enzymes account for specific storage diseases. Included in this group are Gaucher's, Hurler's, Tay-Sachs, Niemann-Pick, Fabry's, Morquio's, Scheie's, and Maroteaux-Lamy diseases.

**lysosome** (lī'sō-sōm) A cell organelle that is part of the intracellular digestive system. Inside its limiting membrane, it contains a number of hydrolytic enzymes capable of breaking down proteins and certain carbohydrates. Lysosomal enzymes contribute to the digestion of pathogens phagocytized by a cell, and also to the tissue damage that accompanies inflammation.

**lysozyme** (lī'sō-zīm) [Gr. *lysis*, dissolution, + *zyme*, leaven] An enzyme

found in neutrophils and macrophages, and in tears, saliva, and other body secretions. It inhibits the growth of bacteria by damaging their cell walls.

**lyssa** (līs'sā) [Gr., frenzy] Obsolete term for rabies.

**Lyssavirus** (līs'ā-vī'rūs) The genus of the family Rhabdoviridae, which includes the rabies virus.

**lyssoid** (līs'oyd) [Gr. *lyssa*, frenzy, + *eidōs*, form, shape] Resembling lyssa or rabies.

**lyssophobia** (līs-ō-fō'bē-ā) [l' + *phobos*, fear] **1.** Fear of going mad, that is, of becoming insane. **2.** Fear of rabies.

**lytic** (līt'ik) Relating to lysis (cellular destruction) or a lysin.

**LZ** Landing zone for a helicopter, usually a minimum of 100× 100 feet and free of overhead obstructions such as trees and power lines.