

# I

- I** 1. Symbol for the element iodine.  
2. Symbol for the quantity of electricity (electric current) expressed in amperes.  
<sup>131</sup>I Radioactive iodine; atomic weight 131.  
<sup>132</sup>I Radioactive iodine; atomic weight 132.

**i** *optically inactive.*

**-ia** Suffix indicating a condition, esp. an abnormal state.

**IABC** *intra-aortic balloon counterpulsation.*

**IABP** *intra-aortic balloon pump.*

**IADR** *International Association for Dental Research.*

**IAET** *International Association for Enterostomal Therapy.*

**I and O** *intake and output.*

**-iasis** [Gr.] Suffix, the same as or interchangeable with *-osis*, meaning the *state of or condition of*, esp. with respect to a pathological condition, infection, or infestation. SEE: *-asis*; *-sis*.

**-iatric** (ī-ăt'rĭk) [Gr. *iatrikos*, medical] Combining form used as a suffix referring to *medicine, the medical profession, or physicians.*

**iatro-** [Gr. *iatros*, physician] Combining form indicating *relationship to medicine or a physician.*

**iatrogenesis** (ī'ăt-rō-jĕn'ĕs-ĭs) [i' + *gennan*, to produce] Any injury or illness that occurs as a result of medical care. Some examples: chemotherapy used to treat cancer may cause nausea, vomiting, hair loss, or depressed white blood cell counts. The use of a Foley catheter for incontinence can create a urinary tract infection and urinary sepsis. A guiding principle of health care is to do little harm to patients while effecting cures—but this ideal is not always achieved. In the U.S., deaths that result from health care errors and complications of treatment are among the most common causes of mortality. **iatrogenic** (ī'ăt-rō-jĕn'ĭk), *adj.*

**iatrogenic disease** A disease caused by or arising as a complication of medical or surgical intervention.

**iatrology** (ī'ă-trŏl'ŏ-jĕ) [i' + *logos*, word, reason] Medical science.

**IBC** *iron-binding capacity.*

**IBD** *inflammatory bowel disease.*

**IBS** *irritable bowel syndrome.*

**ibuprofen** (ī'bū-prŏ'fĕn) A nonsteroidal anti-inflammatory agent with antipyretic and analgesic properties. It inhibits the synthesis of prostaglandins, which may be responsible for its effects. It is used in treating chronic symptomatic rheumatoid arthritis and osteo-

arthritis, dysmenorrhea, athletic injuries, and many other conditions.



All nonsteroidal anti-inflammatory agents may cause bleeding from the gastrointestinal tract and kidney failure.

**IBW** *ideal body weight.*

**IC** *inspiratory capacity.*

**-ic, -ical** Suffixes indicating *characteristic of or relating to.*

**ICA** *islet cell antibodies.*

**ICD** *intrauterine contraceptive device; International Classification of Diseases.*

**ice** (ĭs) [AS. *is*] The solid form of water. Water becomes ice at a temperature of 32°F (0°C).



**i. bag** A flexible, watertight bag with a sealable opening large enough to permit ice cubes or chipped ice to be added. It is used in any condition requiring local application of cold. In an emergency any sturdy, flexible plastic bag can be used, sealing the open end with a knot. A simple ice pack can be made at home by mixing 3 cups of water and 1 cup of rubbing alcohol in a resealable plastic bag and placing the sealed mixture in the freezer for 8 to 12 hours. The solution will not freeze but will attain a gel-like consistency that molds to the body part on which it is used. Alternately, a bag of frozen peas may be used as a conforming ice bag. The usual application time for an ice bag is alternating 10 min on, 20 min off.



Dry ice should not be placed in an ice bag.

**dry i.** Carbon dioxide cooled to the point at which it becomes solid, which occurs at  $-110^{\circ}\text{F}$  ( $-78.9^{\circ}\text{C}$ ). It is used as a commercial refrigerant and for therapeutic refrigeration in the treatment of certain skin conditions, including warts. SEE: *carbon dioxide.*

**i. immersion** Technique for administering therapeutic cold treatments to the distal extremities (e.g., the ankle or hand), using a mixture of water and crushed, flaked, or cubed ice with a temperature range of  $50^{\circ}$  to  $60^{\circ}\text{F}$  ( $10^{\circ}$ – $15^{\circ}\text{C}$ ). The liquid medium allows for equal cooling of irregularly shaped body parts. To reduce the amount of discomfort that is initially experienced during this treatment, the fingers or toes can be covered with an insulating material. Because ice immersion treatments

place the body part in a position that does not promote venous return, the treated limb may swell. It should be elevated and a compression wrap applied following the treatment to encourage venous and lymphatic drainage. SYN: *ice slush*. SEE: *cryotherapy*.



This treatment should not be used in patients with cold intolerance or in those for whom cold application is contraindicated.

**i. massage** Application of ice to obtain a therapeutic numbing effect. Paper cups containing water previously frozen are preferable. The cups are rubbed over a localized area in small circles for 5 to 10 min in order to numb the part and prepare it for deep pressure or deep transverse friction massage. Ice massage is also used to treat traumatized tissues and joints.

**i. slush** Ice immersion.

**i. treatment** The use of ice applied either directly or in a suitable container to cool an injured area. Ice therapy, at least in the first 24 to 48 hours after injury, is believed to be much more beneficial than heat in treating superficial bruises, contusions, and sprains. The application of cold or of ice water in immediate treatment of a burn helps to reduce the extent of inflammation and pain and reduce secondary cell death caused by hypoxia or enzymatic function. Ice therapy may also be used intermittently to reduce or control incisional, muscular, or joint pain.

**iceberg phenomenon** The recognition of gross conditions and diseases and failure to recognize the great majority of conditions that are mild and not clinically obvious.

**iceland disease** Benign myalgic encephalomyelitis.

**iceland moss** An edible lichen, *Cetraria islandica*. It is a demulcent that has been promoted as a treatment for bladder, kidney and lung diseases.

**I cell disease** Mucopolipidosis type II.

**ICF** *intracellular fluid*.

**ICH** *intracranial hemorrhage*.

**ichorous** (i'kor-üs) [Gr. *ichor*, serum] Resembling ichor or watery pus.

**ichthyo-** [Gr. *ichthys*, fish] Combining form meaning *fish*.

**ichthyoid** (ik'thē-oyd) [ʹ + *eidos*, form, shape] Fishlike.

**ichthyology** (ik'thē-öl'ō-jē) [ʹ + *logos*, word, reason] The study of fish.

**ichthyosis** (ik'thē-ō'sis) [ʹ + *osis*, condition] A condition in which the skin is dry and scaly, resembling fish skin. Because ichthyosis is so easily recognized, a variety of diseases have been called by this name.

A mild nonhereditary form is called

winter itch. This is often seen on the legs of older patients, esp. during dry weather during the winter months. It may be more prevalent in those who bathe frequently, thus causing excessive dryness of the skin.

**TREATMENT:** The application of lotions or ointments that soften and soothe the skin provide symptomatic relief for all forms of ichthyosis. Dry scales can be removed by applying a combination of 6% salicylic acid in a gel containing propylene glycol, ethyl alcohol, hydroxy propylene cellulose, and water. This is most effective when applied to moistened skin at night and covered with an occlusive dressing. Soaps should be used sparingly.

**i. congenita** Harlequin fetus.

**i. fetalis** Ichthyosis congenita.

**i. hystrix** Linear nevus. The skin contains bands or lines of rough, thick, warty, hypertrophic papillary growths.

**lamellar i. of newborn** A rare form of inherited ichthyosis with lamellar desquamation.

**i. vulgaris** A hereditary form of ichthyosis that includes two genetically distinct types. Dominant ichthyosis vulgaris is produced by an autosomal dominant gene. Characterized by dry, rough, scaly skin, it is not present at birth and is usually noticed between the ages of one and four. Many cases improve in later life.

The second type is sex-linked ichthyosis vulgaris. It is present only in males and is transmitted by the female as a recessive gene. Onset of scattered large brown scales is seen in early infancy. The scalp may be involved, but the face is spared except for the sides and in front of the ear. There is little tendency for this condition to improve with age.

**ichthyotic** (ik'thē-ōt'ik) [Gr. *ichthys*, fish] Relating to ichthyosis.

**ichthyotoxin** (ik'thē-ō-tōk'sin) [ʹ + *toxikon*, poison] A toxin present in the roe, spine, or muscle of fish or marine invertebrates.

**ICIDH** *International Classification of Impairment, Disability and Handicap*.

**icing 1.** A technique of cutaneous stimulation using cold agents (12°–17°C) to evoke or facilitate reflex muscular responses in patients with central nervous system dysfunction. **2.** Application of ice to a recently traumatized area in order to reduce pain and tissue damage.

**ICN** *International Council of Nurses*.

**ICNP** *International Classification of Nursing Practice*.

**icosahedron** (i-kō'sā-hē'drōn, kōs') [Gr. *eikosaedron*] A nearly spherical structure made of 20 identical subunits linked at 12 symmetrical corners. Each subunit is an equilateral triangle. Several viruses, including the human im-

munodeficiency virus (HIV), are icosahedral.

**ICP** *intracranial pressure.*

**ICS** *incident command system; intercostal space; International College of Surgeons.*

**-ics** [English plural of L. adjectival ending *-ica*, from Gr. adjectival ending *-ika*] Suffix meaning *organized body of knowledge.*

**ICSH** *interstitial cell-stimulating hormone.* SEE: *under hormone.*

**ictal** (ik'tāl) [L. *ictus*, a blow or stroke] Pert. to or caused by a sudden attack or stroke such as epilepsy. SEE: *postictal.*

**icteric** (ik-tēr'ik) [Gr. *ikteros*, jaundice] Pert. to jaundice.

**icterogenic, icterogenous** (ik'tēr-ō-jěn'ik, -ōj'ēn-ūs) [I' + *gennan*, to produce] Causing jaundice.

**icterohemoglobinuria** (ik'tēr-ō-hē'mō-glō'bī-nū-rē-ā) [I' + *haima*, blood, + L. *globus*, globe, + Gr. *ouron*, urine] Concerning icterus and hemoglobinuria.

**icteroid** (ik'tēr-oyd) [I' + *eidōs*, form, shape] Resembling jaundice; yellow-hued.

**icterus** (ik'tēr-ūs) [Gr. *ikteros*, jaundice] Jaundice.

**i. gravis neonatorum** Hemolytic disease of the newborn. SEE: *erythroblastosis fetalis; exchange transfusion; kernicterus; phototherapy.*

**hemolytic i.** Hemolytic jaundice.

**i. neonatorum** Physiological jaundice of the newborn.

**nonobstructive i.** Hemolytic jaundice.

**obstructive i.** Obstructive jaundice.

**ictus** (ik'tūs) [L., stroke] Pert. to or caused by a sudden symptomatic attack—esp. the new onset of neurological symptoms such as those seen in seizures or strokes.

**ICU** *intensive care unit.*

**ID** *identification; infective dose; inside diameter; intradermal.*

**ID<sub>50</sub>** The infective dose of microorganisms that will cause 50% of exposed individuals to become ill.

**id** [L. *id*, it; later translators of Freud's writings believed that the word *es* should have been translated to *it* and not to *id*] In Freudian psychiatry, one of the three divisions of the psyche, the others being the ego and superego. The id, the obscure, inaccessible part of personality, serves as a repository of instinctual drives continually striving for satisfaction. Its existence is unproven.

**id** L. *idem*, the same.

**-id** [Gr. *eidōs*, form, shape] Suffix indicating certain secondary skin eruptions that appear some distance from the site of primary infection. If the etiological agent of primary infection is known, the secondary lesion is designated by add-

ing the suffix *-id*, as in tuberculid and trichophytid.

**IDDM** *insulin-dependent diabetes mellitus.*

**IDEA** *Individuals with Disability Education Act.*

**idea** [Gr., form] A mental image or concept.

**autochthonous i.** A thought that comes into the mind independent of a train of thoughts, in an unaccountable way.

**dominant i.** An idea that controls all one's actions and thoughts.

**fixed i.** An idea that completely dominates the mind despite evidence to the contrary; a delusion. SYN: *idée fixe.*

**flight of i.'s** Continuous but fragmented use of language; a hallmark of psychosis or mania. The general train of thought can be followed but direction is frequently changed, often by chance stimuli from the environment.

**i. of reference** The mistaken idea that the conversation or actions of others allude to oneself.

**ideal** [L. *idea*, model] A goal or endeavor regarded as a standard of perfection.

**ideation** (ī-dē-ā'shūn) The process of thinking; the formation of ideas. Ideation is impaired in dementias, depression, organic brain diseases, and some drug overdoses but speeds up in the early stage of some types of mild intoxication. It is esp. active in manic states.

**identical** [L. *identicus*, the same] Exactly alike.

**identification** [I' + *facere*, to make] **1.** The classification of an object within a category. **2.** Pattern matching, e.g., in diagnosis or laboratory analysis; specification. **3.** The patterning of one's behavior and attitudes on the perceived qualities demonstrated by others. This plays a major role in personality development.

**dental i.** The use of the unique characteristics of a person's teeth or dental work as recorded in dental charts, radiographs, and records to establish the person's identity.

**palm and sole system of i.** A system based on prints of the palmar surface of the hand and the plantar surface of the foot. SEE: *dermatoglyphics.*

**identifier** (ī-dēn'tī-fī'ēr) A unique fact, finding, number, symbol, or word that specifies a person, place, or thing, esp. in a hospital.

**identity** (ī-dēn'tī-tē) The characteristics by which an individual, organism, specimen, or finding is known and recognized.

**ego i.** The sense of self that provides a unity of personality.

**gender i.** SEE: *gender identity.*

**i. testing** SEE: *paternity test.*

**identity, disturbed personal** Inability to

distinguish between self and nonself.  
SEE: *Nursing Diagnoses Appendix*.

**ideo-** [Gr. *idea*, form] Prefix pert. to *mental images*.

**ideology** (ī'dē-ōl'ō-jē) [" + *logos*, word, reason] **1.** The study of ideas or thought. **2.** A system or schema of ideas; a philosophy.

**idio-** [Gr. *idios*, own] Prefix indicating *individual, distinct, or unknown*.

**idiocy** [Gr. *idiotes*, ignorant person] Any severe mental deficiency apparent in early childhood. The cause, which occurs either in utero or in the first years after birth, may be genetic or traumatic or due to severe insults to the brain. SEE: *mental retardation*.

**idioglossia** (īd'ē-ō-glōs'ē-ā) [" + *glossa*, tongue] **1.** An inability to articulate properly, so that the sounds emitted are like those of an unknown language. **2.** A unique form of speech that a child with congenital word deafness may utter. It simulates fluent language but does not share its vocabulary, diction, or syntax.

**idiogram** (īd'ē-ō-grām") [" + *gramma*, something written] The graphic representation of the karyotype, or chromosome complement of a cell.

**idiolysin** (īd'ē-ō-i-sōl'ī-sin) [" + *isos*, equal, + *lysis*, dissolution] A hemolysin active against the cells of an individual of the same species.

**idiolysin** (īd'ē-ōl'ī-sin) [" + *lysis*, dissolution] A lysin normally present in the blood.

**idiopathic** (īd'ē-ō-pāth'īk) [" + *pathos*, disease, suffering] Pertaining to illnesses whose cause is either uncertain or as yet undetermined.

**idiopathic disease** A disease for which no causative factor can be recognized.

**idiopathic hyperkinetic heart syndrome** Hyperactivity of the heart not due to a disease process. Its cause is unknown. In the past, this syndrome was referred to as neurocirculatory asthenia.

**idiosyncrasy** (īd'ē-ō-sin'krā-sē) [" + *syn*, together, + *krasis*, mixture] **1.** Special characteristics by which persons differ from each other. **2.** That which makes one react differently from others; a peculiar or individual reaction to an idea, action, drug, food, or some other substance through unusual susceptibility. **idiosyncratic** (-sin-krāt'īk), *adj.*

**drug i.** An unusual response to a drug. It can manifest as an accelerated, toxic, or inappropriate response to the usual therapeutic dose of a drug. SYN: *idiosyncrasy of effect*.

**i. of effect** Drug i.

**idiotope** (īd'ē-ō-tōp) A single antigenic determinant on a variable region of an antibody or T-cell receptor. A set of idiotopes make up the idiotype.

**idiotropic** (īd'ē-ō-trōp'īk) [Gr. *idios*,

own, + *trophe*, nourishment] Capable of securing its own nourishment.

**idiotropic** (īd'ē-ō-trōp'īk) [" + *trope*, a turning] Egocentric.

**idiot-savant** (ēd-jō'sā-vānt) [Fr., learned idiot] An individual who is generally mentally retarded, but has the ability to do complicated tasks such as play instruments, recall dates, or accurately and rapidly perform mathematical calculations. SEE: *autism*.

**idiotype** (īd'ē-ō-tīp') [" + "'] In immunology, the set of antigenic determinants (idiotopes) on an antibody that make that antibody unique. It is determined by the amino acids of immunoglobulin light and heavy chains. **idiotypic** (-tīp'īk), *adj.*

**idiovariation** (īd'ē-ō-vār'ē-ā-shūn) [" + L. *variare*, to vary] A mutation that occurs without known cause.

**idioventricular** (īd'ē-ō-vēn-trīk'ū-lār) [" + L. *ventriculus*, little belly] Pert. to the cardiac ventricle alone when dissociated from the atrium. A heart rhythm that arises in the ventricle is an idioventricular rhythm.

**idée fixe** (ē-dā' fēks') [Fr.] Fixed idea.

**IDM** *infant of diabetic mother*.

**-id reaction** A generalized or wide-spread rash appearing at a location distant from the original skin irritation site. SEE: *-id*.

**IDU** **1.** *5-iodo-2'deoxyuridine*; *idoxuridine*. **2.** *Injection drug use*.

**IE** *infective endocarditis*.

**I:E ratio** In respiratory therapy or mechanical ventilation, the ratio of a patient's inspiratory to expiratory time.

**Ig** *immunoglobulin*.

**IgA** *immunoglobulin A*.

**IgD** *immunoglobulin D*.

**IgE** *immunoglobulin E*.

**IgG** *immunoglobulin G*.

**IgM** *immunoglobulin M*.

**IH** *infectious hepatitis*.

**IHC** *immunohistochemistry*.

**IHS** *Indian Health Service*.

**IL** (ī'ēl') *interleukin*.

**ILD** *interstitial lung disorder*.

**ile** *isoleucine*.

**ileac** (īl'ē-āk) **1.** Pert. to the ileum. **2.** Pert. to the ileus.

**ileal** (īl'ē-āl) Pert. to the ileum.

**ileal conduit** SEE: *under conduit*.

**ileectomy** (īl'ē-ēk'tō-mē) [L. *ileum*, ileum, + Gr. *ektome*, excision] Excision of the ileum.

**ileitis** (īl'ē-ī'tis) [" + Gr. *itis*, inflammation] Inflammation of the ileum. The most common cause is Crohn's disease (regional ileitis), an inflammatory bowel disease. SEE: *Crohn's disease; inflammatory bowel disease*.

**SYMPTOMS:** Patients may have pain in the right lower quadrant of the abdomen, often with diarrhea, nausea, vomiting, weight loss, and fevers. The stool may contain pus, blood, or mucus.

**backwash i.** Inflammation of the ileum that occurs when the contents of the colon flow backward into the last segment of the small intestine. Backwash ileitis is a risk factor for colon cancer.

**regional i.** Crohn's disease.

**ileo-** (il'ē-ō) [L. *ileum*] Combining form meaning *ileum*.

**ileocecal** (il'ē-ō-sē'kāl) [" + *caecus*, blind] Relating to the ileum and cecum.

**ileocecostomy** (il'ē-ō-sē-kōs'tō-mē) [" + " + Gr. *stoma*, opening] The surgical formation of an opening between the ileum and cecum.

**ileocolic** (il'ē-ō-kōl'ik) [" + Gr. *kolon*, colon] Pert. to the ileum and colon.

**ileocolitis** (il'ē-ō-kō-lī'tis) [" + " + *itis*, inflammation] Inflammatory bowel disease.

**ileocolonoscopy** (il'ē-ō-kō'lōn-ōs'kō-pē) [" + "] Endoscopic examination of the distal gastrointestinal tract, including the rectum, colon, and terminal ileum.

**ileocolostomy** (il'ē-ō-kō-lōs'tō-mē) [" + " + *stoma*, mouth] An anastomosis between the ileum and the colon.

**ileocolotomy** (il'ē-ō-kō-lōt'ō-mē) [" + " + *tome*, incision] An incision of the ileum and colon.

**ileocystoplasty** (il'ē-ō-sist'ō-plās'tē) [" + Gr. *kystis*, bladder, + *plassein*, to form] The use of an isolated ileal segment to increase the size of the bladder.

**ileocystostomy** (il'ē-ō-sīs-tōs'tō-mē) [" + " + *stoma*, mouth] The use of an isolated segment of ileum to replace an absent, diseased, or obstructed ureter. The distal portion is implanted into the bladder.

**ileoileostomy** (il'ē-ō-il'ē-ōs'tō-mē) [" + *ileum*, small intestine, + Gr. *stoma*, mouth] The surgical formation of an opening between two parts of the ileum.

**ileoproctostomy** (il'ē-ō-prōk-tōs'tō-mē) [" + Gr. *proktos*, rectum, + *stoma*, mouth] The establishment of an opening between the ileum and rectum. SYN: *ileorectostomy*.

**ileorectal** (il'ē-ō-rēk'tāl) [" + *rectum*, rectum] Concerning the ileum and rectum.

**ileorectostomy** (il'ē-ō-rēk-tōs'tō-mē) [" + " + Gr. *stoma*, mouth] Ileoproctostomy.

**ileorrhaphy** (il'ē-ōr'ā-fē) [" + Gr. *raphē*, seam, ridge] Surgical repair of the ileum.

**ileosigmoidostomy** (il'ē-ō-sig'moyd-ōs'tō-mē) [" + Gr. *sigma*, letter S, + *eidos*, form, shape, + *stoma*, mouth] A surgical opening between the ileum and sigmoid flexure.

**ileostomy** (il'ē-ōs'tō-mē) [" + Gr. *stoma*, mouth] A surgical passage through the abdominal wall, through which a segment of ileum is exteriorized. An end stoma or loop stoma may be created. Feces or urine drain into a

pouch worn on the abdomen. SEE: *Nursing Diagnoses Appendix*.

**urinary i.** The surgical formation of an opening from the urinary tract to an isolated segment of the ileum, most often by implanting the ureters into an ileal segment fashioned into a continent ileal conduit (e.g., Kock pouch).

**ileotomy** (il'ē-ōt'ō-mē) [" + Gr. *tome*, incision] An incision into the ileum.

**ileotransversostomy** (il'ē-ō-trāns'vēr-sōs'tō-mē) [" + *transversus*, crosswise, + Gr. *stoma*, mouth] Connection of the ileum with the transverse colon.

**ileum** (il'ē-ūm) *pl.* **ileae** [L., *ileum*] The third and last part of the small intestine, which ends at the ileocecal orifice, the opening to the large intestine. The jejunum grades imperceptibly into the ileum, but as a whole the ileum has a narrower diameter (an average of 2.5 cm) than the jejunum. The ileum has many lymphoid nodules (Peyer's patches), but only a few low circular folds (*plicae circulares*), and the end of the ileum has none at all. The ileum is approx. 4 m (12.5 ft) long. SEE: *abdominal regions* and *digestive system* for *ilus*.

**duplex i.** A congenital doubling of the ileum.

**ileus** (il'ē-ūs) [Gr. *eileos*, a twisting] Loss of bowel motility, occasionally resulting in intestinal obstruction. It is characterized by loss of the forward flow of intestinal contents, often accompanied by abdominal cramps, increasing abdominal distention, obstipation or constipation, vomiting, electrolyte disturbances, and dehydration. SEE: *Nursing Diagnoses Appendix*. SYN: *adynamic i.*; *paralytic i.*

Usually occurring after abdominal surgery, ileus may also occur in response to trauma, toxemia, or peritonitis or because of electrolyte deficiencies (esp. hypokalemia) or from use of drugs (e.g., anticholinergics and ganglionic blocking agents).

**PREVENTION:** Prevention of ileus in postoperative patients can sometimes be achieved by encouraging early ambulation and gradually increasing activity. The patient should receive analgesics so that pain does not interfere with mobilization; opioids, however, slow gastrointestinal (GI) motility.

**PATIENT CARE:** The patient is assessed for abdominal distention (abdominal girth is measured and the site marked to ensure the accuracy of future assessments). In the absence of evidence of mechanical obstruction, oral intake may begin even before bowel sounds return. (Bowel sounds are an indication of bowel motility, not absorption; even when bowel sounds are absent, the small bowel is capable of



absorbing nutrients.) Ambulation is encouraged, and when nausea, vomiting and obstipation are present, a nasogastric (NG) or weighted nasointestinal (Miller-Abbott) tube is inserted as prescribed. Characteristics and quantity of drainage from the NG tube are documented. The tube is attached to continuous low suction for decompression, and the pH of drainage from an intestinal tube is measured to help determine its placement level. Abdominal girth is measured to detect progress/regress of distention. Oral hygiene and misting are provided to manage dryness and prevent cracking of the lips, sordes, and obstruction of the salivary glands. Lemon and glycerin preparations, which may etch tooth enamel and add to drying, are not used. Intravenous fluids are given, renal function is assessed, and fluid and electrolyte balance is monitored to maintain normal hydration. Vital signs also are monitored: a drop in blood pressure may indicate dehydration or shock. If colonoscopy or a rectal tube is used to aid decompression, the treatment is explained. Cholinergic agents may sometimes be prescribed. When ileus develops secondary to another illness (e.g., severe infection or electrolyte imbalance), the primary problem is treated.

**adynamic i.** Ileus.

**dynamic i.** Ileus caused by intestinal muscle spasm. SYN: *spastic ileus*.

**gallstone i.** An obstruction of the small bowel, occurring typically but not exclusively in elderly female patients and caused by the trapping of a large gallstone at or near the ileocecal valve. Most gallstones responsible for ileus are greater than 2.5 cm in diameter.

**mechanical i.** Ileus produced by a physical obstruction (e.g., hernia, adhesion, or tumor).

**meconium i.** Ileus due to impacted meconium in the intestines. It is usually associated with newborn children with cystic fibrosis. It is only rarely seen in newborns with other diseases that affect pancreatic exocrine secretion.

**PATIENT CARE:** All newborns are observed for passage of meconium. Meconium ileus occurs in about 10% of infants with cystic fibrosis and is characterized clinically by constipation, bilious vomiting, and progressive abdominal distention. Dehydration and electrolyte imbalance follow. The condition is diagnosed by its clinical presentation and the appearance of plain x-rays of the abdomen (which show bowel obstruction in the distal ileum); it is often supported by tests (e.g., sweat chloride testing or immunoreactive trypsinogen tests). The newborn with meconium ileus can be treated with gastrografin enemas, intravenous hydra-

tion, and general supportive care in mild presentations; when ileus is severe, laparotomy is required to relieve the obstruction. In such a case, the infant is prepared for surgery, and the parents are given psychological and emotional support.

**paralytic ileus** Ileus.

**i. paralyticus** Paralytic ileus.

**postoperative i.** Ileus resulting from handling the bowel during surgery, anesthesia, electrolyte imbalance, or intraperitoneal infection.

**spastic i.** Dynamic i.

**ilia** (il'ē-ā) Pl. of ilium.

**iliac** (il'ē-āk) [L. *iliacus*, pert. to ilium] Relating to the ilium.

**i. fascia** Transversalis fascia over the anterior surface of the iliopsoas muscle.

**i. fossa** SEE: under *fossa*.

**i. region** The inguinal region on either side of the hypogastrium.

**i. spine** SEE: under *spine*.

**-ilide** (-i-lid') A suffix used in pharmacology to designate any Vaughan-Williams class III antiarrhythmic drug that blocks potassium channels.

**ilio-** [L. *ilium*, flank] Combining form meaning *ilium* or *flank*.

**iliococcygeal** (il'ē-ō-kōk-sij'ē-āl) [" + Gr. *kōkkyx*, coccyx] Concerning the ilium and coccyx.

**iliocostal** (il'ē-ō-kōs'tāl) [" + *costa*, rib] Joining or concerning the ilium and ribs.

**iliofemoral** (il'ē-ō-fēm'or-āl) [" + *femoralis*, pert. to femur] Pert. to the ilium and femur.

**iliohypogastric** (il'ē-ō-hī'pō-gās'trik) [" + Gr. *hypo*, under, + *gaster*, stomach] Concerning the ilium and hypogastrium.

**ilioinguinal** (il'ē-ō-in'gwī-nāl) [" + *inguinalis*, pert. to groin] Pert. to the groin and iliac regions.

**iliolumbar** (il'ē-ō-lūm'bar) [" + *lumbus*, loin] Pert. to the iliac and lumbar regions.

**iliopagus** (il'ē-ōp'ā-gūs) [" + Gr. *pagos*, thing fixed] Twins joined in the iliac region.

**iliopectineal** (il'ē-ō-pēk-tīn'ē-āl) [L. *ilium*, flank, + *pecten*, a comb] Concerning the ilium and pubic bone.

**iliopelvic** (il'ē-ō-pēl'vik) [" + *pelvis*, basin] Concerning the iliac area and pelvis.

**iliopsoas** (il'ē-ō-sō'ās) [" + Gr. *psoa*, loin] The compound iliacus and psoas magnus muscles.

**iliosacral** (il'ē-ō-sā'krāl) [" + *sacralis*, pert. to the sacrum] Concerning the sacrum and ilium.

**iliosciatic** (il'ē-ō-sī-āt'ik) [" + *sciaticus*, pert. to the ischium] Concerning the ilium and ischium.

**iliospinal** (il'ē-ō-spi'nāl) [" + *spinalis*, pert. to the spine] Concerning the ilium and spinal column.

**iliothoracopagus** (il'ē-ō-thō'rā-kōp'ä-güs) [l' + Gr. *thorax*, chest, + *pagos*, thing fixed] Twins joined from pelvis to thorax.

**iliotibial band syndrome, iliotibial band friction syndrome** (il'ē-ō-tib'ē-äl) ABBR: ITB or IT band. An inflammatory overuse syndrome caused by mechanical friction between the iliotibial band and the lateral femoral condyle. It is commonly seen in distance runners and cyclists. Pain is manifested over the lateral aspect of the knee along the iliotibial band with no effusion of the knee.

**ilioxiphopagus** (il'ē-ō-zī-fōp'ä-güs) [l' + Gr. *xiphos*, sword, + *eidōs*, form, shape, + *pagos*, thing fixed] Twins joined from the pelvis to the xiphoid process.

**ilium** (il'ē-üm) *pl. ilia* [L., groin, flank] **1.** One of the bones of each half of the pelvis. It is the superior and widest part and serves to support the flank. In the child, before fusion with adjacent pelvic bones, it is a separate bone. SYN: *os ilium*. **2.** The flank. SEE: *sacroiliac*.

**ill** (il) [Old Norse *illr*, bad] Sick; not healthy; diseased.

**illiterate** Being unable to read and write or to use written language to interpret graphs, charts, tables, maps, symbols, and formulas.

**illness** (il'nis) [Old Norse *illr*, bad, + AS. *-ness*, state of] **1.** Sickness; disease. **2.** An ailment.

**catabolic i.** Rapid weight loss with loss of body fat and muscle mass that frequently accompanies short-term, self-limiting conditions such as infection or injury. This condition may be associated with diabetic ketoacidosis, multiple organ system failure, and chemotherapy or radiation therapy for cancer.

**TREATMENT:** Inflammation should be reduced and appropriate nutrients provided.

**catastrophic i.** An unusually prolonged or complex illness, esp. one that causes severe organ dysfunction or threatens life. Catastrophic illnesses often make exceptional demands on patients, caregivers, families, and health care resources.

**folk i.** A disease or condition found only in specific societies, ethnic groups, or cultures. Often the culture has causal explanations for these illnesses, as well as preventive and treatment measures. Well-known examples are present in the Hispanic American culture (e.g., *empacho*, *caída de mollera*, *mal de ojo*, *susto*). These are diagnosed and treated by folk healers called *curanderos*. Some other examples of folk illnesses include *amok* and *piblokto*, though numerous other examples exist within multiple cultures. SEE: *amok*; *piblokto*.

**functional i.** Functional disease.

**heat i.** A general term used to describe the harmful effects on the human body of being exposed to high temperature and/or humidity. SEE: *heat cramp*; *heat exhaustion*; *heatstroke*; *syncope*.

**mental i.** Any disorder that affects mood or behavior.

**psychosomatic i.** SEE: *somatoform disorder*.

**terminal i.** SEE: *terminal illness*.

**illumination** (il-lū-mīn-ā'shūn) [L. *illuminare*, to light up] The lighting up of a part for examination or of an object under a microscope.

**axial i.** Light transmitted along the axis of a microscope. SYN: *central illumination*.

**central i.** Axial i.

**dark-field i.** The illumination of an object under a microscope in which the central or axial light rays are stopped and the object is illuminated by light rays coming from the sides, which causes the object to appear light against a dark background. This technique is used to observe extremely small objects such as spirochetes or colloid particles.

**direct i.** The illumination of an object under a microscope by directing light rays upon its upper surface.

**focal i.** Concentration of light on an object by means of a mirror or a system of lenses.

**oblique i.** Illumination of an object from one side.

**transmitted light i.** Illumination in which the light is directed through the object. Light may come directly from a light source or be reflected by a mirror.

**illusion** [L. *illusio*] An inaccurate perception; a misinterpretation of sensory impressions, as opposed to a hallucination, which is a perception formed without an external stimulus. Vague stimuli are conducive to the production of illusions. If an illusion becomes fixed, it is said to be a delusion.

**optical i.** A visual impression that is inaccurately perceived.

**illusional** Pert. to, or of the nature of, an illusion.

**IM** *Internal medicine; intramuscular(ly)*.

**im-** Prefix that is used in place of *in-* before words beginning with *b*, *m*, or *p*.

**ima** (ī'mā) [L.] Lowest.

**image** (im'ij) [L. *imago*, likeness] **1.** A mental picture representing a real object. **2.** A more or less accurate likeness of a thing or person. **3.** A picture of an object such as that produced by a lens or mirror. **4.** In radiology, a representation of structures within the body as a result of examination by various physical phenomena (e.g., x-rays, gamma rays, sound, or radio).

**body i.** **1.** The subjective image or picture people have of their physical ap-

pearance based on their own observations and the reaction of others. **2.** The conscious and unconscious perception of one's body at any particular time.

**i. detector** Any device used in radiology to receive and record energy emitted in imaging from its source. Examples of image detectors are x-ray cassettes, imaging plates, ultrasonic transducers, and flat panel detectors.

**direct i.** An image produced from radiation without secondary image receptors. SYN: *virtual image*.

**double i.** A perceived image that occurs in strabismus when the visual axes of the eyes are not directed toward the same object. SYN: *false image*. SEE: *diplopia*.

**false i.** Double i.

**i. intensifier** A special vacuum tube used during fluoroscopic imaging that increases the brightness of an image. This increased brightness is controlled by image minification and electron acceleration. The minified image can be viewed directly, coupled with a television camera, or imaged by serial or digital radiography. The quality of the image is better than that of an unintensified fluoroscopic image.

**inverted i.** An image that is turned upside down.

**latent i.** **1.** In radiology, the image within the emulsion of an exposed radiograph that is invisible because it has not been developed. **2.** An unprocessed image physically present within an image receptor but not yet visible.

**mirror i.** An image of an object in which right and left are reversed. The term is also used to indicate the similarity of chemical substances or persons with quite similar personalities and looks (e.g., identical twins).

**i. plate** A photostimulable image detector used in computed tomography in place of x-ray cassettes. It gathers the energy from x-ray photons on a layer of phosphor that can repeatedly store and release information in digitized form for enhancement, recording, and image display.

**radiographic i.** Radiograph.

**real i.** The image formed by convergence of rays of light from an object.

**i. receptor** Any device used in radiology to detect the energy released by the imaging instrument after it passes through the imaged body part.

**i. reconstruction** Reconstruction (2).

**virtual i.** Direct i.

**imagery** (im'ij-rē) [L. *imago*, likeness] Imagination; the calling up of events or mental pictures. Mental imagery may be of various types.

**active i.** The direction of attention toward desired feelings, outcomes, or thoughts and away from unpleasant or unwanted feelings or thoughts. Also

known as guided imagery or rehearsal imagery. SYN: *guided imagery*; *rehearsal imagery*.

**auditory i.** A mental image of sounds that can be recalled, as thunder or wind.

**guided i.** Active imagery.

**rehearsal i.** Active imagery.

**smell i.** A mental concept of odor previously experienced.

**tactile i.** A mental image of the way an object feels.

**taste i.** A mental concept of taste sensations previously experienced.

**visual i.** A mental concept of an object seen previously. SEE: *afterimage*.

**imagination** [L. *imago*, likeness] The formation of mental images of things, persons, or situations that are wholly or partially different from those previously known or experienced.

**imaging** (im'ij-jīng) The production of a picture, image, or shadow that represents the object being investigated. In diagnostic medicine the classic technique for imaging is radiographic or x-ray examination. Techniques using computer-generated images produced by x-ray, ultrasound, or magnetic resonance are also available.

**diffusion weighted i.** In magnetic resonance imaging, the use of changes in the movement of water through tissues as a contrast medium. Diffusion weighted imaging has been used in the diagnosis of strokes and other neurological diseases as well as abdominal and musculoskeletal injuries and diseases.

**digital i.** The capture and production of an image of an object, either on film or on a computerized display, where it can be reformatted and analyzed. Commonly used imaging modalities include x-rays, ultrasound, and magnetic resonance.

**digital subtraction i.** In radiology, use of electronic means to subtract portions of the radiographic image in order to better visualize the object.

**gated blood pool i.** Radioisotopic imaging of the heart, esp. of the muscular contraction of its walls and of its ejection fraction. Red blood cells are withdrawn and labeled with an isotope of technetium. A sequence of images is taken immediately after the radiolabeled blood is reinjected into a peripheral vein and allowed to circulate. The images are timed to begin with each ventricular depolarization (with each R wave of the electrocardiogram). Normally the ejection of blood from the heart occurs at the same time and with the same strength from all muscle segments. Areas of the heart affected by infarction may not move normally (they may be "akinetic" or "hypokinetic") or they may move paradoxically (e.g., when a ventricular aneurysm is



present, they may be “dyskinetic”).  
 SYN: *gated blood pool study*.

**myocardial perfusion i.** ABBR: MPI. Using radioactive isotopes, such as  $^{201}\text{Tl}$  or  $^{99\text{m}}\text{Tc}$  sestamibi, to gauge the blood supply and viability of the regions or walls of the heart. MPI frequently is used to assess patients with coronary artery disease, often in conjunction with exercise tolerance tests. A patient with a coronary artery that is almost totally blocked, for example, may take up only a small quantity of radioisotope during exercise but much more of the tracer after several hours of rest. By contrast, heart muscle that is fed by a completely blocked artery will take up no radioisotope either during or after exercise.

**perfusion weighted i.** In radioisotopic imaging, the use of differences in blood flow through organs as a means of diagnosing diseases such as strokes or malignancies.

**physiological i.** The visual representation of the functions of an organ, i.e., of its blood flow, electrical activity, metabolism, oxygen uptake, or working receptors.

**polarized helium imaging** A means of assessing asthma in which a magnetic resonance image is made of the lungs after a patient inhales polarized helium gas. Asthmatics have ventilation defects in the lungs that are not present in nonasthmatics.

**radionuclide reflux i.** A nuclear medicine scan used to determine whether an infant has gastroesophageal reflux. Radioactively labeled milk is given to the child orally, and its progress through the upper gastrointestinal tract (and in reflux, into the lungs) is monitored. The scan is typically used if an infant has had more than one episode of aspiration pneumonia.

**imago** (i-mā'gō) [L., likeness] **1.** An image or shadow. **2.** A memory, esp. of a loved one, developed during childhood that has become clouded by idealism and imagination. **3.** The adult, sexually mature form of an insect.

**imbalance** (im-bāl'āns) [L. *in-*, not, + *bilanx*, two scales] Lack of balance; the state of inequality in power between opposing forces.

**autonomic i.** An imbalance between sympathetic and parasympathetic divisions of the autonomic nervous system, esp. as pertains to vasomotor reactions.

**occupational i.** A configuration of activities within a person's lifestyle that does not meet physiological, psychological, or social needs in a manner that is healthful and satisfactory to the individual.

**sympathetic i.** Vagotonia.

**vasomotor i.** Excessive vasoconstriction or vasodilation.

**imbed** (im-bēd') [L. *in*, in, (put) into, +

AS. *bedd*, bed] In histology, to surround with a firm substance, such as paraffin, preparatory to cutting sections. SEE: *embedding*.

**imbibition** (im'bi-bish'ūn) [ʹ + *bibere*, to drink] The absorption of fluid by a solid body or gel.

**imbricated, imbrication** (im'brī-kāt-ēd, im'brī-kā'shūn) [L. *imbricare*, to tile] **1.** Overlapping, as tiles. **2.** The overlapping of aponeurotic layers in abdominal surgery.

**Imlerslund syndrome** [Olga Imlerslund, Norwegian pediatrician, 1907–1987] A rare, autosomal recessive form of vitamin B12 deficiency, also known as *juvenile-type pernicious anemia*.

**imidazole** (im-id-āz'ōl) An organic compound,  $\text{C}_3\text{H}_4\text{N}_2$ , characterized structurally by the presence of the heterocyclic ring that occurs in histidine and histamine.

**imide** (im'id) A compound with the bivalent atom group (—NH).

**IMIG** *intramuscular immune globulin*.

**immature** (im'mā-tūr') [L. *in-*, not, + *maturus*, ripe] Not fully developed or ripened.

**immediate** [ʹ + *mediare*, to be in middle] Direct; without intervening steps.

**immersion** (im-ēr'shūn) [L. *in*, into, + *mergere*, to dip] **1.** Placing a body under water or other fluid. **2.** In microscopy, the act of immersing the objective (then called an immersion lens) in water or oil, preventing total reflection of rays falling obliquely upon peripheral portions of the objective.

**i. foot** SEE: under *foot*.

**homogeneous i.** Immersion in which the stratum of air between objective and cover glass is replaced by a medium that deflects as little as possible the rays of light passing through the cover glass.

**immiscible** (i-mis'ī-bl) [L. *in-*, not, + *miscere*, to mix] Pert. to that which cannot be mixed, as oil and water.

**immittance audiometry** A type of audiometry that combines acoustic reflex testing, a reflex decay test, and tympanometry.

**immobilization** (i-mō'bī-lī-zā'shūn) [ʹ + *mobilis*, movable] **1.** The making of a part or limb immovable. SEE: *illus*. **2.** Restricting a patient to a bed or chair.



KNEE IMMOBILIZATION

**PATIENT CARE:** The patient is assessed for development of any of the complications of immobilization, such as atelectasis, pneumonia, deep vein thrombosis (DVT), urinary tract infections, constipation, pressure ulcers, and contracture formation. Lung and heart sounds are auscultated, fluid balance and nutritional and dietary fiber intake monitored, and bowel and bladder function are assessed. Long-term immobilization will result in the atrophy of skeletal muscle and deconditioning.

Techniques to prevent complications include having the patient breathe deeply and cough every 2 hr, using incentive spirometry if prescribed; changing position completely every 2 hr, with lesser position changes in between; wearing antithromboembolic devices; doing quadriceps setting, gluteal muscle setting, and range-of-motion exercises regularly. Maintenance of hygiene and adequate nutrition and fluid intake may also be helpful. A bowel program is initiated to prevent constipation (fluid, fiber, stool softeners, bulk laxatives). Skin care is provided to keep the skin clean, dry, well lubricated, and intact, and low-pressure foam or flotation pads or mattresses are applied as needed. Footboards or right-angle foam heel and ankle supports are employed to prevent foot drop and prevent heel breakdown. Low-molecular-weight heparin may be prescribed to prevent DVT. Whenever possible, the patient is taught to use a trapeze (on a Balkan frame) to move about in bed. The health care professional should ensure that blood supply to the extremities is not restricted by any appliance or by tight bedcovers. Limbs should be evaluated regularly for distal neurovascular status, noting changes in the size, color, temperature, or pain of the limbs. Physical and occupational therapy as well as social and psychological support may be used to restore independence or aid the adjustment to the immobilization. Family members are taught to provide care, often with the assistance of home-health aides. Assisted living or other long-term care facilities may be needed after hospital discharge for those immobilized patients who cannot return home.

**immortality** (im'or-äl'i-tē) The ability of some cells, particularly cancer cells, to reproduce indefinitely. Normal human cells have a finite life expectancy. They may divide for a few dozen generations, but eventually stop reproducing and die.

**immotile cilia syndrome** (i-mōt'il) An autosomal recessive condition characterized by severely impaired movement of the cilia or flagella of respiratory tract epithelial cells, sperm cells, and others.

Affected cells lack the protein dynein, which is essential for effective ciliary motion. SEE: *dynein*; *Kartagener's syndrome*.

**immune** (im-ün') [L. *immunis*, safe] Protected from or resistant to a disease or infection by a pathogenic organism as a result of the development of antibodies or cell-mediated immunity.

**i. complex** A substance formed when antibodies attach to antigens to destroy them. These complexes circulate in the blood and may eventually attach to the walls of blood vessels, producing a local inflammatory response. Immune complexes form in type III hypersensitivity reactions and are involved in the development of glomerulonephritis, serum sickness, arthritis, and vasculitis, which may be called immune-complex diseases.

**mucosal i. system** Clusters of lymphoid cells beneath the mucosal endothelium of the gastrointestinal, respiratory, and genitourinary tracts that help protect the body from inhaled, consumed, or sexually transmitted infections. The system has two parts: organized and diffuse. The organized part (the mucosal-associated lymphoid tissue of the gastrointestinal and respiratory tracts) is composed of nodules containing lymphocytes and macrophages that are activated by ingested or inhaled microorganisms. The diffuse part is composed of loose clusters of macrophages and mature B and T lymphocytes found within the folds of the intestinal walls. The B cells secrete antibodies, primarily immunoglobulin A; the T cells directly lyse microorganisms.

The mucosal immune system is augmented by the presence of normal microflora; peristalsis and cilia, which move mucus outward; and various chemicals, such as gastric acid and pancreatic enzymes, that destroy pathogens. Normally all of these components must be functioning to prevent infection. SEE: *gut-associated lymphoid tissue*; *immunoglobulin A*.

**primary i. response** The initial reaction to an immunogen, during which T and B lymphocytes are activated and antibodies specific to the antigen are produced. This reaction is considered relatively weak but produces large numbers of antigen-specific memory cells.

**i. reconstitution** The restoration of normal or improved immune function in a person with congenital or acquired immunodeficiency syndrome. Bone marrow transplantation or drug therapies may be used, depending on the underlying cause of the immune failure.

**i. response** The body's reaction to foreign antigens so that they are neu-



tralized or eliminated, thus preventing the diseases or injuries these antigens might cause. It requires that the body recognize the antigen as “nonself,” or foreign. There are several major components to the immune response. The *nonspecific immune response*, or inflammation, is the response of the body’s tissues and cells to injury from any source (e.g., trauma, organisms, chemicals, ischemia). As the initial response of the immune system to any threat, it involves vascular, chemical, and white blood cell activities. The *specific immune response*, involving T cells and B cells, is a reaction to injury or invasion by particular organisms or foreign proteins. The *cell-mediated immune response* refers to the activity of T lymphocytes (T cells) produced by the thymus in response to antigen exposure. Without T cells, the body cannot protect itself against many disease-causing microbes. The loss of T cells in patients with acquired immunodeficiency syndrome (AIDS), for example, leads to infections with many opportunistic microbes that would otherwise be relatively well tolerated by persons with intact cellular immunity. T-cell activity also is the basis for delayed hypersensitivity, rejection of tissue transplants, and responses to cancers. The *humoral immune response* refers to the production of antigen-specific antibodies by plasma B lymphocytes (B cells); antibodies attach to foreign antigens in the bloodstream, helping to inactivate or remove them. SEE: *cell-mediated immunity*; *humoral immunity*; *inflammation*.

**secondary i. response** The rapid, strong response by T and B cells to a second or subsequent appearance of an immunogen. This occurs because of the availability of T and B lymphocyte memory cells.

**i. system** The lymphatic tissues, organs, and physiological processes that identify an antigen as abnormal or foreign and prevent it from harming the body. The skin, mucosa, normal flora of the gastrointestinal tract and skin, and chemicals contained in tears, sebaceous glands, gastric acid, and pancreatic enzymes protect the body from pathogen invasion. The bone marrow produces white blood cells (WBCs), the primary internal defense. Lymphoid tissues, including the thymus gland, spleen, and lymph nodes, influence the growth, maturation, and activation of WBCs; lymphoid tissue in the gastrointestinal and respiratory tracts and mucous membranes contain WBCs for site-specific protection. Finally, physiologically active protein mediators, called cytokines, help regulate the growth and function of immunologically active cells.

*Effects of stress:* Investigations of the

influence of stress on susceptibility to disease have shown that in some, but not all, individuals who experienced undesirable events, the possibility of onset of illness was increased. A decrease in the usual number of pleasant events was a stronger predictor of susceptibility to illness than was an increase in unpleasant ones. Negative experiences included criticism, frustration, irritating encounters with fellow workers, deadlines, heavy workload, and burdensome and unpleasant chores or errands. Even though the concept that stress lowers resistance to disease appears to apply only to some individuals, the explanation of this mechanism has not been established.

**immune globulin** Drug created from serum containing antibodies (immunoglobulins). It is used to supply necessary antibodies to patients with immunoglobulin deficiencies and to provide passive immunization against common viral infections (e.g., hepatitis A, measles). It also has been used successfully to treat patients with idiopathic thrombocytopenic purpura because it seems to inhibit phagocytosis of platelets coated with autoantibodies, although the exact mechanism of its action is unknown.

**cytomegalovirus i.g. intravenous** An immune globulin preparation containing cytomegalovirus (CMV)-specific antibodies used to treat or prevent CMV infection after organ or tissue transplantation. Antiviral drugs like ganciclovir may be used for the same purpose.

**intramuscular i.g.** A preparation of immune globulin that is injected directly into a muscle. It can be used to provide passive immunity to a wide variety of infections including, for example, hepatitis A.

**intravenous i.g. ABBR:** IVIG. An immune globulin preparation used intravenously in patients with immunodeficiency syndromes and in immunosuppressed recipients of bone marrow transplants. In conjunction with aspirin, it is the standard of care for children during the first 10 days of Kawasaki disease to prevent the development of coronary aneurysms.

IVIG is also used to treat idiopathic thrombocytopenic purpura and Guillain-Barré syndrome as well as to prevent bacterial infections in patients with hypogammaglobulinemia or recurrent infections associated with B-cell chronic lymphocytic leukemia.



The administration of sucrose-containing IVIGs has been associated with acute renal failure, which in about 10% of patients has proved fatal. Patients should be hydrated before being treated with IVIG.

**Rh<sub>0</sub>(D) i.g.** A solution of immune globulin containing anti-Rh antibodies. It is given to Rh-negative women at 28 weeks' gestation and within 72 hr after delivery of an Rh-positive infant. It prevents hemolytic disease of the newborn (erythroblastosis fetalis) in subsequent pregnancies in which the mother has an Rh-positive fetus by blocking the formation of maternal antibodies against Rh-positive red blood cells. These maternal antibodies would otherwise cross the placenta in subsequent pregnancies, injuring the fetus. SEE: *Rh blood group*.



Rh<sub>0</sub>(D) immune globulin should not be injected intravenously.

**tetanus i.g.** SEE: *tetanus immune globulin*.

**varicella-zoster i.g.** ABBR: VZIG. An immune globulin used for passive immunization of susceptible immunodeficient individuals after significant exposure to varicella. VZIG does not modify established varicella-zoster infections.



VZIG should not be injected intravenously.

### immune-mediated inflammatory reaction

The process by which the immune system destroys, dilutes, or walls off injurious agents and injured tissue. Small blood vessels dilate and become permeable. This increases blood flow and permits exudation of plasma and leukocytes. The cells arriving from the blood include monocytes, neutrophils, basophils, and lymphocytes; those of local origin include endothelial cells, mast cells, tissue fibroblasts, and macrophages. Other mediators of inflammation include cytokines, interleukins, and neuropathies.

**immune reaction** **1.** A demonstrated antigenic response to a specific antibody. **2.** The specific reaction of host cells to antigenic stimulation. SEE: *immune response*.

**immunifacient** (i-mū'ni-fā'shēnt) [ " + *facere*, to make] Making immune.

**immunity** (im-ūn'ī-tē) [L. *immunitas*] Protection from diseases, esp. infectious diseases. SEE: *immune response*; *immune system*; *immunization*; *vaccine*.

**acquired i.** Immunity that results either from exposure to an antigen or from the passive injection of immunoglobulins.

**active i.** Immunity resulting from the development within the body of antibodies or sensitized T lymphocytes that

neutralize or destroy the infective agent. This may result from the immune response to an invading organism or from inoculation with a vaccine containing a foreign antigen. SEE: *immune response*; *vaccination*.

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

**cell-mediated i.** ABBR: CMI. The regulatory and cytotoxic activities of T cells during the specific immune response. This process requires about 36 hr to reach its full effect. SYN: *T-cell-mediated immunity*. SEE: *illius*; *humoral immunity*.

Unlike B cells, T cells cannot recognize foreign antigens on their own. Foreign antigens are recognized by antigen-presenting cells (APCs), such as macrophages, which engulf them and display part of the antigens on the APC's surface next to a histocompatibility or "self" antigen (macrophage processing). The presence of these two markers, plus the cytokine interleukin-1 (IL-1), secreted by the APCs, activates CD4 helper T cells (T<sub>H</sub> cells), which regulate the activities of other cells involved in the immune response.

CMI includes direct lysis of target cells by cytotoxic T cells, creation of memory cells that trigger a rapid response when a foreign antigen is encountered for the second time, and delayed hypersensitivity to tissue and organ transplants. T cells also stimulate the activity of macrophages, B cells, and natural killer cells. These functions are controlled largely by the secretion of lymphokines such as the interleukins, interferons, and colony-stimulating factors; lymphokines facilitate communication and proliferation of the cells in the immune system.

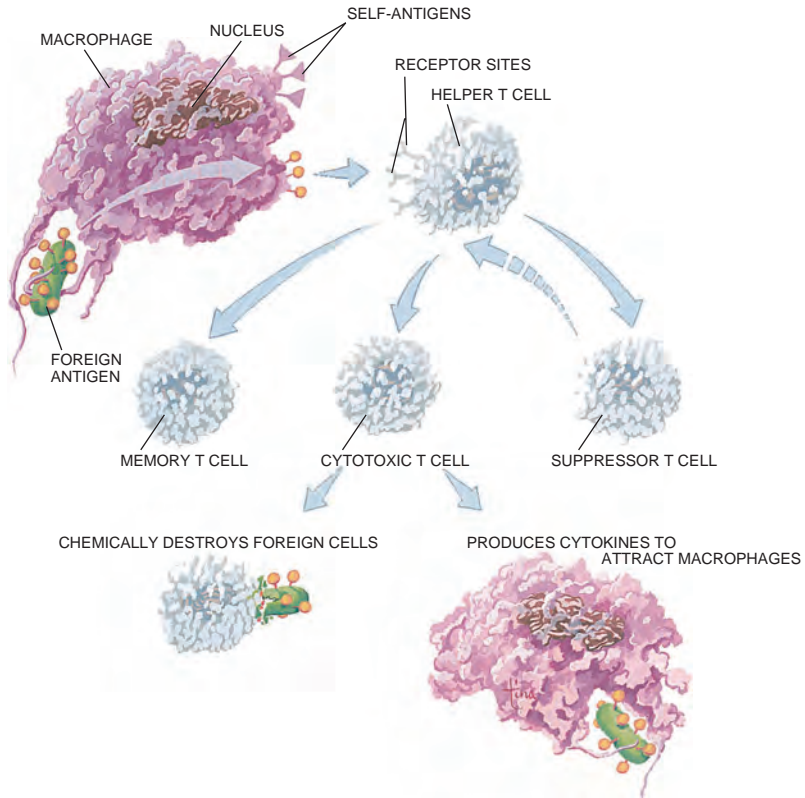
**cellular i.** T-cell-mediated immune functions requiring cell interactions (e.g., graft rejection or destruction of infected cells).

**community i.** A synonym for herd immunity.

**congenital i.** Immunity present at birth. It may be natural or acquired, the latter depending on antibodies received from the mother's blood.

**herd i.** The ability of a community to resist epidemic disease. Herd immunity may develop naturally in a society as a result of widespread exposure to disease, or it may be stimulated artificially by mass vaccination programs.

**humoral i.** The protective activities of antibodies against infection or reinfection by common organisms (e.g., streptococci and staphylococci). B lymphocytes with receptors to a specific antigen react when they encounter that antigen by producing plasma cells (which produce antigen-specific antibodies) and memory cells (which enable



### CELL-MEDIATED IMMUNITY

the body to produce these antibodies quickly should the same antigen appear later). B-cell differentiation also is stimulated by interleukin-2 (IL-2) secreted by CD4<sup>+</sup>T cells and foreign antigens processed by macrophages.

Antibodies produced by plasma B cells, found mainly in the blood, spleen, and lymph nodes, neutralize or destroy antigens in several ways. They kill organisms by activating the complement system, neutralize viruses and toxins released by bacteria, coat the antigen (opsonization), or form an antigen-antibody complex to stimulate phagocytosis, promote antigen clumping (agglutination), and prevent the antigen from adhering to host cells. SYN: *B-cell-mediated immunity*. SEE: *illus.*; *cell-mediated i.*; *immunoglobulin*.

**innate i.** Those immune defenses against infection and cancer that are not determined by the specific responses of B or T lymphocytes. Innate immunity is not pathogen-specific and does not create immunological memory. It includes the actions of adhesion molecules; cellular chemotaxis; the secretion

of cytokines; cytotoxicity; the activities of dendritic and natural killer cells; inflammation; and phagocytosis. SYN: *innate immune system*.

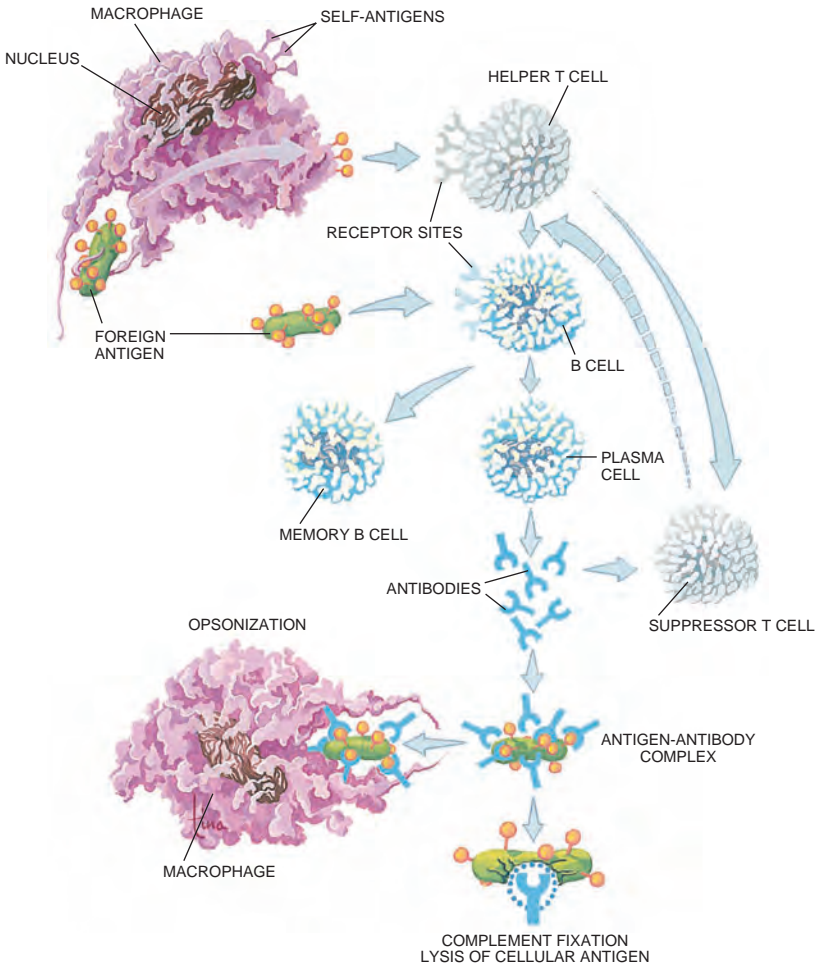
**local i.** Immunity limited to a given area or tissue of the body.

**natural i.** Immunity that is genetically determined in specific species, populations, or families. Some pathogens cannot infect certain species because the cells are not suitable environments (e.g., the measles virus cannot reproduce in canine cells; therefore, dogs have natural immunity to measles).

**passive i.** Immunity acquired by the introduction of preformed antibodies into an unprotected individual. This can occur through intravenous infusion of immune globulin or, in utero, from antibodies that pass from the mother to the fetus through the placenta. Newborns also may acquire immunity through breastfeeding.

**T-cell-mediated i.** Cell-mediated i.

**waning i.** The progressive loss of protective antibodies against an antigen or disease that occurs with the passage of time. It is a crucial factor in vaccination.



### HUMORAL IMMUNITY

Booster doses of a vaccine are given when the immune response to an antigen drops below protective levels.

**immunization** (im'ū-nī-zā'shūn) [L. *immunitas*, immunity] The protection of individuals or groups from specific diseases by vaccination or the injection of immune globulins. SEE: *vaccination*; *vaccine* for table.

**immunization status, readiness for enhanced** A pattern of conforming to local, national, and/or international standards of immunization to prevent infectious disease(s) that is sufficient to protect a person, family, or community and can be strengthened. SEE: *Nursing Diagnoses Appendix*.

**immunoablation** (im-ū'nō-ā-blā'shūn) The systematic destruction of a patient's immune competence. Immunoab-

lation is used to prepare patients for organ transplantation and to treat refractory autoimmune diseases, esp. when followed by immunoreconstruction (usually with autologous stem cell transplantation).

**PATIENT CARE:** Patients who have undergone immunoablation may be easily infected by caregivers. Careful hand-washing and infection control techniques (such as "reverse isolation") should be used to limit exposing these patients to harmful pathogens.

**immunoadhesin** (im'ū-nō-ād-hē'sin) [L. *immunis*, safe, + *adhaerere*, to stick to] A genetically engineered, antibody-like protein that fuses the Fc region of an immunoglobulin and the ligand-binding region of a receptor or adhesion molecule. Immunoadhesins can be used

to direct the immune-responsive effect of cytokines to tumor cells and to stimulate the destruction of such cells.

**immunoaffinity purification** (i-mū'nō-ā-fin'ī-tē, ī-mū") Exposure to monoclonal antibodies in order to isolate specific analytes. Immunoaffinity purification is used during the preparation of blood products to reduce their likelihood of contamination by specific disease-causing microorganisms.

**immunoassay** (im"ū-nō-ās'sā) [L. *immunis*, safe, + O.Fr. *assai*, trial] Any of several laboratory techniques that detect or measure molecules involved in immunological reactions. SEE: *immunoelectrophoresis*; *immunofluorescence*; *radioimmunoassay*.

**cloned enzyme donor i.** ABBR: CE-DIA. A homogeneous enzyme immunoassay (EIA), based on the modulation of enzyme activity by bound fragments of beta-galactosidase.

**end point i.** An immunoassay in which the signal is measured as the antigen-antibody complex reaches equilibrium.

**sandwich i.** An immunoassay in which the analyte is bound to a solid phase and a labeled reagent subsequently bound immunochemically to the analyte.

**immunobiological** (im"ū-nō-bī'ō-lō'jī-kūl) [L. *immunis*, safe, + Gr. *bios*, life] Any substance derived from a pathogen that can immunize a person or a community against disease; e.g., a vaccine. SYN: *immunobiological agent*.

**immunobiology** (im"ū-nō-bī-ōl'ō-jē) [ + Gr. *bios*, life, + *logos*, word, reason] The study of immune phenomena in biological systems, including the immune response to infectious diseases, transplantation of organs, allergy, autoimmunity, and cancer.

**immunochemistry** (im"ū-nō-kēm'īs-trē) [ + " ] The chemistry of antigens, antibodies, receptors, and other molecules involved in immunological reactions.

**immunocompetence** (im"ū-nō-kōm'pētēns) The ability of the body's immune system to respond to pathogenic organisms and tissue damage. This ability may be diminished by drugs specifically developed to inhibit immune cell function (e.g., chemotherapeutic agents used to treat leukemia and drugs used to prevent organ transplant rejections), by diseases that attack elements of the immune system, or overwhelming infections. SEE: *immunocompromised*.

**immunocompromised** (im"ū-nō-kōm'prō-mīzd") Having an immune system that is incapable of a normal, full reaction to pathogens or tissue damage, as the result of a disease (e.g., diabetes mellitus, overwhelming sepsis, or the

acquired immunodeficiency syndrome) or drug therapy with agents that inhibit components of the immune system.



Live virus vaccinations should never be administered to immunocompromised persons.

SYN: *immunodeficient*. SEE: *immune system*.

**immunoconglutinin** (im"ū-nō-kōn-gloo-tī-nīn) [ + *conglutinare*, to glue together] A protein used in the laboratory to assess the number of immune complexes in blood, which may be related to immunological activity. It acts by binding with complement factor 3, a significant part of an antigen-antibody immune complex.

**immunocontraception** The development of antibodies to bind with gamete-specific antigens, i.e., antigens on eggs, sperm, or sex hormones, as a means of preventing conception.

**immunocytoadherence** (im"ū-nō-sī'tō-ād-hēr'ēns) A laboratory test used to identify antibody-bearing cells by the formation of rosettes composed of red blood cells and those cells bearing antibodies.

**immunodeficiency** (im"ū-nō-dē-fīsh'ēnsē) Decreased or compromised ability to respond to antigenic stimuli with an appropriate immune response, as the result of one or more disorders in B-cell-mediated immunity, T-cell-mediated immunity, phagocytic cells, or complement. This state may be genetic or acquired following infections, drug abuse, multiple transfusions, immunosuppressive therapy, or malnutrition. Affected patients develop chronic infections that are difficult to treat and recur frequently; these infections frequently are caused by opportunistic organisms. Other findings related to the type and degree of deficiency in the immune system include failure to thrive, thrombocytopenia, and hepatosplenomegaly. Treatments vary depending on the underlying cause. They may include combinations of antiviral agents in the acquired immunodeficiency syndrome; infusions of intravenous immune globulin (IVIG) in disorders of humoral immunity; bone marrow transplantation in patients with malignancies; and antibiotics that specifically treat active infections. Cytokine therapy and gene therapy may play a role in the treatment of patients with defined genetic defects. SEE: *acquired immunodeficiency syndrome*; *agammaglobulinemia*. **immunodeficient, adj.**

**immunodeficiency disease, severe combined** ABBR: SCID. Any of a group of inherited autosomal or X-linked recessive

sive disorders in which there is partial or complete dysfunction of the immune system. Defects are present in both B- and T-cell-mediated immunity responses and frequently include defective cytokine function. Within 6 months after birth, babies develop infections from bacterial, viral, fungal, or protozoan organisms. Intravenous immune globulin (IVIG) is given to provide antibodies, but a successful bone marrow transplant is required to prevent death. The efficacy of gene therapy is under investigation. SEE: *cytokine; cell-mediated immunity; humoral immunity.*

**immunodeficient** (im'ū-nō-dē-fish'ēnt) Immunocompromised.

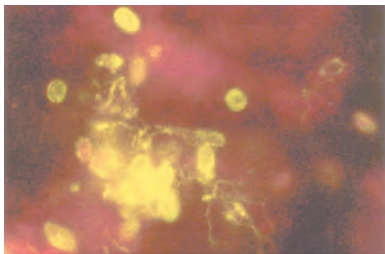
**immunodiagnosis** (im'ū-nō-dī'āg-nō'sis) The use of antibody assays, immunocytochemistry, detection of lymphocyte markers, and other strategies to diagnose autoimmune diseases, immunodeficiencies, infections, or malignancies.

**immunodiffusion** (im'ū-nō-dī-fū'zhūn) A test method in which an antigen and antibody are placed in a gel, where they diffuse toward each other. When they meet, a precipitate is formed.

**immunodominant** (im'ū-nō-dōm'ā-nīnt) Pert. to the ability of a specific antigen or epitope to induce a measurable or clinically meaningful immune response when other structurally related antigens do not. **immunodominance**, *n.*

**immunoelectrophoresis** (ī-mū'nō-ē-lēk'trō-fō-rē'sis) A method of investigating the amount and character of proteins and antibodies in body fluids with electrophoresis.

**immunofluorescence** (im'ū-nō-floo'ō-rēs'ēns) The detection of antibodies with fluorescein-labeled proteins. Bound antibodies glow when illuminated. SEE: *illus.*



IMMUNOFLUORESCENT STAINING OF PARASITIC SPORES

**immunogen** (ī-mū'nō-jēn) [*i* + Gr. *gennan*, to produce] A substance capable of producing an immune response. Proteins and some polysaccharides tend to be strong immunogens; some lipids and nucleic acids are as well. SEE: *antigen.*

**immunogenetics** (im'ū-nō-jē-nēt'īks) [*i* + Gr. *gennan*, to produce] The study

of the influence of genetic factors on one's susceptibility to infectious diseases (e.g., malaria) and autoimmune illnesses (e.g., rheumatoid arthritis) or on one's suitability for organ transplantation. SEE: *histocompatibility* and its subentries.

**immunogenic** (im'ū-nō-jēn'īk) Capable of inducing an immune response.

**immunogenicity** (im'ū-nō-jē-nīs'ī-tē) The capacity to induce a detectable immune response.

**immunoglobulin** (im'ū-nō-glōb'ū-līn) ABBR: Ig. **1.** Any of a diverse group of plasma polypeptides that bind antigenic proteins and serve as one of the body's primary defenses against disease. Two different forms exist. The first group of immunoglobulins lies on the surface of mature B cells, enabling them to bind to thousands of antigens. When the antigens are bound, the B plasma cells secrete the second type of immunoglobulins, antigen-specific antibodies, which circulate in the blood and accumulate in lymphoid tissue, esp. the spleen and lymph nodes, binding and destroying specific foreign antigens and stimulating other immune activity. Antibodies also activate the complement cascade, neutralize bacterial toxins and viruses, and function as opsonins, stimulating phagocytosis.

Immunoglobulins are formed by light and heavy (depending on molecular weight) chains of polypeptides made up of about 100 amino acids. These chains determine the structure of antigen-binding sites and, therefore, the specificity of the antibody to one antigen. The five types of immunoglobulins (IgA, IgD, IgE, IgG, IgM) account for approximately 30% of all plasma proteins. Antibodies are one of the three classes of globulins (plasma proteins) in the blood that contribute to maintaining colloidal oncotic pressure. SYN: *antibody.* SEE: *antigen; B cell.*

**2.** A frequently used synonym for immune globulin, a solution containing antibodies to specific organisms obtained from donated human plasma.

**i. A** ABBR: IgA. The principal immunoglobulin in exocrine secretions such as milk, respiratory and intestinal mucin, saliva, and tears. It prevents pathogenic bacteria and viruses from invading the body through the mucosa of the gastrointestinal, pulmonary, and genitourinary tracts. Its presence in colostrum and breast milk helps prevent infection in breastfeeding infants.

**i. D** ABBR: IgD. An immunoglobulin that is present on the surface of B lymphocytes and acts as an antigen receptor.

**i. E** ABBR: IgE. An immunoglobulin that attaches to mast cells in the respiratory and intestinal tracts and plays a



major role in allergic reactions. About 50% of patients with allergies have increased IgE levels. IgE is also important in the formation of reagin, a type of immunoglobulin gamma E (IgGE), found in the blood of individuals with an atopic hypersensitivity.

**i. G** ABBR: IgG. The principal immunoglobulin in human serum. Because IgG moves across the placental barrier, it is important in producing immunity in the infant before birth. It is the major antibody for antitoxins, viruses, and bacteria. It also activates complement and serves as an opsonin. As gamma globulin, IgG may be given to provide temporary resistance to hepatitis or other diseases.

**intravenous i.** ABBR: IVIG. A solution containing concentrated human immunoglobulins (antibodies), primarily IgG. IVIG has numerous uses in health care, including as replacement therapy for patients with primary immune deficiencies; as a treatment for those with Kawasaki disease, bullous pemphigoid, Guillain-Barré syndrome, idiopathic thrombocytopenic purpura, chronic inflammatory demyelinating polyneuropathy, and other immune-mediated illnesses; and as a means of providing patients with passive immunity against infectious diseases.

**i. M** ABBR: IgM. An immunoglobulin formed in almost every immune response during the early period of the reaction. IgM controls the A, B, O blood group antibody responses and is the most efficient antibody in stimulating complement activity. Its size prevents it from moving across the placenta to the fetus.

**immunohematology** (i-mū-nō-hēm"ā-tōl'ō-jē) [L. *immunus*, safe, + Gr. *haima*, blood, + *logos*, word, reason] The study of the immunology and genetics of blood groups, blood cell antigens and antibodies, and specific blood proteins (such as complement); esp. important in blood banking and transfusion medicine.

**immunohistochemistry** ABBR: IHC. The identification of antigens in tissues using antibodies that are linked to enzymes, fluorescent dyes, or radioactive labels. IHC is used to diagnose and track specific cellular anomalies, such as cancers, by identifying those antigens that are specifically found in affected cells.

**immunoincompetency** (im"ū-nō-īn-kōm'pē-tēn-sē) An inability to produce an immune response. SEE: *immunodeficiency*.

**immunofertility** (im"ū-nō-īn'fēr-tīl'ī-tē, ī-mū") Inability to conceive offspring as a result of the production of antigamete antibodies that destroy sperm, esp. an-

tisperm antibodies. It is a rare cause of infertility in humans.

**immunological priming** [im"yā-nō-lōj'ī-kāl prim'īng, ī-mū"] Stimulation of the differentiation of memory B cells with an antigen exposure, so that subsequent exposures to that antigen will produce a rapid proliferation of plasma cells and a vigorous antibody response.

**immunological therapy** Immunotherapy.

**immunologist** (im"ū-nōl'ō-jīst) An individual whose special training and experience is in immunology.

**immunology** (im"ū-nōl'ō-jē) [" + Gr. *logos*, word, reason] The study of the components of the immune system and their function. SEE: *immune system*.

**immunologic** (im"ū-nō-lōj'īk), *adj.*

**immunomagnetic** (im"ū-nō-māg-nēt'īk, ī-mū") Of, pertaining to, or using magnetic beads or spheres that have been coated with antibodies.

**immunomagnetic technique** The use of magnetic microspheres to sort, isolate, or identify cells with specific antigenic markers.

**immunomics** (ī-mū-nōm'īks) [L. *immunis*, safe + Gr. *ome*, complete] The study of all the antigens present in particular biological specimens and the approaches that can be used to identify them or use them as potential targets for treatment.

**immunomodulation** (im"ū-nō-mōd'ū-lā'shūn) **1.** The alteration of immune responses with monoclonal antibodies, cytokines, glucocorticoids, immunoglobulins, ultraviolet light, plasmapheresis, or related agents known to alter cellular or humoral immunity. SEE: *immunotherapy*; *biological response modifier*. **2.** In alternative medicine, the use of vitamins, minerals, natural foods, or other nutrients to promote health or prevent degenerative or malignant diseases. SEE: *biotherapy*.

**immunonutrient** (im"ū-nō-noo'trē-īnt, ī-mū, nū) [" + ""] A nutritional supplement (e.g., arginine) that when added to a clinical diet is thought to improve resistance to infectious disease.

**immunonutrition** (im"ū-nō-nū-trī'shūn) The study of the effects of nutrients, including macronutrients, vitamins, minerals, and trace elements on inflammation, the actions of white blood cells, the formation of antibodies, and the resistance to disease.

**immunopathology** (im"ū-nō-pā-thōl'ō-jē) The study of tissue alterations that result from immune or allergic reactions.

**immunophenotyping** (im"ū-nō-fēn'ā-tīp'īng, ī-mū") Differentiation among subsets of lymphocytes, using antibodies that select for identifying molecules on their cell membranes.

**immunoprecipitation** (im"ū-nō-prē-sīp'ī-

tā'shūn) The formation of a precipitate when an antigen and antibody interact.

**immunoprecipitin analysis** (īm"ū-nō-prē-sīp'ī-tīn, ī-mū") An immunoassay in which the antibody-antigen reaction forms a visible substance that drops out of solution. This is most commonly represented by turbidity in a liquid matrix or a band of turbidity in a gel matrix. The amount of turbidity or the size of the band allows quantification.

**immunoproliferative** (īm"ū-nō-prō-līf'ēr-ā-tīv) Pert. to the rapid growth and dissemination of cells and tissues involved in producing antibodies.

**immunoprophylaxis** (īm"ū-nō-prō'fī-lāk'sis) Prevention of disease with agents (e.g., vaccines) that affect the immune system.

**immunoprotein** (īm"ū-nō-prō'tē-in) [I + Gr. *protos*, first] An immunologically active protein, esp. one that is used as a target for immunological probes or therapies.

**immunoreactant** (ī-mū'nō-rē-āk'tānt) Any of the substances involved in immunological reactions, including immunoglobulins, complement components, and specific antigens.

**immunoreaction** (ī-mū'nō-rē-āk'shūn) The reaction of an antibody to an antigen, exploited in some laboratory tests that stain, isolate, or purify cells that express specific markers on their cell membranes.

**immunoscintigraphy** (īm"ū-nō-sīn-tīg'f-rā-fē) The imaging of specific tissues by means of their binding to radioactively labeled monoclonal antibodies; used to detect metastatic cancer. The release of radiation from the antibodies is detected and quantified. SYN: *radioimmunoinmaging*.

**immunoselection** (īm"ū-nō-sē-lēk'shūn) The enhanced survival of cells or organisms that have favorable cell surface markers. The antigens allow the cells or organisms to escape destruction by humoral or cell-mediated immunity.

**immunosenescence** (īm"ū-nō-sī-nēs'ēns) The age-associated decline of the immune system and host defense mechanisms. Elderly individuals frequently have a decline in cell-mediated immunity and secondary declines in humoral immunity. The clinician caring for an older patient can assume that the individual has defective host defenses, is at greater risk for developing an infectious disease, and has an increased risk of morbidity and mortality from infectious diseases.

**immunostimulator** (īm"ū-nō-stīm'ū-lā-tōr) SEE: *immunotherapy*.

**immunosuppressant** (īm"ū-nō-sū-prēs'īnt, ī-mū") [L. *immunis*, safe, + *suppressio*, a pressing under] An agent

that decreases or inactivates the immune response to antigens.

**immunosuppression** (īm"ū-nō-sū-prēsh'ūn) 1. Prevention of immune responses (e.g., with drugs like mycophenolate or cyclosporine). 2. Deterioration in the immune response resulting from certain diseases (e.g., alcoholism, diabetes mellitus, or infection HIV virus). **immunosuppressive** (-prēs'īv), *adj.*

**immunosuppressive therapy** (īm"ū-nō-sā-prēs'īv, ī-mū") Treatment with drugs such as cyclosporine or mycophenolate that impair immune responses. SEE: *immunotherapy*.

**immunosurveillance** (īm"ū-nō-sēr-vā'lēns) The recognition and destruction of malignant cells by immune cells that travel through and scan the body for foreign or mutant antigens.

**immunotherapy** (īm"ū-nō-thēr'ā-pē) [I + Gr. *therapeia*, treatment] The use of natural and synthetic substances to stimulate or suppress the immune response, to treat deficits, or to interfere with the growth of malignant neoplasms. Therapeutic agents are either antigen-specific or non-antigen-specific. Immunological therapies include cytokines (e.g., alpha interferon and interleukin-2), monoclonal antibodies, intravenous immune globulin, heat shock proteins, and cancer vaccines. SYN: *immunological therapy*.

**adoptive i.** The treatment of malignancies with T cells that are taken from patients with cancer, grown and activated in a culture where they are stimulated to react to specific tumor antigens, and then returned to patients by infusion. The adopted T cells invade the cancer and immunologically reject it. Side effects of the treatment include fever and nausea.

**allergen-specific i.** Antigen-specific immunotherapy.

**antigen-specific i.** Immunotherapy in which individual antigens are used in gradually increasing concentrations to stimulate an immune response (e.g., against particular allergic diseases or tumors). SYN: *allergen-specific immunotherapy*; *specific immunotherapy*.

**nonspecific i.** Induction of a general immune response with adjuvants, drugs, or vaccines that stimulate the release of interferons or other immune cytokines. Nonspecific immunotherapy differs from specific immunotherapy in that the agents used (e.g., BCG vaccine, Freund's adjuvant) do not stimulate antibody production for or against (or tolerance to) individual antigens.

**passive i.** The prevention of disease by administering antibodies in the form of a gamma globulin infusion or injection. Preparations enriched with specific antibodies can be used to prevent

hepatitis B (HBIG), tetanus (Hyper-Tet), and chickenpox (VZIG).

**rush i.** Immunotherapy administered rapidly, e.g., over several days (with several injections of antigen daily) or even a single day.

**specific i.** Antigen-specific immunotherapy.

**stimulation i.** The therapeutic use of agents that stimulate immune function (immunostimulants). These agents include cytokines and cytokine antagonists, monoclonal antibodies, compounds obtained from bacteria, and hormones from the thymus. The most successful immunostimulants have been laboratory-prepared cytokines, the protein mediators of immune responses. Granulocyte colony-stimulating factor (G-CSF) and granulocyte-macrophage colony-stimulating factor (GM-CSF) are used widely to increase white blood cell production in the bone marrow after cancer therapy, bone marrow transplantation, and AIDS. Erythropoietin is effective in treating anemia in patients with chronic renal failure, AIDS, and bone marrow depression following cancer therapy. Transforming growth factor beta seems to enhance wound healing and reduce fibrotic changes following inflammation. Interleukins and interferons are being studied for their beneficial effects in patients with certain leukemias and other malignant tumors. Lymphocyte-activated killer (LAK) cells and tumor-infiltrating lymphocytes (TILs), which are lymphocytes that have been removed from the patient and stimulated with interleukin-2, also show promise in treating malignant tumors. Monoclonal antibodies against mediators of inflammation have been created in the laboratory from hybridomas and are being studied for clinical use.

Bacteria-based compounds, which produce nonspecific stimulation, have been used the longest. Attenuated (weak) solutions of *Mycobacterium bovis* (bacille Calmette-Guérin) and endotoxins from *Staphylococcus aureus* and OK432, prepared from *Streptococcus pyogenes*, are being used as adjunct cancer therapy because of their ability to activate natural killer cells, T cells, and macrophages. New techniques have enabled researchers to isolate hormones from the thymus gland, where T lymphocytes mature, to treat viral infections and cancers. Their clinical effectiveness has not been established. SEE: *cytokine; monoclonal antibody.*

**sublingual i.** ABBR: SLIT. Allergen desensitization in which the antigen is administered in droplet form under the tongue instead of being injected subcutaneously. SLIT is a relatively safe form of immunotherapy and is often used at

home instead of in a medical office, several times a week.

**PATIENT CARE:** Adverse effects include oral itching or swelling and gastrointestinal upset. The incidence of systemic side effects may be reduced with SLIT as opposed to immunotherapy by subcutaneous injection.

**suppressive i.** Any treatment used to block abnormal or excessive immune responses.

**Corticosteroids**, the most widely known anti-inflammatory agents, increase the number of neutrophils in the blood but decrease their aggregation at inflammatory sites, decrease the number and function of other white blood cells, and inhibit cytokine production. They are most effective during an acute flareup of a chronic autoimmune disease and in conjunction with other agents because they do not adequately block autoantibodies when used alone.

**Cytotoxic drugs** kill all white blood cells and their precursors and were originally developed as anticancer agents. However, low-dose methotrexate is now known to be effective in reducing the symptoms and the need for corticosteroids in chronic inflammatory diseases such as rheumatoid arthritis, Crohn's disease, psoriasis, and asthma.

**Cyclosporine and tacrolimus** are related to the cytotoxic drugs, but these drugs selectively inhibit helper T-cell production of interleukin-2, effectively preventing replication rather than killing them. They are used extensively to prevent rejection of transplanted tissue and graft-versus-host disease.

**Intravenous gamma globulin (IVIG)** is used routinely to replace antibodies in patients with immunodeficiency disorders. However, it also can be used as an immunosuppressive. IVIG inhibits phagocytosis of platelets in idiopathic thrombocytopenic purpura; it has been most successful in the treatment of children but also can produce a short-term remission in adults. Because it seems to inhibit natural killer cells and augment suppressor T cells, it also has been used to treat other autoimmune diseases, but its clinical effectiveness has not been determined.

**Antilymphocyte antibodies** inhibit the T-cell-mediated immune response. The two types are monoclonal antibodies, which react with one specific antigen, and polyclonal antibodies, which target several different antigens. Polyclonal antibodies are created by injecting animals (usually mice) with human lymphocytes. The animals' B cells are harvested from lymphoid tissue or peripheral blood and used to create antilymphocyte serum (ALS); isolated antibodies from these B cells are the active agents in antilymphocyte globulin

(ALG). Both ALS and ALG are used routinely to treat transplant rejection and graft-versus-host reactions. Because they come from animals, however, they can cause serum sickness. In addition, they are not specific to T cells and also can destroy platelets.

Monoclonal antibodies are laboratory-created antibodies developed from a single cell line that block the receptor molecules that bind and transfer cytokine signals on T cells. OKT3, a monoclonal antibody obtained from mice, is a strong immunosuppressant used in the primary treatment of acute transplant rejection; it also may be effective in preventing rejection. It frequently causes a massive release of cytokines whose effects must be controlled, usually by corticosteroids, after the first or second dose. In addition, over time it stimulates the production of antimouse antibodies that block its effectiveness. Monoclonal antibodies provide disease or tumor-specific therapy for various autoimmune illnesses and cancers by selectively binding to tumor cell surfaces. Interleukin's effects are exerted on the T lymphocytes. Interferons have antiviral, antiproliferative and immunomodulatory effects. SEE: *hybridoma*.

*Plasmapheresis*, the separation and removal of plasma containing autoantibodies (AAb), is most effective against disorders in which the AABs are tissue-specific, such as myasthenia gravis, and those in which more AABs are found in the blood than in extravascular spaces.



Many immunosuppressant drugs increase patients' susceptibility to infections (e.g., the reactivation of tuberculosis) or the new acquisition of opportunistic infections. Some also increase the risk of developing malignant tumors, because of the loss of immunosurveillance.

**PATIENT CARE:** Patients need to learn to minimize their exposure to infectious organisms and consistently to use good hand and oral hygiene measures. The medication regimen may be rigorous and should be accompanied by intensive teaching about desired effects and side effects of the drugs and the need for frequent bloodwork; written as well as verbal instructions about the treatment regimen is often provided to the patient.

**immunotoxin** (im'ū-nō-tōk'sīn) [I' + Gr. *toxikon*, poison] Any medication or poison chemically linked to antibodies, used to target and destroy cells with specific receptors, esp. cancerous cells. Immunotoxins have been used to eliminate malignant tumors in the bone marrow.

**Imovax** (ī'mō-vāks'') Rabies vaccine.

**impacted** (im-pāk'tēd) [L. *impactus*, pressed on] Pressed firmly together so as to be immovable. This term may be applied to a fracture in which the ends of the bones are wedged together, a tooth so placed in the jaw bone that eruption is impossible, a fetus wedged in the birth canal, cerumen, calculi, or accumulation of feces in the rectum.

**impaction** (im-pāk'shūn) [L. *impactio*, a pressing together] A condition of being tightly wedged into a part, as when the eruption of a tooth is blocked by other teeth; the overloading of an organ, as the feces in the bowels.

**food i.** The forcing of food into the interproximal spaces of teeth by chewing (vertical impaction) or by tongue and cheek pressure (horizontal impaction).

**impaired fasting glucose** (im-pārd' fāst'ing gloo'kōs) ABBR: IFG. Abnormal glucose metabolism demonstrated by the presence of a fasting blood sugar that is greater than 100 mg/dl.

**impairment** (im-pār'mēnt) Any loss or abnormality of psychological, physiological, or anatomical structure or function. Impairments represent a deviation from certain generally accepted population standards in the biomedical status of the body and its functions.

**cognitive i.** The loss of intellectual function, i.e., of the ability to think effectively. It may occur briefly after drug overdose or alcohol use, during sepsis, or after severe head injury. Permanent cognitive impairment may occur in older adults. Approximately half of people older than 85 show permanently impaired thinking when tested with standard assessment tools.

**i. evaluation** An examination of a person's fitness for work or performance of specific activities.

**nonsyndromic hereditary hearing i.** Hearing loss, or deafness, that is inherited and is not associated with other inherited characteristics.

**specific language i.** ABBR: SLI. A common impairment in language development affecting about 4% to 6% of children in which nonverbal intelligence is normal but skills such as the ability to name objects or to understand word meanings lags.

**syndromic hereditary hearing i.** Hearing loss or deafness that is genetically transmitted and associated with other inherited diseases or deficits.

**impairment testing** A means of measuring an employee's suitability for a particular job, esp. one in which the employee's performance may affect the health or safety of others. Some employers have preferred using impairment testing rather than random drug screening to assess the fitness of workers for employment in safety-conscious work environments (e.g., hospitals).

**impaled object** A foreign body that penetrates the skin and remains embedded in tissue. Such objects should be stabilized to prevent movement and allowed to remain in place while the patient is transported to receive professional care. EMS providers are taught that an impaled object to the cheek may be removed if it is causing a compromise to the airway.

**impalpable** (im-päl'pă-b'l) [L. *in-*, not, + *palpare*, to touch] Felt with difficulty, if at all; hardly perceptible to the touch.

**impartial** (im-pär'shîl) [ʹ + *partial*] In medicine, providing unbiased and non-judgmental treatment.

**impotent** (im-pă'tënt) [ʹ + *patere*, to be open] Closed; not patent.

**impedance** (im-pē'dāns) [L. *impedire*, to hinder] Resistance met by alternating currents in passing through a conductor; consists of resistance, reactance, inductance, or capacitance. The resistance due to the inductive and condenser characteristics of a circuit is called reactance.

**acoustic i.** Resistance to the transmission of sound waves.

**bioelectrical i.** ABBR: BIA. Resistance to electrical current as it travels through body fluids and tissues. Its measurement is used in body composition analysis to determine total water, lean mass, and other body components. The results may vary with ambient temperature and humidity, the subject's hydration, and other variables. SEE: *body composition; body fat; fluid, body; lean body mass.*

**thoracic i.** A measure of the electrical activity in the chest that varies with changes in body size and composition, fluid volume, ventilatory status, and other variables.

**imperative** (im-pēr'ă-tív) [L. *imperativus*, commanding] Not controlled by one's own will; involuntary; obligatory.

**deontological i.** Moral obligation or duty of caregivers, established by tradition and culture.

**impercption** (im'pēr-sēp'shūn) [L. *in-*, not, + *percipere*, to perceive] The inability to form a mental picture; lack of perception.

**imperfurate** (im-pēr'fō-rāt) [ʹ + *per*, through, + *forare*, to bore] Without an opening.

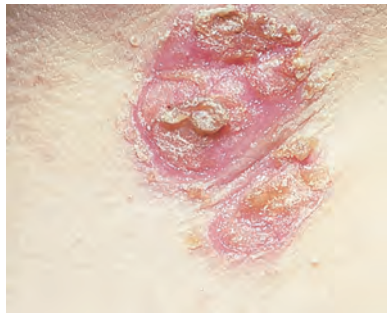
**imperfuration** (im-pēr'fō-rā'shūn) Atresia.

**impermeable** (im-pēr'mē-ă-bl) [L. *in-*, not, + *permeare*, to pass through] Not allowing passage, as of fluids; impenetrable.

**impervious** (im-pēr'vē-ūs) [L. *impervius*] Unable to be penetrated.

**impetiginous** (im'pē-tij'ĭ-nūs) [L. *impetiginosus*] Relating to or resembling impetigo.

**impetigo, impetigo contagiosa** (im-pē-tī'gō, -tē'gō) [L.] A bacterial infection of the skin, caused by streptococci or staphylococci and marked by yellow to red, weeping and crusted or pustular lesions, esp. around the nose, mouth, and cheeks or on the extremities. Associated symptoms include itching, burning, and regional lymphadenopathy; glomerulonephritis is a rare but serious complication. The disease is common in children and adults and may develop after trauma or irritation to the skin. SEE: *illus., Nursing Diagnoses Appendix. impetiginous, adj.*



**IMPETIGO CONTAGIOSA IN AXILLA**

**TREATMENT:** The infection is highly contagious and spreads easily among infants, children, and the elderly, with outbreaks related to such predisposing factors as poor hygiene, crowded and unclean living conditions, warm climate, malnutrition, and anemia. Topically applied mupirocin ointment, related drugs, or oral agents effective against staphylococcus and streptococcus are used to treat the infection. Mupirocin also eliminates nasal carriage of the offending organisms.

**PATIENT CARE:** The appearance, location, and distribution of lesions are documented, along with any associated symptoms (pruritus, pain). Family members are taught to keep the skin clean and dry, removing exudate 2 to 3 times daily by washing the lesions with soap and water; warm saline soaks or compresses may be applied to remove stubborn crusts. Patients and families are taught the importance of not sharing washcloths, towels, or bed linens; the need for thorough handwashing and frequent bathing with a bactericidal soap; and the urgency for early treatment of any purulent eruption to limit spread to others.

Prescribed treatment must be continued for 7 to 10 days even if lesions have healed. Nonprescription antihistamines may be used to reduce itching. The fingernails should be cut and, if necessary, mittens applied to prevent further in-

jury if the patient is unable to avoid scratching. Diversional activities appropriate to the patient's developmental stage are encouraged to distract from local discomforts. Black patients may develop deeper inflammation than whites and should be informed that this may result in hypopigmentation or hyperpigmentation changes after the inflammation has subsided. The school nurse or employer is notified of the infection, and family members are checked for evidence of impetigo. The patient can return to school or work when all lesions have healed.

**bullous i.** A rare infection, usually occurring in infants, caused by a strain of *Staphylococcus aureus* that produces a toxin that splits the epidermis. SEE: *illus.*



**BULLOUS IMPETIGO**

**i. herpetiformis** A rare and occasionally life-threatening eruption that typically occurs in the third trimester of pregnancy. It is pathologically indistinguishable from pustular psoriasis.

**impingement** (im-pīnj'měnt) **1.** Degenerative alteration in a joint in which there is excessive friction between joint tissues. This typically causes limitations in range of motion and the perception of joint pain. **2.** An area of periodontal tissue traumatized by the occlusal force of a tooth. **3.** The unwanted compression of soft tissue between two or more harder, unyielding structures.

**impingement syndrome** The compromise of soft tissues in the subacromial space, causing pain with overhead motions or rotational motions with an abducted arm (e.g., throwing). This syndrome is seen in repetitive overhead activities. It is treated with rotator cuff strengthening exercises, anti-inflammatory medications, and subacromial steroid injection. If conservative management fails, subacromial decompression (acromioplasty) is used.

**implant** (im'plānt) [L. *in-*, into, + *plantare*, to plant] An object inserted into the body, such as a piece of tissue, a tooth, a pellet of medicine, a tube or needle containing a radioactive substance, liquid and solid plastic materials used to augment tissues or to fill in areas traumatically or surgically removed, and artificial joints. SEE: *mammaplasty, augmentation.*

**bone i.** The use of implanted materials to repair bone or to cover implanted objects such as artificial hips or tooth implants.

**brain i.** Any substance, tissue, or object placed surgically in the brain.

**breast i.** A surgical alteration in the size and/or contour of the breast or chest wall, either using the patient's own tissue (e.g., pedicle graft) or a prosthesis.

**dental i.** In dentistry, a prosthetic device in any of several shapes. It is implanted into oral tissues beneath the mucosa or the periosteal layer, or within the bone to support or hold a fixed or removable prosthesis. SYN: *tooth implant.* SEE: *illus.*



Ultrasonic devices should not be used on dental implants.

**endosteal i.** A dental prosthesis that is partially submerged and anchored within the bone. The blade form and the cylinder form are the two types of endosteal implants used. The cylinder form, which is most common, consists of a screw, a small titanium cylinder, and an abutment surgically inserted into the bone. The blade form consists of one or more abutments. In both forms, the prosthetic device is placed on the abutment(s).

**interstitial i.** The insertion of an applicator containing a radioactive source directly into a tumor to deliver a high radiation dose while sparing the surrounding tissues.

**intracavitary i.** The insertion of an applicator containing a radioactive source directly into a hollow organ to deliver a high radiation dose to the organ while sparing the surrounding tissues.

**radioactive i.** SEE: *brachytherapy; interstitial i.; intracavitary i.*

**staple i.** Transosteal i.

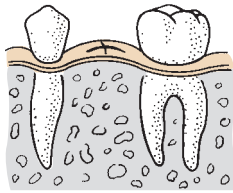
**subperiosteal i.** A prosthesis for use in edentulous patients who cannot wear dentures (e.g., because of mandibular atrophy). The implant consists of a metal framework that rests on the residual ridge beneath the periosteum but does not penetrate the mandible.

**tooth i.** Dental implant.

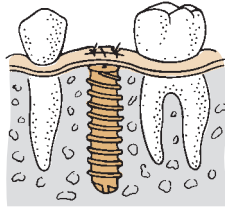
**transosteal i.** A rarely used type of dental prosthesis that completely penetrates the mandible. Its use is complicated by infection and a high rate of implant failure. SYN: *staple implant.*

**implantable collamer lens** ABBR: ICL. An artificial lens that can be inserted between the cornea and a patient's own lens, used to correct severe nearsightedness.

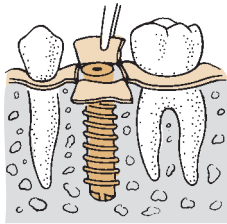
**implantation** (im'plān-tā'shūn) [im' + *plantare*, to plant] **1.** The grafting of tissue or the insertion of an organ such as tooth, skin, or tendon into a new lo-



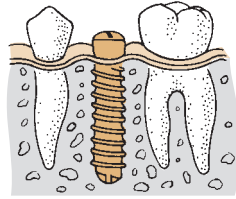
1. INCISION INTO GUM FOR PLACEMENT OF IMPLANT



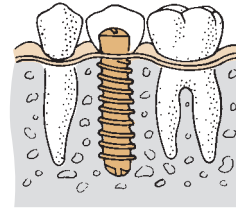
3. THE SOFT TISSUE IS SUTURED TO PERMIT BONE GROWTH AROUND THE IMPLANT



2. SCREW OR PIN FOR PLACEMENT INTO THE ALVEOLAR BONE DIRECTLY



4. CAP AFFIXED TO TOP OF IMPLANT



5. RESTORATION APPLIED TO CAP AS SHOWN

### ENDOSSEOUS DENTAL IMPLANT

cation in the body. **2.** Embedding of the developing blastocyst in the uterine mucosa 6 or 7 days after fertilization. **SYN:** *nidation*.

**hypodermic i.** The introduction of an implant under the skin; usually a solid substance placed by forcing a small amount out of a hypodermic needle.

**teratic i.** The union of an abnormal fetus with a nearly normal fetus.

**transkaryotic i.** The insertion into a cell nucleus of genetic information not normally present in the cell's DNA. This technique is used, e.g., to treat genetic illnesses in which a protein is absent or inadequately expressed by the cells of the patient.

**implicit** (im-pli'sit) [L. *implicare*, to enfold, to involve] **1.** Implied. **2.** Contained inside something.

**implicit association test** A test used to assess the attitudes or biases of the subject toward particular words or ideas. The examiner presents the subject with two words (e.g., the names of two different medical treatments) and two concepts (e.g., "safe" and "hazardous"). The subject is asked to choose which of the concepts best matches the offered words.

**implosion** (im-plō'zhūn) A violent collapse inward.

**i. flooding** A method of treating a phobia by systematically exposing the affected person to his greatest fear. The phobic situation is imagined first and, after the person becomes partly desensitized to it, experienced in reality. The

fear is experienced at maximum intensity for up to an hour until the patient is no longer capable of experiencing further fear. **SEE:** *phobic desensitization*.

**imponderable** (im-pōn'dēr-ā-bl) [L. *in-*, not, + *pondus*, weight] Incapable of being weighed or measured.

**impotence, impotency** (im'pō-tēns, im'pō-tēn-sē) [ + *potentia*, power] A weakness, esp. pert. to the inability of a man to achieve or maintain an erection. **SYN:** *erectile dysfunction*. **SEE:** *penile prosthesis; sex therapy; sexual dysfunction; sexual stimulant*.

**TREATMENT:** Sildenafil, alprostadil, and several other drugs are used to treat erectile dysfunction. Penile vacuum pumps and penile prostheses are among the nonpharmacological alternatives.

**anatomical i.** Impotence caused by a genital defect.

**atonic i.** Impotence resulting from paralysis of nerves supplying the penis.

**functional i.** Impotence not due to an organic or anatomical defect; usually of psychogenic origin. The individual may experience impotence with one or more sexual partners, but not with others.

**neurogenic i.** Impotence due to central nervous system lesions, paraplegia, or diabetic neuropathy.

**pharmacological i.** Erectile dysfunction due to the side effects of certain drugs and medications (e.g., alcohol, cytotoxic agents, barbiturates, beta blockers, marijuana, cimetidine, clonidine, guanethidine, immunosuppres-

sives, lithium, opiates, phenothiazine, some antihypertensive agents, some diuretics, antidepressants, and anticholinergics).

**psychic i.** Psychogenic i.

**psychogenic i.** Impotence caused by emotional factors rather than organic disease. SYN: *psychic impotence*.

**vasculogenic i.** Impotence due to an inadequate supply of arterial blood to the corpora cavernosa of the penis.

**impotent** (im'pō-tēnt) **1.** Unable to copulate. **2.** Sterile; barren. **3.** Lacking effectiveness.

**imprecision** (im-prē-sī'shūn) The amount or degree of random error in an assay, research study, or calculation, usually represented by the standard deviation, coefficient of variation, or range.

**impregnate** (im-prēg'nāt) [L. *impregnare*, to make pregnant] **1.** To render pregnant; to fertilize an ovum. **2.** To saturate.

**impregnation** (im'prēg-nā'shūn) [L. *impregnare*, to make pregnant] **1.** Fertilization of an ovum. SYN: *fecundation*. **2.** Saturation.

**artificial i.** Pregnancy resulting from successful assisted reproduction procedures. SEE: *artificial insemination*.

**impression** [L. *impressio*] **1.** A hollow or depression in a surface. **2.** An effect produced upon the mind by external stimuli. **3.** The imprint of all or part of the dental arch, individual teeth, or cavity preparations, made with appropriate dental materials and used to make records or dental protection devices, or to prepare for restorative procedures.

**addition silicone i. material** An elastic final impression material used to construct cast restorations, dental prostheses, and other appliances. It is made from a vinyl polysiloxane paste mixed with a platinum salt catalyst.



Wearing latex gloves inhibits the setting of addition silicone impression material. The contamination is so pervasive that touching the tooth with the latex will inhibit setting.

**complete dental i.** A negative impression of the entire edentulous area (e.g., the area that originally provided the base for the normal teeth).

**condensation silicone i. material** An elastic final impression material used to construct dental cast restorations, prostheses, and appliances. It is made of two pastes containing siloxane and stannous octoate and has a limited shelf life.

**final i.** An impression used for making the master cast for a dental prosthesis.

**partial dental i.** A negative impression of a portion of the maxilla or man-

dible where teeth were previously present.

**polyether i. material** The stiffest of the dental final impression materials, used to construct restorations, prosthetics, and other appliances. It is made from a base containing a polyether polymer, silica, filler, and plasticizer, and an accelerator, made of an alkylaromatic sulfonate, filler, and plasticizer.

**polysulfide i. material** An elastic final dental impression used to construct restorations, prosthetics, and appliances, which is made from a paste composed of polysulfide polymer, filler, sulfur, plasticizer, and an accelerator paste containing lead dioxide (which causes it to turn dark-brown).

**imprint** (im-print, im'print) [L. *imprimere*, to press] **1.** To leave a pressure mark on an object. **2.** To guide or restrict the development or expression of a genetic, behavioral, or personal characteristic. **imprinting, n.**

**genomic i.** The inactivation of a gene by its allele.

**imprint cytology** The study of cellular morphology or of tissue diseases after a clinical specimen, e.g., a bone marrow biopsy, is dabbed on a microscope slide. It is used in some settings as an adjunct or alternative to fine needle aspiration biopsy, frozen sectioning, and other pathological techniques.

**improvised explosive device** ABBR: IED. Military jargon for a detonatable bomb or land mine.

**impulse** (im'pūls) [L. *impulsus*] **1.** The act of driving onward with sudden force. SEE: *conation*. **2.** An incitement of the mind, prompting an unpremeditated act (e.g., impulse buying). **3.** In physiology, a change transmitted through certain tissues, esp. nerve fibers and muscles, resulting in physiological activity or inhibition.

**cardiac i.** **1.** The heartbeat felt through the chest wall overlying the apex of the heart. **2.** The electrical impulse transmitted over the conducting pathway of the heart that is responsible for the contraction of the muscular tissue of the heart. SEE: *heart*.

**ectopic i.** A cardiac impulse arising in some part of the heart other than the sinoatrial node.

**enteroceptive i.** An afferent nerve impulse arising from stimuli originating in receptors located in internal organs.

**excitatory i.** A nerve signal that increases the activity of target cells, organs, or tissues.

**inhibitory i.** A nerve signal that diminishes the activity of the target it acts upon.

**nerve i.** A self-propagated electrical signal transmitted along the membrane of a nerve. At the end of the axon of the



nerve, the electrical impulse stimulates the release of a neurotransmitter, which may stimulate or inhibit another electrical impulse in another nerve fiber, cause muscle contraction or glandular secretion, or produce a sensation in the brain. The velocity varies according to the diameter of the fiber and the presence or absence of a myelin sheath. The most rapid conducting mammalian neurons (50 to 80 m/sec) are large, myelinated neurons.

**proprioceptive i.** An afferent nerve impulse arising from stimuli originating in joints, muscles, tendons, or other sensory endings that respond to pressure or stretch.

**impulse-control disorder** A disorder marked by failure to resist impulses, drives, or temptations that may potentially cause harm. Impulse-control disorders include kleptomania, pyromania, pathological gambling, trichotillomania, and intermittent explosive disorder.

**impulsion** (im-pūl'shūn) A persistent psychic drive to act that is not relieved until the action is taken. Clear consciousness of the proposed act followed by an agonizing struggle, defeat, and sense of relief following the act are characteristics of impulsions, obsessions, and inhibitions. Impulsions may include folie du doute or doubting mania (e.g., repeatedly checking to determine whether something has been done); obsessive fears of contact or delirium of touch; agoraphobia; dipsomania; pyromania; kleptomania; homicidal or suicidal impulsion; onomatomania; arithmomania; exhibitionism.

**imputed negligence** (im-pūt'ēd) [L. *putare*, to think] The liability of the manager, owner, or leader of an enterprise for faulty behavior or injuries committed by his or her employees or subordinates.

**IMS** *incident management system.*

**IMV** *intermittent mandatory ventilation; intermittent mechanical ventilation.*

**In** Symbol for the element indium.

**in-** [L. *in*, into] Prefix indicating *in*, *inside*, *within*; and also *intensive action*.

**in-** [L. *in-*, not] Prefix indicating *negative*.

**inaccuracy** (in-āk'ūr-āsē) Inexactness as a result of measurement error.

**inaccurate** (in-āk'ūr-āt) **1.** Mistaken or incorrect; in error. **2.** In quantitative analysis, not in agreement with an accepted value.

**inaction** (in-āk'shūn) [L. *in-*, not, + *actio*, act] Failure of or decreased response to a stimulus.

**inactivate** (in-āk'ti-vāt") [" + *activus*, acting] To render inactive, esp. the alteration or destruction of an enzyme system or a biologically active agent such as a microorganism or antigen.

**inactivation** (in-āk'ti-vā'shūn) Rendering anything inert by using heat or other means.

**inanimate** (in-ān'i-māt) [" + *animatus*, alive] **1.** Not alive; not animate. **2.** Dull, lifeless.

**inanition** (in"ā-nish'ūn) [L. *inanis*, empty] A debilitated condition caused by a lack of sufficient food material essential to the body, such as in starvation or malabsorption syndrome. This condition may also be due to causes other than the food supply, such as malabsorption, or to other diseases of the gastrointestinal system that prevent absorption of food.

**inappetence** (in-āp'ē-tēns) [" + *appetere*, to long for] A lack of craving or desire, esp. for food.

**inarticulate** (in"ār-tik'ū-lāt) [" + *articulus*, joined] **1.** Not jointed; without joints. **2.** Unable to pronounce distinct syllables or express oneself intelligibly. **3.** Not given to expressing oneself verbally.

**in articulo mortis** (in ār-tik'ū-lō mor'tis) [L.] At the very moment of death.

**inassimilable** (in"ā-sim'i-lā-b'l) [" + *assimilis*, to make similar] Not capable of being used by the body for nutrition.

**inattention** **1.** Neglect, e.g., of sensory stimuli. **2.** Distractibility.

**unilateral i.** An inability to recognize stimulation provided to the side of the body or the visual field damaged by a stroke in the nondominant hemisphere of the brain. Sometimes called visual inattention or visual unilateral inattention. SYN: *neglect, altitudinal; neglect, hemispacial*. SEE: *hemi-inattention; unilateral spatial agnosia*.

**inborn** (in'born") Innate or inherent, said of characteristics both structural and functional that are inherited or acquired during uterine development.

**inbreeding** (in'brēd'ing) [" + AS. *brēdan*, to cherish] Mating of closely related individuals.

**incandescent** (in'kān-dēs'ēnt) [L. *incandescere*, to glow] Glowing with light; white hot.

**incapacitate** (in'kā-pās'i-tāt) Being made incapable of some function, act or strength. This may be purely physical or intellectual or both.

**incarcerated** (in'kār'sē-rāt-ēd) [L. *incarcerare*] Imprisoned, constricted, and confined of blood flow, as an irreducible hernia.

**incarceration** (in'kār'sē-rā'shūn) **1.** Legal confinement. **2.** The imprisonment of a part; constriction, as in a hernia.

**incasement** (in-kās'mēnt) Becoming surrounded by a structure or wall.

**incentive** (in-sēn'tiv) Any stimulus that encourages a desired response. Incentives may be provided to patients (e.g., to ensure adherence to treatment plans), to practitioners (e.g., to improve

productivity or job performance), or to students (e.g., to improve grades).

**inception** (in-sēp'shūn) [L. *inceptio*, taking in, beginning] **1.** The beginning of anything. **2.** Ingestion. **3.** Intussusception.

**incest** (in'sēst) [L. *incestus*, unchaste, incest] Coitus between close blood relatives.

**incidence** (in'sid-ins) [L. *incidens*, falling upon] **1.** The frequency of new cases of a disease or condition in a specific population or group. SEE: *prevalence*. **2.** The falling or impinging upon, touching, or affecting in some way.

**incident** **1.** A happening, event, or occurrence. **2.** Falling or striking, as a ray of light.

**critical i.** Medical jargon for a crisis.

**multiple casualty i.** ABBR: MCI.

Medical or traumatic emergencies that involve more than one patient (e.g., in automobile or plane crashes, bombings, fires, hazardous materials spills, or acts of terrorism).

**incident command system** ABBR: ICS. Incident management system.

**incident management system** ABBR: IMS. A system designed to assist in the management and command of emergency operations such as natural disasters, civil disturbances, multiple casualty incidents, hazardous materials incidents, fires, and acts of terrorism. The key components to the system include finance, logistics, operations, and planning. SYN: *incident command system*.

**incident pain** Pain that occurs as a result of a sudden, forceful, unanticipated, or unusual body movement or posture.

**incident screening** The scheduling of follow-up screening examinations (e.g., mammograms) at predetermined intervals after an initial study.

**incineration** (in-sin'er-ā'shūn) [L. *in*, into, + *cineres*, ashes] Destruction by fire; cremation.

**incipient** (in-sip'ē-ēnt) [L. *incipere*, to begin] Beginning; coming into existence.

**incisal** (in-sī'zāl) Relating to or involving cutting.

**incise** (in-sīz') [L. *incisus*] To cut, as with a sharp instrument.

**incised** (in-sīzd') Cut cleanly, as with a knife.

**incision** (in-sīzh'ūn) [L. *incisio*] A cut made with a knife, electrosurgical unit, or laser esp. for surgical purposes.

**coronal i.** **1.** An incision made across the scalp in a plane that separates the front (anterior portion) of the head from the back (posterior portion). **2.** A crown-shaped incision.

**Pfannenstiel i.** SEE: *Pfannenstiel incision*.

**incisive** (in-sī'siv) [L. *incisivus*] **1.** Cutting; having the power of cutting. **2.** Relating to the incisor teeth.

**incisor** (in-sī'zor) [L., a cutter] **1.** That which cuts. **2.** That which applies to the incisor teeth. **3.** One of the cutting teeth; the four front teeth in each jaw of the adult. SEE: *dentition*.

**central i.** One of two upper and lower incisors adjacent to the midsagittal plane.

**incisura** (in'sī'-zhoor'ā) *pl. incisurae* [L.] **1.** An incision. **2.** Incisure; notch; emargination; indentation at the edge of any structure.

**i. angularis gastrica** A fold or notch on the distal end of the lesser curvature of the stomach.

**incisure** (in-sī'zhēr) [L. *incisura*, a cutting into] A notch or slit.

**i. of Schmidt-Lanterman** Channels of cytoplasm found in myelinated nerve fibers that were once thought to represent breaks in the myelin sheath.

**incitant** (in-sit'ānt) [L. *incitarē*, to set in motion] The stimulus that sets off a reaction, disease, or incident.

**inclination** (in'kli-nā'shūn) [L. *inclinare*, to slope] Leaning from the normal or from the vertical, as a tooth or the pelvis.

**inclinometer** (in'kli-nōm'ē-ter) [i + Gr. *metron*, measure] **1.** A device for measuring ocular diameter from vertical and horizontal lines. **2.** A device for measuring angles among different body parts, e.g., specific bones or joints. It can be used to determine the relative motion of these structures during active or passive bending.

**inclusion** (in-kloo-zhūn) [L. *inclusus*, enclosed] Being enclosed or included.

**i. body** Microscopic structures (made of a dense, occasionally infective core surrounded by an envelope) seen in the cytoplasm and nuclei of cells infected with some intracellular pathogens. Inclusion bodies are seen in cells infected with herpesviruses (esp. cytomegalovirus), smallpox, lymphogranuloma venereum, psittacosis, and other organisms. SYN: *cell inclusion.*; SEE: *Negri bodies*.

**cell i.** Inclusion body.

**fetal i.** Malformed twins in which one, the parasite, is completely enclosed within the other, its host or autosite. SEE: *teratoma*.

**incoagulability** (in'kō-āg'ū-lā-bīl'ī-tē) [L. *in-*, not, + *coagulare*, to congeal] Not coagulable.

**incoherence** (in'kō-hēr'ēns) [i + *cohaerens*, adhering] An inability to express oneself coherently or to present ideas in a related order.

**incoherent** (in'kō-hēr'ēnt) Not coherent or understandable.

**incombustible** (in'kōm-būs'tī-bl) [i + *combustus*, burned] Incapable of being burned.

**incompatibility** (in'kōm-pā'tī-bīl'ī-tē) [L. *incompatibilis*] **1.** The quality of not

being suitable for mixture. It can be applied to a state that renders admixture of medicines unsuitable through chemical action or interaction, insolubility, formation of poisonous or explosive compounds, difference in solubility, or antagonistic action. **2.** The quality of not being mixed without chemical changes, or without countering the action of other ingredients in a compound. **3.** The condition of not being in harmony with one's surroundings or associates, esp. a spouse or friend.

**ABO i.** An antigen-antibody immune response to infusion of another's red blood cells. Transfusion reactions occur most commonly in people with type O blood, which carries no antigens on the red blood cells and contains both anti-A and anti-B antibodies. People with type A blood carry A antigens on their red cells and anti-B antibodies; those with type B blood carry B antigens and anti-A antibodies; those with type AB blood carry both A and B antigens but no antibodies to A or B. The antibodies are called natural antibodies because their formation does not require sensitization by A and B antigens. The antibodies recognize the antigens on the donor cells as foreign and destroy them by agglutination and lysis. ABO incompatibilities are different from Rh incompatibilities, which are most commonly related to the D antigen in the Rh blood group. SEE: table; *blood group*.

**Obstetrics:** Transplacental fetal-maternal transfusion occurs when fetal blood cells escape into the maternal circulation, eliciting antibody formation. Maternal antibodies then cross the placenta into the fetal circulation, attack, and destroy red blood cells, as evidenced by neonatal hyperbilirubinemia and jaundice.

**physiological i.** A condition in which one or more substances in a mixture oppose or counteract one of the other compounds being administered.

**incompatible** (in'kōm-pā'tī-bl) **1.** Not capable of uniting. **2.** Antagonistic in action, said of some drugs. **3.** Not being in harmony with one's environment, situation, or associates, esp. a spouse or friend.

**incompetence, incompetency** (in'kōm'-pē-tēns, in'kōm'pē-tēn-sē) [L. *in-*, not,

+ *competere*, to be suitable] An inadequate ability to perform the function or action normal to an organ or part.

**aortic i.** Aortic insufficiency.

**cervical i.** Structural inability of the cervical os to remain closed and support a growing fetus. This problem commonly has been associated with recurrent spontaneous second-trimester abortions. A higher incidence of this structural abnormality is noted after cervical trauma (e.g., previous vaginal or cesarean births, cervical laceration, conization of the cervix). It also has been reported among daughters whose mothers were treated with diethylstilbestrol (DES) during their pregnancies. Traditionally, cerclage has been used for treatment, even though controlled trials of its effectiveness have not been uniformly successful. SEE: *cerclage*; *Shirodkar operation*.

**chronotropic i.** An inappropriate response of the heart rate to stimulation, e.g., a slow heart rate during an exercise stress test.

**ileocecal i.** An inability of the ileocecal valve to stop the return of the feces from the colon to the ileum.

**mental i.** Legally unable to execute a contract, or to perform necessary activities and tasks expected of one's life roles.

**muscular i.** An imperfect closure of one of the atrioventricular valves due to weak action of papillary muscles.

**pyloric i.** A weakness of the pyloric sphincter, which permits undigested food to leave the stomach and enter the duodenum.

**relative i.** Excessive dilatation of a cardiac cavity, rendering it impossible for the cardiac valves leading in and out of the chamber to close perfectly.

**valvular i.** The backward flow of blood through a valve, e.g., a cardiac valve during the stage of the cardiac cycle when the valve leaflets should be closed.

**velopharyngeal i.** Velopharyngeal insufficiency.

**venous i.** Inability of a vein to prevent the backward flow of blood because of valve diseases or complications of deep venous thrombosis.

**incompetent palatal syndrome** (in-

## Blood Type Compatibility

Donor Blood Type	Compatibility with Recipient Blood Type			
	Type A Blood	Type B Blood	Type AB Blood	Type O Blood
A	yes	no	yes	no
B	no	yes	yes	no
AB	no	no	yes	no
O	yes	yes	yes	yes

köm'p'i-tint päl'ä-til s'in'dröm") Incomplete or ineffective separation by the soft palate of the nasopharynx from the oropharynx, characterized by hypernasality and distortion of speech called rhinolalia. This syndrome may be due to congenital or acquired defects of the palate.

**incompressible** (in'köm-prës'ï-bl) [" + *compressus*, pressed together] Compact; not compressible.

**inconsolable** (in'kôn-sô'lô-bil) [L. *inconsolabilis*] Said of an infant or child who is extremely irritable and cannot be comforted despite its parents' best efforts. In pediatrics inconsolability is a clinical indicator of severe illness.

**incontinence** (in-könt'in-ëns) [" + *continere*, to stop] 1. Loss of self-control, esp. of urine, feces, or semen. SEE: *bladder drill*; *continence*. 2. Loss of neurological or psychological control (e.g., of appetites, habits, or speech).

**active i.** A discharge of feces and urine in the normal way at regulated intervals but involuntarily.

**anal i.** fecal i.

**fecal i.** Failure of the anal sphincter to prevent involuntary expulsion of gas, liquid, or solids from the lower bowel. SYN: *anal incontinence*. SEE: *encopresis*.

**functional urinary i.** Inability of a usually continent person to reach the toilet in time to avoid unintentional loss of urine. Urinary incontinence (UI) affects about 30% of older adults living at home and about 50% of those in nursing care facilities. Women are more likely than men to develop UI. Urinary incontinence can result in physical problems such as skin breakdown, but also causes many emotional problems, such as embarrassment, frustration, depression, and loss of self-esteem, leading to social isolation, loss of independence, and even institutionalization. SEE: *Nursing Diagnoses Appendix*.

**PATIENT CARE:** Health care professionals should make questions about incontinence a routine part of history taking, as the patient may be too embarrassed to report the problem without prompting. The type of incontinence episodes experienced should be documented, along with how long the problem has been present. Many factors may be involved, including (but not limited to) neurologic disorders, urinary tract infection, adverse drug effects, and decreased muscle tone. Physical examination should follow up on the problem, and a urologic consultation may be warranted.

Functional urinary incontinence may afflict older adults who have normal bladder control but have a difficult time getting to the toilet because of problems that interfere with mobility (e.g., ar-

thritis, Parkinson disease, or stroke). Environmental factors also may play a part (clutter, lack of ready access to facilities, distance to the toilet). Health care professionals should assess the individual's fluid intake to be sure he/she is drinking enough, and should review the individual's medication regimen to determine if any of the drugs affect continence. The patient should be encouraged to use the toilet on a preplanned schedule (upon arising, before and after each meal and at bedtime, and as adjusted to the individual's needs). For patients living independently, walkways should be kept free of clutter, and, if necessary, a commode placed closer to the person's living space.

**giggle i.** Involuntary passage of urine induced by laughter. The condition occurs commonly in young girls and women, but tends to improve in the second or third decade of life. It is distinct from stress urinary incontinence, a condition that usually begins after menopause. SEE: *stress urinary i.*

**intermittent i.** Loss of control of the bladder upon sudden pressure or movement.

**i. of milk** Galactorrhea.

**overflow i.** Incontinence characterized by small frequent voidings due to leakage of small amounts of urine spilling from an overfilled bladder, or to a bladder with pathologically decreased volume. SEE: *Nursing Diagnoses Appendix*.

**PATIENT CARE:** More common in men than women, this type of incontinence requires further evaluation, as it may be triggered by diabetes mellitus, multiple sclerosis, spinal injury, or benign prostatic hypertrophy. Sterile intermittent catheterization or an indwelling urinary catheter may be prescribed, as retained urine can lead to infection and other complications. Male patients may benefit from alpha-adrenergic antagonists such as prazosin and terazosin, which decrease bladder outlet resistance and improve emptying. Patient, family, home health aides, and long-term-care health-care assistants involved with the individual's care should be taught about adverse reactions to these drugs, which need to be observed for and reported: postural hypotension, palpitations, headache, nausea, and dizziness. If the person feels dizzy while taking medications for incontinence, he should be advised to sit or lie down, and taught to change position slowly. The patient should not drive or operate machinery of any kind until he knows how the drug affects his safety and mental alertness.

Coping strategies for overflow incontinence include allowing enough time for toileting and providing external col-

lection devices such as a urinal or external (condom) catheter at night. Teaching the patient to perform a Crede maneuver (applying gentle pressure above the symphysis pubis in a downward direction with the blade of the hand) may increase emptying. Assessing residual urine using a portable non-invasive bladder ultrasound scanner, and following with intermittent catheterization if the residual amount is above specified limits, can assist the patient in learning to empty the bladder.

**paralytic i.** The constant voiding of small amounts of urine and feces owing to stroke or other central nervous system disorders.

**passive i.** A form of urinary incontinence; instead of emptying normally, the full bladder allows urine to drip away upon pressure.

**reflex urinary i.** An involuntary loss of urine at somewhat predictable intervals when a specific bladder volume is reached. SEE: *Nursing Diagnoses Appendix*.

**risk for urinary urge i.** Risk for involuntary loss of urine associated with a sudden, strong sensation or urinary urgency. SEE: *Nursing Diagnoses Appendix*.

**stress urinary i.** ABBR: SUI. Sudden leakage of urine with activities that increase intra-abdominal pressure. SEE: *Nursing Diagnoses Appendix*.

**DIAGNOSIS:** Direct observation of urine loss while coughing is a reliable method of establishing this diagnosis. Laughing, sneezing, lifting a heavy object, and exercising are other triggers. The urine should be cultured to rule out urinary tract infection. Bladder ultrasound after the patient voids establishes the residual urine volume, and helps to rule out retention with overflow. This phenomenon should be investigated to be certain that it is not caused by a structural abnormality.

**TREATMENT:** In addition to using devices to absorb urine that escapes, therapy consists of behavioral modification, pharmacological treatment, and surgical management. Behavioral therapy includes bladder training, timed voiding, prompted voiding, and pelvic muscle (Kegel) exercises. Pharmacotherapy includes oxybutynin hydrochloride, propantheline bromide, and imipramine hydrochloride. Surgery may restore anatomic support of the urethra or compensate for a poorly functioning urethral sphincter. The American Urological Association considers sling procedures and retropubic suspensions the most effective surgeries long term. The transvaginal tape (TVT) sling procedure is performed as outpatient surgery under local anesthesia, using a small vaginal incision and two small su-

prapubic incisions. The sling supports the urethra during stress and increases in intra-abdominal pressure that occur during routine activities. SEE: *bladder drill; Kegel exercise*.

**PATIENT CARE:** The patient is taught Kegel exercises to strengthen pubococcygeal muscles and encouraged to practice the exercises at frequent intervals throughout the day, as well as during urination (by stopping and starting the urinary stream intermittently). The vulva and introitus should be kept clean and dry and odor-free, and commercial barrier products should be used to protect clothing. To avoid the social isolation and depression that may result from this condition, the patient should be encouraged to continue or resume usual activities while using protective barriers. The patient's response to the exercise regimen is periodically evaluated. If conservative therapies are ineffective, surgery may be recommended to improve not only the urinary problem but also the patient's quality of life and activity. Postoperative precautions include: avoid lifting objects weighing 15 lb (6.8 kg) or more for 3 months; avoid driving for 1 to 2 weeks; avoid strenuous exercise (running, cycling) for 4 to 6 weeks; avoid tub baths for 4 weeks (may shower immediately); refrain from sexual intercourse for 4 weeks. Oral analgesics are prescribed for discomfort expected during the first 24 to 48 hr; continued or increasing pain should be reported, as should blood in the urine or urination that is painful or difficult.

**total urinary i.** Continuous and unpredictable loss of urine SEE: *Nursing Diagnoses Appendix*.

**urge urinary i.** Involuntary passage of urine occurring soon after a strong sense of urgency to void. Drugs that inhibit the detrusor muscle of the bladder, such as oxybutynin, can be used as treatment. SEE: *Nursing Diagnoses Appendix*.

**PATIENT CARE:** While healthy older adults may develop urge incontinence, it also can affect individuals who have experienced a stroke or who have Alzheimer's disease, Parkinson's disease, multiple sclerosis, or diabetes mellitus. Bladder retraining and Kegel exercises should be the first therapies for urge incontinence. The patient should maintain a regular toileting schedule, beginning with every 1 to 2 hr, then gradually increasing the time between voiding. Keeping a diary of fluid intake, urine output and any episodes of incontinence helps the patient and the primary health care provider to recognize patterns and revise the regimen as needed. The patient should carry out Kegel exercises when the urge to void starts,

as these exercises help to strengthen perineal muscles, which may provide the patient more time to reach the toilet. Anticholinergic drugs that inhibit the detrusor muscle of the bladder such as oxybutynin and tolterodine, can be prescribed. Patients should be aware of potential adverse effects, which include confusion, dry mouth, dry eyes, urinary retention, constipation, and blurred vision.

**i. of urine** Intermittent or complete absence of ability to control loss of urine from the bladder, a problem that affects about 25% of women over the age of 60. It may have significant impact on social, occupational, and psychological functioning.

**TREATMENT:** Therapy will depend upon the cause. Information on this subject may be obtained from Health for Incontinent People at (800) 251-3337. SEE: *Kegel exercise; stress urinary i.*

**incontinence, overflow urinary** Involuntary loss of urine associated with overdistention of the bladder. SEE: *overflow incontinence; Nursing Diagnoses Appendix.*

**in control** Within an acceptable predetermined range. The limits that define the acceptable range may be set using one or more criteria, depending on the intent. A typical analytical "in-control" limit is based on the calculation of the dispersion of the data measured as standard deviation (SD). Subsequent multiplication of the SD by 2 and then by 3 results in what frequently are used as "warning" and "action" limits, respectively. Other statistical or clinical criteria also can be used to set the limits. SEE: *standard deviation.*

**incoordinate** (in'kō-or'dī-nāt") [L. *in-*, not, + *coordinare*, to arrange] **1.** Not able to make coordinated muscular movements. **2.** Unable to adjust one's work harmoniously with others.

**incoordinate uterine contraction** An abnormality of the first stage of labor in which uterine contractions are too weak or too ineffective to dilate the cervix.

**incoordination** (in'kō-or'dī-nā'shūn) An inability to produce harmonious, rhythmic, muscular action that is not due to weakness. The condition is typically caused by a lesion on the cerebellum. SYN: *asynergia*. SEE: *disdiadochokinesia.*

**incorporation** [L. *in*, into, + *corporare*, to form into a body] Combining two ingredients to form a homogeneous mass.

**increment** (in'krē-mēnt) [L. *incrementum*] **1.** An increase or addition in number, size, or extent; an enlargement. **2.** Something added or gained. **3.** The beginning portion of a uterine contraction between baseline and acme. Increasing strength of contraction is

shown by the upslope record recorded by the fetal monitor.

**incrustation** (in'krūs'tā'shūn) [L. *in*, on, + *crusta*, crust] The formation of crusts or scabs.

**incubation** (in'kū-bā'shūn) [L. *incubare*, to lie on] **1.** The interval between exposure to infection and the appearance of the first symptom. SYN: *latent period* (2). SEE: table. **2.** In bacteriology, the period of culture development. **3.** The development of a fertilized ovum. **4.** The care of a premature infant in an incubator.

**incubation period** The time from the moment infection enters the human body to the appearance of the first symptom.

**incubator** (in'kū-bā'tōr) **1.** An enclosed crib, in which the temperature and humidity may be regulated, for care of premature babies. **2.** An apparatus for providing suitable atmospheric conditions for culturing bacteria or for maintaining eggs until they hatch.

**incubus** (in'kū-būs) [L. *incubare*, to lie upon] A nightmare.

**incudectomy** (ing'kū-dēk'tō-mē) [" + Gr. *ektome*, excision] The surgical removal of all or part of the incus of the middle ear.

**incurable** (in-kūr'ā-bl) [L. *in-*, not, + *curare*, to care for] Not capable of being cured.

**incurvation** (in'kūr-vā'shūn) [L. *incurvare*, to bend in] State of being bent or curved in.

**incus** (ing'kūs) *pl. incudes* [L., anvil] The second of the three tiny auditory bones, which form a chain that conducts vibrations through the middle ear from the tympanic membrane to the oval window of the inner ear. The incus has the shape of a bicycle saddle (the body) with its post (the long limb or lenticular process). The body articulates with the malleus, and the lenticular process articulates with the stapes. The incus is commonly known as the anvil. SEE: *ear for illus.*

**lenticular process of i.** The long process of the incus, a middle ear ossicle. It articulates with the head of the stapes. The incus is commonly known as the anvil.

**incyclophoria** (in-sī'klō-fōr'ē-ā) [L. *in-*, not, + Gr. *kyklos*, circle, + *phoros*, bearing] Median or negative cyclophoria in which the affected eye, when covered, turns inward about its anteroposterior axis.

**incyclotropia** (in-sī'klō-trō'pē-ā) [" + " + *tropos*, turning] Cyclotropia in which the eye turns inward toward the nose even when both eyes are open.

**indemnify** (in-dēm'nī-fī") [L. *indemnitas*, without loss] **1.** To protect the interests of another party against losses. **2.** To compensate another party for expenses

## Incubation and Isolation Periods in Common Infections\*

Infection	Incubation Period	Isolation of Patient†
AIDS	Unclear; antibodies appear within 1–3 months of infection	Protective isolation if T-cell count is very low; private room only necessary with severe diarrhea, bleeding, copious blood-tinged sputum if patient has poor personal hygiene habits
Bloodstream (bacteremia, fungemia)	Variable; usually 2–5 days	
Brucellosis	Highly variable, usually 5–21 days; may be months	None
Chickenpox	2–3 weeks	1 week after vesicles appear or until vesicles become dry
Cholera	A few hours to 5 days	Enteric precautions
Common cold	12 hr–5 days	None
Dysentery, amebic	From a few days to several months, commonly 2–4 weeks	None
Dysentery, bacillary (e.g., shigellosis)	12–96 hr	As long as stools remain positive
Encephalitis, mosquito-borne	5–15 days	None
Giardiasis	3–25 days or longer; median 7–10 days	Enteric precautions
Gonorrhea	2–7 days; may be longer	No sexual contact until cured
Hepatitis A	15–50 days	Enteric (gloves with infected material; gowns as needed to protect clothing)
Hepatitis B	45–180 days	Blood and body fluid precautions (gloves and plastic gowns for contact with infective materials)
Hepatitis C	14–180 days	As for hepatitis B
Hepatitis D	2–8 weeks	As for hepatitis B
Hepatitis E	15–64 days	Enteric precautions
Influenza	1–3 days	As practical
Legionella	2–10 days	None
Lyme disease	3–32 days after tick bite	None
Malaria	7–10 days for <i>Plasmodium falciparum</i> ; 8–14 days for <i>P. vivax</i> , <i>P. ovale</i> ; 7–30 days for <i>P. malariae</i>	Protection from mosquitoes
Measles (rubeola)	8–13 days from exposure to onset of fever; 14 days until rash appears	From diagnosis to 7 days after appearance of rash; strict isolation from children under 3 years
Meningitis	2–10 days	Until 24 hr after start of chemotherapy
Mononucleosis, infectious	4–6 weeks	None; disinfection of articles soiled with nose and throat discharges
Mumps	12–25 days	Until the glands recede
Paratyphoid fevers	3 days–3 months; usually 1–3 weeks; 1–10 days for gastroenteritis	Until 3 stools are negative
Pneumonia, pneumococcal	Believed to be 1–3 days	Enteric precautions in hospital. Respiratory isolation may be required.

Table continued on following page

## Incubation and Isolation Periods in Common Infections\* (Continued)

Infection	Incubation Period	Isolation of Patient†
Puerperal fever, streptococcal	1–3 days	Transfer from maternity ward
Rabies	Usually 2–8 weeks; rarely as short as 9 days or as long as 7 years.	Strict for duration of illness; danger to attendants
Rubella (German measles)	16–18 days with range of 14–23 days	None; no contact with nonimmune pregnant women
Salmonellosis	6–72 hr, usually 12–36 hr	Until stool cultures are <i>Salmonella</i> free on two consecutive specimens collected in 24-hr period
Scabies	2–6 weeks before onset of itching in patients without previous infections; 1–4 days after re-exposed	Patient is excused from school or work until day after treatment
Trachoma	5–12 days	Until lesions disappear, but usually not practical
Tuberculosis	4–12 weeks to demonstrable primary lesion or significant tuberculin reactions	Variable, depending on conversion of sputum to negative after specific therapy and on ability of patient to understand and carry out personal hygiene methods

\* SEE: *Standard Precautions Appendix*.

† Standard precautions and handwashing are assumed.

incurred, as when a policy holder is indemnified by an insurance company.

**indentation** (in'dèn-tā'shūn) [L. *in*, in, + *dens*, tooth] A depression or hollow.

**independent living** In rehabilitation, thriving on one's own; living autonomously and actively in one's own home and community.

**independent living center** A facility in the community that coordinates services for the disabled, including counseling, training, rehabilitation, assistance with devices, and respite care.

**independent living skills** Skills such as shopping, cooking, cleaning, and child care that are necessary for maintaining the home environment.

**independent practice association** ABBR: IPA. An integrated group of health care professionals who share patients, premiums, and practices to jointly manage costs, risks, and health care delivery.

**index** (in'děks) *pl.* **indexes, indices** [L., an indicator] **1.** The forefinger. **2.** The ratio of the measurement of a given substance with that of a fixed standard.

**addiction severity i.** A structured assessment tool that evaluates the impact of addictive behavior on seven areas of living: alcohol use, drug use, employment, family relationships, illegal activities, physical health, and psychological health.

**alveolar i.** Gnathic index.

**ankle-brachial i.** ABBR: ABI. A measure of the adequacy of blood flow to the

arteries of the legs. It is used to gauge the severity of peripheral vascular disease.

**PATIENT CARE:** The index is obtained by measuring the systolic blood pressure in the upper and lower extremities after the patient has been lying on his or her back for about 5 min and then repeating the measurements after the patient walks for 5 min. There are several ways to obtain an ABI. The most accurate test results are obtained by measuring the blood pressure in both arms using a blood pressure cuff and Doppler ultrasound and recording the higher of these. The measurement is repeated in each leg, with measurement of blood pressures at both the posterior tibial and dorsalis pedis artery. The pressure that should be recorded is the pressure found during the first return of a pulse to the cuffed limb. The blood pressure in each leg is divided by the blood pressure in the higher of the two arms to obtain an ABI for each lower extremity. An ABI above 0.9 is normal, except when it exceeds 1.3 (an indicator of severe peripheral arterial obstruction). Severe obstruction is also indicated by an ABI of less than 0.5. Moderate peripheral arterial disease is suggested by an ABI of 0.8. A drop in the ABI after exercise also strongly suggests peripheral arterial disease. Patients with mild or moderately abnormal ABIs are usually treated with antiplatelet medications, an exercise regimen, and



cholesterol-lowering drugs or diet. Those who smoke are encouraged to quit. Patients with severe disease may need angiography and, in some instances, arterial bypass surgery or stenting.

**apnea-hypopnea i.** ABBR: AHI. The number of times in an hour when a sleeping person either stops breathing completely or has limited airflow. Each episode must last at least 10 sec. The AHI is one indicator of obstructive sleep apnea, although it is recognized as an imperfect diagnostic tool. An AHI of 30 or more events in an hour indicates severe sleep apnea; 15 to 29 events suggests moderate apnea; and 5 to 14 events indicates mild apnea.

**Barthel i.** SEE: Barthel index.

**bispectral i.** ABBR: BIS. An electroencephalographic measure of the effect of sedative and hypnotic drugs on an anesthetized patient. It is used to determine the level of central nervous system (CNS) depression. The index ranges from zero (completely unresponsive to stimulation) to 100 (awake and alert). At levels below 60, most patients are adequately sedated for surgery.

**body mass i.** ABBR: BMI. An index for estimating obesity. The BMI is obtained by dividing weight in kilograms by height in meters squared. In adults, a BMI greater than 30 kg/m<sup>2</sup> indicates obesity; a BMI greater than 40 kg/m<sup>2</sup> indicates morbid obesity, and a BMI less than 18.5 kg/m<sup>2</sup> indicates a person is underweight. SEE: *illus.*

**cardiac i.** The cardiac output (expressed in liters per minute) divided by the body surface area (expressed in square meters).

**i. case** The first person whose condition leads to the investigation of a hereditary or infectious disease. SEE: *cohort.*

**cephalic i.** Skull breadth multiplied by 100 and divided by the length of the skull.

**cerebral i.** The ratio of greatest transverse to the greatest anteroposterior diameter of the cranium.

**chemotherapeutic i.** The ratio of the toxicity of a drug, expressed as maximum tolerated dose per kilogram of body weight to the minimal curative dose per kilogram of body weight. This index is used in judging the safety and effectiveness of drugs.

**DMF i.** The index of dental health and caries experience based on the number of DMF teeth or tooth surfaces. D indicates the number of decayed teeth, M the missing teeth, and F the filled or restored teeth.

**dynamic gait i.** ABBR: DGI. A semi-quantitative tool used to evaluate a patient's ability to modify gait by changing task demands, esp. in patients with dizziness and balance deficits. This test is used to identify patients, esp. seniors, who are predisposed to falling. Patients are graded on their ability to vary speed, turn the head, turn the body, step over and around obstacles, climb stairs, turn while walking, pick objects up from the floor, and perform alternate step-ups on a stool.

**exposure i.** A relative value indicating the quantity of ionizing radiation received by a digital radiographic image receptor. Although vendors currently use many kinds of exposure indices (i.e., Sensitivity Numbers), standardization is being developed by physicists' organizations.

**gas exchange i.** One of several measurements of the efficiency of respiration, esp. of the extent of intrapulmonary shunting in respiratory failure. Among the commonly used gas ex-

Federal health guidelines in the U.S. call for use of the Body Mass Index (BMI) to help assess overweight and obesity. A BMI of 25 or more is considered overweight. On the chart below your BMI is located at the intersection of your height and weight.

WEIGHT	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
5'0"	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
5'1"	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
5'2"	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'3"	18	19	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
5'4"	17	18	19	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
5'5"	17	17	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'6"	16	17	18	19	20	21	22	23	23	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'7"	16	16	17	18	19	20	20	21	22	23	23	24	25	26	27	28	29	30	31	31	32	33	34	35	36
5'8"	15	16	17	17	18	19	20	21	21	22	23	24	24	25	26	27	28	29	30	30	31	32	33	34	35
5'9"	15	16	16	17	18	18	19	20	21	21	22	23	24	24	25	26	27	28	29	30	30	31	32	33	34
5'10"	14	15	16	17	17	18	19	20	21	22	22	23	24	25	26	27	28	29	29	30	31	31	32	33	34
5'11"	14	15	15	16	17	17	18	19	20	20	21	22	22	23	24	25	26	26	27	28	29	29	30	31	32
6'0"	14	14	15	16	16	17	18	19	20	20	21	22	22	23	24	25	26	26	27	28	29	29	30	31	32
6'1"	13	14	15	16	16	17	18	18	19	20	21	22	22	23	24	25	26	26	27	28	28	29	30	31	32
6'2"	13	13	14	15	16	16	17	18	19	20	21	22	22	23	24	25	26	26	27	28	28	29	30	31	32
6'3"	12	13	14	15	16	16	17	18	19	20	21	22	22	23	24	25	26	26	27	28	28	29	30	31	32
6'4"	12	13	13	14	15	15	16	17	18	19	20	21	22	23	23	24	25	26	26	27	28	28	29	30	31

SOURCES: Shape Up America; National Institutes of Health

BODY MASS INDEX

change indices is the alveolar-arterial oxygen tension difference (a measurement derived from an analysis of the oxygen tension of an arterial blood gas, compared with the atmospheric oxygen content).

**glycemic i.** A ratio used to describe the ability of a food to increase blood sugar as compared with consumption of either glucose or white bread as the standard. Foods with a low glycemic index result in a slower rise and lower maximum elevation of blood glucose levels than foods with a higher glycemic index. Consumption of low glycemic index foods can contribute to blood glucose regulation in patients with diabetes mellitus. Another use for the index is for choice of food to raise blood sugar levels after, e.g., endurance exercise.

**gnathic i.** A measure of the degree of projection of the upper jaw by finding the ratio of the distance from the nasion to the basion to that of the basion to the alveolar point multiplying by 100. SYN: *alveolar index*.

**opsonic i.** A ratio of the number of bacteria that are ingested by leukocytes contained in the serum of a normal individual, compared with the number ingested by leukocytes in the patient's own blood serum.

**oral hygiene i.** ABBR: OHI. A popular indicator developed in 1960 to determine oral hygiene status in epidemiological studies. The index consists of an oral debris score and a calculus score. Six indicator teeth are examined for soft deposits and calculus. Numerical values are assigned to the six indicator teeth according to the extraneous deposits present. The scores are added and divided by the number of surfaces examined to calculate the average oral hygiene score.

**Oswestry Disability I.** SEE: *Oswestry Disability Index*.

**pelvic i.** The ratio of pelvic conjugate and transverse diameters.

**periodontal (Ramfjord) i.** An extensive consideration of the periodontal status of six teeth by evaluating gingival condition, depth of gingival sulcus or pocket, plaque or calculus, attrition, tooth motility, and extent of tooth contact.

**phagocytic i.** The average number of bacteria ingested by each leukocyte after incubation of the leukocytes in a mixture of serum and bacterial culture.

**physiologic cost i.** ABBR: PCI. The metabolic expenditure per unit of distance traveled. It is expressed as the number of heartbeats per meter traveled and is calculated by subtracting the resting heart rate from the exercise heart rate divided by the distance traversed.

**ponderal i.** The ratio of an individ-

ual's height to the cube root of his or her weight; used to determine body mass. SEE: *body mass i.*

**refractive i.** Index of refraction.

**respiratory i.** The ratio of the alveolar-arterial oxygen tension gradient to the arterial partial pressure of oxygen.

**respiratory disturbance i.** A measurement of the number of disordered breathing cycles during sleep. Sleep disordered breathing, which includes both apneas and hypopneas, results in daytime fatigue. It is also associated with an increased prevalence of cardiovascular disease.

**shock i. 1.** The systolic blood pressure divided by the heart rate. **2.** The heart rate divided by the systolic blood pressure.

**sulcus bleeding i.** ABBR: SBI. A sensitive measure of gingival condition that involves probing of all sulci. The score is based on six defined criteria. It is calculated by counting the number of sulci with bleeding, dividing by the total number of sulci, and multiplying by 100.

**therapeutic i.** The maximum tolerated dose of a drug divided by the minimum curative dose.

**thoracic i.** The ratio of the thoracic anteroposterior diameter to the transverse diameter.

**vital i.** The ratio of the number of births to the number of deaths in a population over a stated period of time.

**Index Medicus** A publication of the National Library of Medicine that lists biomedical and health sciences journal articles by title, subject, field, and country of publication. The major medical and biological journals are indexed.

**Indian Health Service** ABBR: IHS. A bureau of the U.S. Department of Health and Human Services, responsible for providing public health and medical services to Native Americans.

**indican** (in'dī-kān") **1.** Potassium salt of indoxylsulfate, found in sweat and urine, and formed when intestinal bacteria convert tryptophan to indole. **2.** In plants, a yellow glycoside, the precursor of the dye indigo.

**indicanemia** (in'dī-kān-ē'mē-ā) [*indican* + Gr. *haima*, blood] Indican in the blood.

**indicant** (in'dī-kānt) **1.** Something such as a sign or symptom that points to the presence of a disease. **2.** Something such as loss of a symptom or sign that indicates that the treatment of the disease is proper and effective.

**indicanuria** (in'dī-kān-ū'rē-ā) [" + Gr. *ouron*, urine] An excess of indoxylsulfate of potassium, a derivative of indole, in urine. It is found in small quantities in normal urine. SEE: *urocyanosis*.

**indication** (in'dī-kā'shūn) [L. *indicare*, to show] **1.** A sign or circumstance that suggests the proper treatment of a dis-

ease. **2.** An approved use for a drug, e.g., in the U.S., a use that has met the standards set by the U.S. Food and Drug Administration.

**causal i.** An indication provided by the knowledge of the cause of a disease.

**symptomatic i.** An indication provided by the symptoms of a disease rather than because of precise knowledge of the actual disease process (e.g., a patient may be given acetaminophen without knowing the cause of the symptoms of headache or fever).

**indicator** [L. *indicare*, to show] In chemical analysis, a substance that can be used to determine pH. In a more general sense, any substance that can be used to determine the completeness of a chemical reaction, as in volumetric analysis. Its uses include (1) in the titration of ammonia and other weak bases; (2) in Topfer's reagent, for determining free acid in gastric juice; and (3) in the titration of weak acids and determination of combined acid in gastric juice. SEE: table.

**empirical i.** An instrument, experimental condition, or clinical procedure that is used for observation, measurement, or protocol writing, esp. in clinical research.

**indictment** (in-dit'ment) First step in criminal procedure; a written accusation or charge that identifies the alleged offense that must be proved at trial, beyond a reasonable doubt, in order to convict the defendant.

**indifferent** [L. *in-*, not, + *differre*, to differ] **1.** Neutral; tending in no specific direction. **2.** Not responsive to normal stimuli; apathetic. **3.** Pert. to cells that have not differentiated.

**indigestible** (in'di-jes'ti-bl) [L. *in-*, not, + *digerere*, to separate] Not digestible.

**indigestion** (in'di-jes'chın) [ + *digerere*, to separate] Incomplete or imperfect digestion, usually accompanied by one or more of the following symptoms: pain, nausea and vomiting, heartburn, acid regurgitation, accumulation of gas, and belching. SYN: *dyspepsia*.

**indigitation** (in-dij'i-tä'shün) [L. *in*, in, + *digitus*, finger] Intussusception.

**indigo** (in'di-gō) A blue dye obtained from plants or made synthetically.

**indigotindisulfonate sodium** (in'di-gō'tin-di-sül'fō-nät) A dye used in testing renal function.

**indisposition** (in'dis-pō-zis'hün) [L. *in-*, not, + *dispositus*, arranged] A mild disorder; any slight or temporary illness.

**indium** (in'dē-ūm) [L. *indicum*, indigo] SYMB: In. A rare metallic element; atomic weight 114.82; atomic number 49; specific gravity 7.31. It is soft and malleable and used in electronics.

**indium-111** (<sup>111</sup>In) An isotope of indium with a half-life of 2.8 days; used in radioactive tracer studies.

**Individuals with Disability Education Act** ABBR: IDEA. A U.S. federal law that mandates that children with disabilities receive publicly financed public education appropriate for their level of functional ability.

**individuation** (in'di-vid'ū-ä'shün) **1.** During development, the emergence of specific and individual structures and functions. **2.** The process by which a healthy, integrated personality is developed.

**indocyanine green** (in'dō-si'ä-nēn', -nīn) A fluorescent contrast agent used for tests of liver function, blood volume, and retinal perfusion (e.g., during angiography).

**indolaceturia** (in'döl'äs'i-tūr'ē-ä) [*indole* + L. *acetum*, vinegar, + Gr. *ouron*, urine] The excretion of an increased amount of indoleacetic acid in the urine. This occurs in patients with phenylketonuria and may also be increased by eating serotonin-containing foods (e.g., bananas).

**indole** (in'döl) C<sub>8</sub>H<sub>7</sub>N; a substance found in feces. It is the product of bacterial decomposition of tryptophan and is partially responsible for the odor of feces. In intestinal obstruction it is absorbed and eliminated in the urine in the form of indican.

**indolent** (in'dō-lēnt) [LL. *indolens*, painless] **1.** Indisposed to action. **2.** Inactive; slowly developing; sluggish.

**indoxyl** (in-dök'sil) [Gr. *indikon*, indigo,

### Colors of Indicators of pH

	Color		
	Toward Acid	Toward Alkali	Range of pH
Methyl yellow	Red	Yellow	2.9–4.0
Congo red	Blue	Red	3.0–5.2
Methyl orange	Red	Yellow	3.1–4.4
Methyl red	Red	Yellow	4.2–6.2
Litmus	Red	Blue	4.5–8.3
Bromocresol purple	Yellow	Purple	5.2–6.8
Bromothymol blue	Yellow	Blue	6.0–7.6
Phenol red	Yellow	Red	6.8–8.4
Phenolphthalein	Colorless	Pink	8.2–10.0

+ *oxys*, sharp]  $C_8H_7NO$ ; an oily substance sometimes found in the urine of apparently healthy individuals. It is formed from the decomposition of tryptophan by intestinal bacteria.

**induce** (in-'doos', dūs') [L. *inducere*, to lead in] **1.** To generate a product or bring about an effect. **2.** To produce a result by using a specific stimulus. SEE: *induction*. **inducible**, *adj.*

**induced** (in-'dūs'd') [L. *inducere*, to lead in] Produced; caused.

**inducer** (in-'dūs'ēr) In chemistry, a compound that increases the concentration of another molecule; in molecular biology, something that facilitates the development of a gene. SEE: *catalyst*.

**inductance** (in-'dūk'tāns) That property of an electrical circuit by virtue of which a varying current induces an electromotive force in that circuit or a neighboring circuit. The unit of inductance, or self-induction, is the henry.

**induction** (in-'dūk'shūn) [L. *inductio*, leading in] **1.** The process of causing or producing, as induction of labor with oxytocic drugs in cases of uterine dysfunction. **2.** The generation of an electric current in a conductor by electricity in another conductor near it. **3.** In embryology, the production of a specific morphogenic effect by a chemical substance from one part of the embryo to another. SYN: *evocation*. **4.** In anesthesia, the period from the initial inhalation or injection of an anesthetic gas or drug until optimum level of anesthesia is reached. **5.** Reasoning from the particular to the general. SEE: *deduction*.

**rapid-sequence i.** ABBR: RSI. Rapid sequence intubation.

**inductothermy** (in-'dūk'tō-thēr'mē) Treatment of disease by artificial production of fever by electromagnetic induction.

**indulin** (in-'dū-līn) Any one of a group of dyes used in histology.

**indulinophil(e)** (in-'dū-līn'ō-fīl, -fīl) The state of being readily stained with indulin.

**indurate** (in-'dū-rāt) [L. *in*, in, + *durus*, hard] **1.** To harden. **2.** Hardened.

**induration** (in-'dū-rā'shūn) **1.** The act of hardening. **2.** An area of hardened tissue. SEE: *sclerosis*; *skin*. **indurative** (-dūr-ā'tiv), *adj.*

**black i.** Anthracosis of the lung.

**brawny i.** Pathological hardening and thickening of tissues, usually due to inflammation.

**brown i.** Pigmentation and fibrosis of the lung as a result of chronic venous congestion of the lung.

**cyanotic i.** Induration from long continued venous hyperemia, pressure on vessels causing transudation of blood and serum, and formation of a dark, hard mass. In the liver or spleen it leads

to absorption of the parenchyma with formation of scar tissue.

**granular i.** Fibrosis of an organ such as the liver or kidney in which small fibrotic granules are present.

**gray i.** Unresolved pneumonia with fibrosis of the lung, and no pigmentation.

**red i.** Chronic interstitial pneumonia with severe congestion.

**industrial** (in-'dūs'trē-īl) Pert. to the workplace and the work done there.

**indwelling** (in-'dwēl-īng) Inside the body; said of invasive diagnostic or therapeutic devices; pert. to a catheter, drainage tube, or other device that remains inside the body for a prolonged time.

**inebriation** (in-'ēbrē-ā'shūn) Intoxication.

**inelastic** (in-'ē-lās'tīk) [L. *in-*, not, + Gr. *elastikos*, elastic] Not elastic.

**inert** (in-'ērt') [L. *iners*, unskilled, idle]

**1.** Not active; sluggish. **2.** In chemistry, having little or no tendency or ability to react with other chemicals.

**inertia** (in-'ēr'shē-ā) [L., inactivity] **1.** In physics, the tendency of a body to remain in its state (at rest or in motion) until acted upon by an outside force. **2.** Sluggishness; a lack of activity.

**sleep i.** The normal impairment in thinking and motor performance that immediately follows awakening.

**uterine i.** An absence or weakness of uterine contractions in labor.

**in extremis** (in 'ēks-trē'mīs) [L.] At the point of death.

**infancy** The very early period of life from birth until age one year. SEE: *infant*.

**Infanrix** (in-'fān-rīks) Diphtheria, tetanus toxoids, and acellular pertussis (Dtap) vaccine, adsorbed.

**infant** [L. *infans*] A child in the first year of life. SEE: *neonate*.

*Development:* For 3 days after birth a baby loses weight; in the next 4 days, however, a baby should regain the loss and weigh as much as at birth.

The average weekly weight gain in the first 3 months is 210 g for boys and 195 g for girls; from 3 to 6 months it is 150 g for both girls and boys; from 6 to 9 months, 90 g for boys and 105 g for girls; from 9 to 18 months 60 g for both sexes; and from 18 to 24 months 45 g, both sexes.

The newborn is aware of shadow, movement, and voice. By the 4th week the infant lifts the head momentarily; by the 16th week, holds the head erect, coos, or laughs; walks with hands held by the 52nd week; and by the 15th month, toddles alone and may have a vocabulary of a few words. SEE: *psychomotor and physical development of infant*.

*Respiration:* At birth, respirations are 40 to 50/min; during the first year, 20 to

40/min; during the fifth year, 20 to 25/min; during the 15th year, 15 to 20/min. SEE: *pulse*; *respiration*; *temperature*. *Temperature*: Normal (rectal) temperature may have a daily variation of 1° to 1.5°C (1.8° to 2.7°F). It is usually highest between 5 and 8 P.M. and lowest between 3 and 6 A.M. Therefore, there is no specific normal temperature, but the values given should be regarded as ranging around the value of 37.6°C (99.7°F) when the temperature is taken rectally. Axillary temperatures in the normal newborn range from 36.4° to 37.2°C (97.5° to 99°F). Infants have poorly developed temperature-regulating mechanisms and need to be protected from chilling and overheating.

**postterm i.** An infant born after the beginning of the 42nd week of gestation (longer than 288 days).

**premature i.** Preterm i. SEE: *Nursing Diagnoses Appendix*.

**preterm i.** An infant born before the completion of 37 weeks (259 days) of gestation. SYN: *premature infant*. SEE: *prematurity*.

**i. stimulation** The use of various techniques to provide neonates and infants identified with or at risk for developmental delay with an environment that has a rich and diverse range of sensations and experiences.

**i. of substance-abusing mother** ABBR: ISAM. All-inclusive term describing a newborn whose birth mother used alcohol, cocaine, opiates, or other potentially hazardous chemicals during pregnancy. These babies are considered to be at high risk for complications during the neonatal period; many also exhibit related long-term disabilities that influence their potential for normal growth and development. *Perinatal complications* include intrauterine growth retardation, infection, asphyxia, congenital abnormalities, low birth weight, low Apgar score, withdrawal-related symptoms, jaundice, and behavioral problems. *Long-term complications* include behavioral problems such as short attention span, delayed development of language-related skills, and sudden infant death syndrome. SEE: *cocaine baby*; *fetal alcohol syndrome*; *heroin*.

**term i.** An infant born between the beginning of the 38th week through the 41st week of gestation (260 to 287 days).

**infant behavior, disorganized** Disintegrated physiological and neurobehavioral responses to the environment of the newborn. SEE: *Nursing Diagnoses Appendix*.

**infant behavior, readiness for enhanced organized** A pattern of modulation of the physiological and behavioral systems of functioning of an infant (i.e., autonomic, motor, state, organizational,

self-regulatory, and attentional-interactional systems) that is satisfactory but that can be improved, resulting in higher levels of integration in response to environmental stimuli. SEE: *Nursing Diagnoses Appendix*.

**infant behavior, risk for disorganized** Risk for alteration in integration and modulation of the physiological and behavioral systems of functioning (i.e., autonomic, motor, state, organizational, self-regulatory, and attentional-interactional systems). SEE: *Nursing Diagnoses Appendix*.

**infant feeding pattern, ineffective** Impaired ability to suck or to coordinate the suck-swallow response resulting in inadequate oral nutrition for metabolic needs. SEE: *Nursing Diagnoses Appendix*.

**infanticide** (in-fan'ti-sīd) [LL. *infanticidium*] The killing of an infant.

**infantile** (in-fan'til) [Fr. *infantil*] Pert. to infancy or an infant.

**infantile hypertrophic pyloric stenosis** SEE: *pyloric stenosis*.

**infantilism** (in-fan'til-izm, in-fan'til-izm") [" + Gr. *-ismos*, condition] **1.** A condition in which the mind and body make slow development and the individual fails to attain adult characteristics. It is characterized by mental retardation, stunted growth, and sexual immaturity. **2.** Childishness.

**intestinal i.** Infantilism associated with a chronic intestinal disorder, causing poor growth.

**infarct** (in-färkt) [L. *infarctus*] An area of tissue in an organ or part that undergoes necrosis following cessation of the blood supply. This may result from occlusion or stenosis of the supplying artery or, more rarely, from occlusion of the vein that drains the tissue.

**anemic i.** An infarct in which blood pigment is lacking or decoloration has occurred. SYN: *pale infarct*; *white infarct*.

**bland i.** An infarct in which infection is absent.

**cerebral i.** A stroke resulting from interrupted blood flow to one of the large or small arteries of the brain.

**cicatized i.** An infarct that has been replaced or encapsulated by fibrous tissue.

**hemorrhagic i.** Red infarct.

**infected i.** Infarcted tissue that has been invaded by pathogenic organisms. SYN: *septic infarct*.

**pale i.** Anemic infarct.

**red i.** An infarct that is swollen and red as a result of hemorrhage. SYN: *hemorrhagic infarct*.

**septic i.** Infected infarct.

**uric acid i.** An infarct in the kidney caused by obstruction of the renal tubules by uric acid crystals.

**white i.** Anemic infarct.

**infarction** (in-färk'shün) Death of tissue that results from deprivation of its blood supply.

**cerebral i.** SEE: *cerebral infarct*.

**evolution of i.** The normal healing process after myocardial infarction; seen on an electrocardiogram as progressive changes in the QRS complex and S-T segment.

**extension of i.** An increase in the size of a myocardial infarction, occurring after the initial infarction and usually accompanied by a return of acute symptoms, such as angina unrelieved by appropriate medicines.

**lacunar i.** A small stroke deep within the brain (e.g., in the internal capsule, basal ganglia, thalamus, or pons) caused by damage to or a blockage of a tiny penetrating artery. Lacunar infarctions are associated with a kind of vascular damage caused by chronic high blood pressure called lipohyalinosis. They may be asymptomatic, showing up only on brain imaging, or may produce pure motor, pure sensory, ataxic, or mixed motor and sensory symptoms. SYN: *lacunar stroke*.

**malignant cerebral artery i.** A massive stroke involving the middle cerebral artery, in which swelling of the brain leads either to herniation and death or to additional strokes in other arteries.

**myocardial i.** SEE: *myocardial infarction*.

**placental i.** A localized necrotic area caused by abruption. SEE: *abruptio placentae*.

**pulmonary i.** An infarction in the lung usually resulting from pulmonary embolism that may appear on x-rays as a wedge-shaped infiltrate near the pleura. Immediate therapy includes control of pain, oxygen administered continuously by mask, intravenous heparin (unless patient has a known blood clotting defect), and treatment of shock or dysrhythmias, if present.

**silent myocardial i.** Unrecognized myocardial infarction. The patient may experience difficulty breathing, heartburn, nausea, arm pain, or other atypical symptoms.

**infect** [ME. *infecten*] To cause pathogenic organisms to be present in or upon, as to infect a wound.

**infection** (in-fèk'shün) A disease caused by microorganisms, esp. those that release toxins or invade body tissues. Worldwide, infectious diseases (e.g., malaria, tuberculosis, hepatitis viruses, diarrheal illnesses) produce more disability and death than any other cause. Infection differs from colonization of the body by microorganisms in that during colonization, microbes reside harmlessly in the body or perform useful functions for it (e.g., bacteria in the gut

that produce vitamin K). By contrast, infectious illnesses typically cause harm.

**ETIOLOGY:** The most common pathogenic organisms are bacteria (including mycobacteria, mycoplasmas, spirochetes, chlamydiae, and rickettsiae), viruses, fungi, protozoa, and helminths. Life-threatening infectious disease usually occurs when immunity is weak or suppressed (e.g., in the first few months of life, old age, malnourished persons, trauma or burn victims, leukopenic patients, and those with chronic illnesses such as diabetes mellitus, renal failure, cancer, asplenia, alcoholism, or heart, lung, or liver disease). Many disease-causing agents, however, may afflict vigorous persons, whether they are young or old, fit or weak. Some examples include sexually transmitted illnesses (e.g., herpes simplex or chlamydia), respiratory illnesses (influenza or varicella), and food or waterborne pathogens (cholera, schistosomiasis).

**SYMPTOMS:** Systemic infections cause fevers, chills, sweats, malaise, and occasionally, headache, muscle and joint pains, or changes in mental status. Localized infections produce tissue redness, swelling, tenderness, heat, and loss of function.

**TRANSMISSION:** Pathogens can be transmitted to their hosts by many mechanisms, namely, inhalation, ingestion, injection or the bite of a vector, direct (e.g., skin-to-skin) contact, contact with blood or body fluids, fetomaternal contact, contact with contaminated articles ("fomites"), or self-inoculation.

In health care settings, infections are often transmitted to patients by the hands of professional staff or other employees. Hand hygiene before and after patient contact prevents many of these infections.

**DEFENSES:** The body's defenses against infection begin with mechanisms that block entry of the organism into the skin or the respiratory, gastrointestinal, or genitourinary tract. These defenses include (1) chemicals (e.g., lysozymes in tears, fatty acids in skin, gastric acid, and pancreatic enzymes in the bowel), (2) mucus that traps the organism, (3) clusters of antibody-producing B lymphocytes (e.g., tonsils, Peyer's patches), and (4) bacteria and fungi (normal flora) on skin and mucosal surfaces that destroy more dangerous organisms. In patients receiving immunosuppressive drug therapy, the normal flora can become the source of opportunistic infections. Also, one organism can impair external defenses and permit another to enter; for example, viruses can enhance bacterial invasion by damaging respiratory tract mucosa.

The body's second line of defense is the nonspecific immune response, inflammation. The third major defensive system, the specific immune response, depends on lymphocyte activation, during which B and T cells recognize specific antigenic markers on the organism. B cells produce immunoglobulins (antibodies), and T cells orchestrate a multifaceted attack by cytotoxic cells. SEE: *cell, B; cell, T; inflammation* for table.

**SPREAD:** Once pathogens have crossed cutaneous or mucosal barriers and gained entry into internal tissues, they may spread quickly along membranes such as the meninges, pleura, or peritoneum. Some pathogens produce enzymes that damage cell membranes, enabling them to move rapidly from cell to cell. Others enter the lymphatic channels; if they can overcome WBC defenses in the lymph nodes, they move into the bloodstream to multiply at other sites. This is frequently seen with pyogenic organisms, which create abscesses far from the initial entry site. Viruses or rickettsiae, which reproduce only inside cells, travel in the blood to cause systemic infections; viruses that damage a fetus during pregnancy (e.g., rubella and cytomegalovirus) travel via the blood.

**DIAGNOSIS:** Although many infections (e.g., those that cause characteristic rashes) are diagnosed clinically, definitive identification of infection usually occurs in the laboratory. Carefully collected and cultured specimens of blood, urine, stool, sputum, or other body fluids are used to identify pathogens and their susceptibilities to treatment.

**TREATMENT:** Many infections, like the common cold, are self-limited and require no specific treatment. Understanding this concept is crucial, because the misuse of antibiotics does not help the affected patient and may damage society by fostering antimicrobial resistance (e.g., in microorganisms such as methicillin-resistant *Staphylococcus aureus*). Many common infections, such as urinary tract infections or impetigo, respond well to antimicrobial products. Others, like abscesses, may require incision and drainage.

**acute i.** An infection that appears suddenly and may be of brief or prolonged duration.

**airborne i.** An infection caused by inhalation of pathogenic organisms in droplet nuclei.

**apical i.** An infection located at the tip of the root of a tooth.

**bacterial i.** Any disease caused by bacteria. Bacteria exist in a variety of relationships with the human body. Bacteria colonize body surfaces and provide benefits (e.g., by limiting the

growth of pathogens and producing vitamins for absorption (symbiotic relationship). Bacteria can coexist with the human body without producing harmful or beneficial effects (commensal relationship). Bacteria may also invade tissues, damage cells, trigger systemic inflammatory responses, and release toxins (pathogenic, infectious relationship). SEE: *bacterium* for table.

**blood-borne i.** An infection transmitted through contact with the blood (cells, serum, or plasma) of an infected individual. The contact may occur sexually, through injection, or via a medical or dental procedure in which a blood-contaminated instrument is inadvertently used after inadequate sterilization. Examples of blood-borne infections include hepatitis B and C and AIDS. SEE: *needle-stick injury; Standard Precautions Appendix*.

**breakthrough i.** An infection that occurs despite previous vaccination.

**chronic i.** An infection having a protracted course.

**concurrent i.** The existence of two or more infections at the same time. SEE: *superinfection*.

**cross i.** The transfer of an infectious organism or disease from one patient in a hospital to another.

**cryptogenic i.** An infection whose source is unknown.

**deep neck i.** An infection that enters the fascial planes of the neck after originating in the oral cavity, pharynx, or a regional lymph node. It may be life-threatening if the infection enters the carotid sheath, the paravertebral spaces, or the mediastinum. Death may also result from sepsis, asphyxiation, or hemorrhage. Aggressive surgical therapy is usually required because antibiotics alone infrequently control the disease.

**diabetic foot i.** A polymicrobial infection of the bones and soft tissues of the lower extremities of patients with diabetes mellitus, typically those patients who have vascular insufficiency or neuropathic foot disease. Eradication of the infection may require prolonged courses of antibiotics, surgical débridement or amputation, or reconstruction or bypass of occluded arteries.

**droplet i.** An infection acquired by the inhalation of a microorganism in the air, esp. one added to the air by sneezing or cough.

**fungi i.** Pathological invasion of the body by yeast or other fungi. Fungi are most likely to produce disease in patients whose immune defenses are compromised. SEE: table.

**inapparent i.** An infection that is asymptomatic, or one that is not detected.

**local i.** An infection that has not

## Fungal Infections

Superficial Fungal Infections			
Disease	Causative Organisms	Structures Infected	Microscopic Appearance
Epidermophytosis (e.g., dhobie itch)	<i>Epidermophyton</i> , (e.g., <i>floccosum</i> )	Inguinal, axillary, and interdigital folds; hairs not affected	Long, wavy, branched, and segmented hyphae and spindle-shaped cells in stratum corneum
Favus (tinea favosa)	<i>Trichophyton schoenleinii</i>	Epidermis around a hair; all parts of body; nails	Vertical hyphae and spores in epidermis; sinuous branching mycelium and chains in hairs
Ringworm (tinea, otomycosis)	<i>Microsporum</i> (e.g., <i>audouinii</i> )	Horny layer of epidermis and hairs, chiefly of scalp	Fine septate mycelium inside hairs and scales; spores in rows and mosaic plaques on hair surface
	<i>Trichophyton</i> (e.g., <i>tonsurans</i> )	Hairs of scalp, beard, and other parts; nails	Mycelium of chained cubical elements and threads in and on hairs; often pigmented
Thrush and other forms of candidiasis	<i>Candida albicans</i>	Tongue, mouth, throat, vagina, and skin	Yeastlike budding cells and oval thick-walled bodies in lesion
Systemic Fungal Infections			
Aspergillosis	<i>Aspergillus fumigatus</i>	Lungs	Y-shaped branching of septate hyphae
Blastomycosis	<i>Blastomyces brasiliensis</i> , <i>B. dermatitidis</i>	Skin and lungs	Yeastlike cells demonstrated in lesion
Candidiasis	<i>Candida albicans</i>	Esophagus, lungs, peritoneum, mucous membranes	Small, thin-walled, ovoid cells
Coccidioidomycosis	<i>Coccidioides immitis</i>	Respiratory tract	Nonbudding spores containing many endospores, in sputum
Cryptococcosis	<i>Cryptococcus neoformans</i>	Meninges, lungs, bone, skin	Yeastlike fungus having gelatinous capsule; demonstrated in spinal fluid
Histoplasmosis	<i>Histoplasma capsulatum</i>	Lungs	Oval, budding, uninucleated cells

spread but remains contained near the entry site.

**low-grade i.** A loosely used term for a subacute or chronic infection with only mild inflammation and without pus formation.

**nosocomial i.** Nosocomial infection.

**opportunistic i.** 1. Any infection that results from a defective immune system that cannot defend against pathogens normally found in the environment. Common types include bacterial (*Pseu-*



*domonas aeruginosa*), fungal (*Candida albicans*), protozoan (*Pneumocystis jirovecii*), and viral (cytomegalovirus). Opportunistic infections are seen in patients with impaired defenses against disease, such as those with cystic fibrosis, poorly controlled diabetes mellitus, acquired or congenital immune deficiencies, or organ transplants. **2.** An infection that results when resident flora proliferate and infect a body site in which they are normally present or at some other location. In healthy humans, the millions of bacteria in and on the body do not cause infection or disease. Host defenses and interaction with other microorganisms prevent excess growth of potential pathogens. A great number of factors, many poorly understood, may allow a normal bacterial resident to proliferate and cause disease. SEE: *acquired immunodeficiency syndrome; immunocompromised.*

**protozoal i.** An infection with a protozoon (e.g., malaria).

**pyogenic i.** An infection resulting from pus-forming organisms.

**risk for i.** An immunocompromised state. SEE: *Nursing Diagnoses Appendix.*

**secondary i.** An infection made possible by a primary infection that lowers the host's resistance (e.g., bacterial pneumonia following influenza).

**subacute i.** An infection intermediate between acute and chronic.

**subclinical i.** An infection that is immunologically confirmed but does not produce obvious symptoms or signs.

**systemic i.** An infection in which the infecting agent or organisms circulate throughout the body.

**infection control** In medical care, institutional procedures and policies for monitoring and attempting to control the transmission of communicable diseases. This includes establishing mandatory sanitation, sterilization, hand hygiene, and isolation procedures. SEE: *table.*

**infectious** (in-fĕk'shŭs) [ME. *infecten*, infect] **1.** Capable of being transmitted with or without contact. **2.** Pert. to a disease caused by a microorganism. **3.** Producing infection.

**infectious disease** Any disease caused by growth of pathogenic microorganisms in the body. SEE: *incubation* for *table.*

**infecundity** (in-fĕ-kŭn'dī-tĕ) [L. *infecunditas*, sterility] Barrenness; an inability to conceive.

**inferior** (in-fĕ'rĕ-or) [L. *inferus*, below] **1.** Beneath; lower. **2.** Used medically in reference to the undersurface of an organ or indicating a structure below another structure.

**inferiority complex** SEE: *complex, inferiority.*

**infertility** (in'fĕr-tĭl'ĭ-tĕ) Inability to

achieve pregnancy during a year or more of unprotected intercourse. The condition may be present in either or both partners and may be reversible. In the U.S., about 20% of all couples are infertile. In women, infertility may be primary (i.e., present in women who have never conceived) or secondary (i.e., occurring after previous conceptions or pregnancies). Causes of primary infertility in women include ovulatory failure, anatomical anomalies of the uterus, Turner's syndrome, and eating disorders, among many others. Common causes of secondary infertility in women include but are not limited to tubal scarring (e.g., after sexually transmitted infections), endometriosis, cancers, and chemotherapy. In men, infertility usually is caused by failure to manufacture adequate amounts of sperm (e.g., as a result of exposures to environmental toxins, viruses or bacteria, developmental or genetic diseases, varicoceles, or endocrine abnormalities).

**DIAGNOSIS:** Investigation begins with a comprehensive individual history from both partners, assessment of their usual timing of intercourse, and thorough physical examinations. The initial test for men is semen analysis to assess sperm morphology, motility, and number. This should be done after 2 to 3 days of sexual abstinence. At least two to three ejaculates, obtained at no less than 1-week intervals, should be examined, because of the variability in sperm counts. Female assessment usually begins with evaluation of ovulation by use of a basal body temperature graph. Additional special assessments of the woman may be ordered to evaluate ovarian, tubal, uterine, and cervical factors.

**TREATMENT:** The specific problems that testing identifies may be managed by either pharmacological or surgically assisted reproduction techniques. SEE: *embryo transfer; in vitro fertilization; gamete intrafallopian transfer; transcervical balloon tuboplasty.*

**secondary i.** Infertility in which one or more pregnancies have occurred before the present condition of infertility.

**infest** (in-fĕst') [L. *infestare*, to attack] To invade or contaminate; said esp. of parasites.

**infestation** (in'fĕ-stā'shŭn) An invasion of the body by animal parasites, esp. macroscopic forms such as worms, larvae, or nymphal forms of endoparasites or ectoparasites.

**chigoe i.** Infestation of a parasite of dogs, pigs, and barefooted humans by the flea *Tunga penetrans*. In humans the usual sites of invasion are the spaces between the toes, where the bur-

## Basic Guidelines for Infection Control

Infection Control Recommendation	Summary of Useful Practices
Cleaning and disinfection	Disinfect or sterilize surfaces, such as bed rails, computer keyboards, nightstands, phones, and toilets.
Cough etiquette/respiratory courtesy	Wear masks; cover mouth and nose when coughing or sneezing. Maintain three feet distances from others when you have a cold or flu.
Drug formulary restrictions	Limit prescribing privileges for antibiotics to designated specialists.
Hand hygiene	Use alcohol-based rubs, or wash hands after contact with any blood, body fluids, or potentially contaminated items or patients.
Isolation procedures	Follow protocols for isolation of patients who are bleeding, coughing, giving off other excretions, secretions, or potentially hazardous body fluids. Segregate patients during outbreaks of infectious diseases. Separate immune-suppressed patients from others with potentially communicable diseases.
Laundry/linen and food service management	Gather patient clothing, eating utensils, gowns, sheets, and towels without contaminating other objects used in patient care. Gown and glove while collecting and washing laundry. Perform hand hygiene after laundry management procedures.
Personal protective equipment (PPE) use	Wear gloves, goggles, gowns, masks, and shoe covers while performing patient care procedures whenever exposure to blood, body fluids, aerosols, or splashes are possible. Dispose of PPEs in designated containers.
Resuscitation and invasive airway management	Avoid mouth-to-mouth contact with patients; wear personal protective equipment at all times, such as particulate respirators or masks. Disinfect or sterilize endoscopes, intubation equipment, nebulizers, face masks (e.g., for CPAP or supplemental oxygen), or other respiratory care devices.
Sharps (management of needles, wires, etc.)	Maintain sharps in open view, to avoid accidental injuries. Never recap or manipulate needles used in patient care. Dispose of sharp objects in puncture-proof solid waste containers.
Source control	Application of anti-infective rubs or soaps to patients to limit their colonization by disease-causing bacteria
Standard/universal precautions	Follow universal precautions during every patient encounter.

rowing female swells and causes a painful open sore.

**TREATMENT:** The gravid flea is removed with a sterile needle. The site is treated with tincture of iodine, which is toxic to the remaining fleas and eggs.

**infibulation** (in-fīb-ū-lā'shūn) [L. *in*, in, + *fibula*, clasp] **1.** The process of fastening, as in joining the lips of wounds by clasps. **2.** Female genital cutting.

**infiltrate** (in-fil'trāt, in-fil-trāt) [" + *filtrare*, to strain through] **1.** To pass into or through a substance or a space. **2.** The material that has infiltrated. **3.** A shadow seen on a chest x-ray and assumed to represent blood, pus, or other body fluids in the lung.

**alveolar i.** Opacification of air spaces, caused by the filling of alveoli with blood, pus, or fluid. Alveolar infiltrates are seen on the chest radiograph as

patchy areas of increased density, often surrounding air bronchograms.

**lobar i.** A well-defined site of lung consolidation, seen on the chest radiograph as an area of increased density confined within a specific lobe or segment. SYN: *lobar pneumonia*.

**ETIOLOGY:** Lobar infiltrates are usually due to bacterial infection (pneumonia).

**TREATMENT:** The patient will need antibiotics, oxygen, and bronchial hygiene.

**patchy i.** A poorly defined area of lung consolidation seen on the chest radiograph as scattered opacification within normal lung tissue. It is usually caused by a mixture of normally aerated and infected lung lobules.

**infiltration** (in'fil-trā'shūn) The deposition and accumulation of an external

substance within a cell, tissue, or organ, such as fat deposition within a damaged liver.

**amyloid i.** The infiltration of tissue or viscera with amyloid, a starchlike glycoprotein. SEE: *amyloid*.

**anesthesia i.** The injection of an anesthetic solution directly into tissue. SEE: *anesthesia*.

**cellular i.** An infiltration of cells, esp. blood cells, into tissues; invasion by cells of malignant tumors into adjacent tissue.

**fatty i.** A deposit of fat in the tissues, or oil or fat globules in the cells.

**glycogenic i.** Glycogen deposit in cells.

**lymphocytic i.** An infiltration of tissue by lymphocytes.

**pulmonary i.** ABBR: PIE. Eosinophilic pneumonia.

**purulent i.** Pus in tissue.

**serous i.** An infiltration with lymph.

**waxy i.** Amyloid degeneration.

**infinite distance** 1. A distance without limits. 2. In ophthalmology, the assumption that the light rays coming from a point of a distance beyond 20 ft (6.1 m) are practically parallel and accommodation is unnecessary.

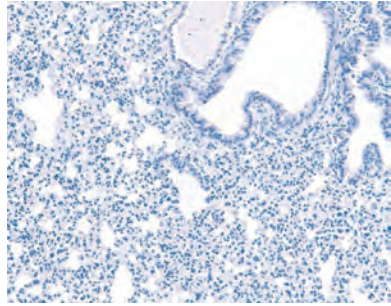
**infirm** (in-firm') [L. *infirmis*] Weak or feeble, esp. from old age or disease.

**infirmarium** (in-firm'ă-rē) [L. *infirmarium*] A small hospital; a place for the care of sick or infirm persons.

**infirmity** (in-fir'mī-tē) 1. Weakness. 2. A sickness or illness.

**inflammation** (in'flā-mă'shūn) [L. *inflammare*, to flame within] An immunological defense against injury, infection, or allergy, marked by increases in regional blood flow, immigration of white blood cells, and release of chemical toxins. Inflammation is one mechanism the body uses to protect itself from invasion by foreign organisms and to repair tissue trauma. Its clinical hallmarks are redness, heat, swelling, pain, and loss of function of a body part. Systemically, inflammation may produce fevers, joint and muscle pains, organ dysfunction, and malaise. SEE: *illus.*; *table*; *autoimmune disease*; *infection*. **inflammatory, adj.**

**THE INFLAMMATORY PROCESS:** Local inflammatory responses begin when traumatized or infected tissues activate the humoral and cellular immune systems. Complement proteins and cytokines are manufactured; these signaling proteins start a cascade of chemical events that result in increases in local blood flow and the attraction of white blood cells to the damaged tissue. White blood cells in turn consume foreign or injured cells and release arachidonic acid metabolites, kinins, histamines, and more complement, thereby amplifying and perpetuating the immune re-



#### INFLAMMATION

Extensive inflammation of the lung.

sponse. The white blood cells also release toxic oxygen radicals, nitric oxide, and tissue-destroying enzymes in an attempt to kill any invading microorganisms. In healthy individuals, the process continues until all damaged tissues or invading pathogens are removed (usually about 5 days); an inpouring of fibroblasts, which repair the injury and form a healed scar, follows.

Systemic inflammatory responses occur when foreign proteins are recognized (e.g., in the bloodstream) and immune complexes are formed or cytotoxic T cells are activated. If sepsis triggers the immune response, these agents may help clear microorganisms from the blood.

Autoimmune illnesses occur when the chemical and cellular tools of inflammation are directed relentlessly against the body's own tissues.

**DIAGNOSIS:** Nonspecific test results that suggest inflammation include an elevated white blood cell count, erythrocyte sedimentation rate, or C-reactive protein level.

**TREATMENT:** Mild inflammation (such as the inflammatory change that follows minor injuries) often resolves with the topical application of ice packs or cold water. Nonsteroidal anti-inflammatory drugs (e.g., ibuprofen) and steroids (e.g., prednisone) are useful in managing more severe inflammation, as are many disease-modifying antirheumatic drugs, such as methotrexate or azathioprine.

**acute i.** The early response to tissue injury, marked by the influx of white blood cells and inflammatory mediators into damaged tissues. The majority of the response takes place in 12 to 24 hr.

**adhesive i.** Inflammation of the serous membrane, enhancing the likelihood of attachments.

**chronic i.** Inflammation that persists weeks to months after tissue damage. Its pathological hallmarks include si-

## Mediating Factors in Inflammation

Factors	Source	Effect
Arachidonic acid metabolites (prostaglandins and leukotrienes)	Phospholipids of cell membranes, especially mast cells	Primary mediators of late-stage (>6 hr) inflammation; increase dilation and permeability of blood vessels; stimulate neutrophil adhesion to endothelial tissue; bronchoconstriction; anaphylaxis
Bradykinin	Kinin system of plasma proteins	Primary mediator of prolonged (>1 hr) inflammation; vasodilation and increased permeability of blood vessels; pain; release of leukotrienes and prostaglandins
Complement proteins	Macrophages; liver endothelium	Increase vasodilation and vascular permeability; coat antigens to enhance phagocytosis; attract neutrophils; destroy pathogens
Histamine and serotonin	Mast cells; basophils	Primary mediators of early ( $\leq 30$ min) inflammation; rapid dilation and increase in permeability of venules; bronchoconstriction; stimulation of prostaglandin production
Interleukin 1 (IL-1)	Macrophages; B cells, dendritic cells, neutrophils, other nucleated cells	Increased production and activity of other chemical mediators, phagocytes and lymphocytes; promotes release of acute-phase proteins; causes fever
Interleukin 8 (IL-8)	T lymphocytes; monocytes	Attracts neutrophils and more T cells
Platelet-activating factor (PAF)	Platelets	Releases chemical mediators; activates neutrophils; dilates and increases permeability of vessels
Transforming growth factor $\beta$ (TGF $\beta$ )	Activated macrophages and T lymphocytes	Attracts neutrophils and monocytes; stimulates growth of connective tissue; inhibits other mediators
Tumor necrosis factors (TNF $\alpha$ )	Activated macrophages and some lymphocytes	Increase synthesis of other cytokines; induce formation of new blood vessels; increase adhesion of neutrophils to endothelium; cause fever and cachexia

multaneous tissue repair and destruction.

**exudative i.** An inflammatory process in which the fluid leaving the capillaries is rich in plasma proteins.

**fibrinous i.** Inflammation in which the exudate is rich in fibrin.

**granulomatous i.** An inflammation characterized by granulomas, growths that result when macrophages are unable to destroy foreign bodies after en-

gulfing them; seen esp. in tuberculosis, syphilis, and some fungal infections.

**hyperplastic i.** Inflammation characterized by excess production of young fibrous tissue. SYN: *proliferative inflammation*.

**interstitial i.** Inflammation involving principally the noncellular or supporting elements of an organ.

**proliferative i.** Hyperplastic i.

**pseudomembranous i.** Inflamma-

tion in which a shelf of fibrin and white blood cell debris forms on an epithelial lining, usually as a result of a toxin that necroses tissue. Most often this type of inflammation is seen in colitis caused by *Clostridium difficile*; in the era before vaccinations against diphtheria, it frequently was found in the oral cavity of individuals infected with that germ.

**purulent i.** Inflammation in which pus is formed. SYN: *suppurative inflammation*.

**serous i.** Inflammation of a part with serous exudate, or inflammation of a serous membrane.

**subacute i.** Mild inflammatory process with minimal signs and symptoms. It may become chronic and gradually damage tissues.

**suppurative i.** Purulent i.

**ulcerative i.** The formation of an ulcer over an area of inflammation.

**inflammatory** (in-flām'ā-tōr'ē) [L. *inflammare*, to flame within] Pert. to or marked by inflammation.

**inflammatory bowel disease** ABBR: IBD. The term for a number of chronic, relapsing inflammatory diseases of the gastrointestinal tract of unknown etiology. The two most common types are ulcerative colitis and Crohn's disease.

**PATHOLOGY:** Ulcerative colitis is limited to the superficial layers of the wall of the colon, whereas Crohn's disease may involve all layers of the bowel wall, from the oropharynx to the anus. The inflammation of ulcerative colitis is continuous throughout the affected bowel, producing a raw, ulcerated, or effaced lumen. In contrast, Crohn's disease is characterized by patchy areas of granulomatous inflammation, creating a cobblestoned mucosal surface that may develop deep fissures or a thickened, rubbery texture. In Crohn's disease but not ulcerative colitis, fistulas to adjacent sections of the bowel, vagina, and bladder may develop.

**DIAGNOSIS:** Barium studies of the upper and lower gastrointestinal tract and endoscopic examinations are used to diagnose IBD.

**inflation** (in-flā'shūn) [L. *in*, into, + *flare*, to blow] The distention of a part by air, gas, or liquid.

**inflator** (in-flā'tor) An apparatus for forcing air or other gas into an organ. This may be done for diagnostic or therapeutic purposes.

**inflection** (in'flēk'shūn) [*f* + *flectere*, to bend] 1. An inward bending. 2. A change of tone or pitch of the voice; a nuance.

**infliximab** (in-flēx'ē-măb) A monoclonal antibody against tumor necrosis factor, used to treat patients used to treat inflammatory bowel disease and rheumatoid arthritis.

**influenza** (in'floo-ēn'zā) [It., influence]

An acute contagious respiratory infection marked by fevers, chills, muscle aches, headache, prostration, runny nose, watering eyes, cough, and sore throat. The disease usually strikes during the winter. In patients with serious pre-existing illnesses (such as diabetes, chronic obstructive lung disease, heart disease or renal failure) and people over 65, influenza frequently is fatal. The disease spreads primarily by inhalation of infectious aerosols, although spread by direct personal contact also is possible. Epidemics or pandemics arise intermittently around the world during periods of viral evolution; in the winter of 1918 to 1919, an influenza pandemic claimed 20 million victims. Sporadic cases occur each year in the U.S., where the disease is responsible for an average of 36,000 deaths annually. SYN: *flu*. SEE: *cold*; *Nursing Diagnoses Appendix*. **influenzal** (-zāl), *adj.*

**ETIOLOGY:** The responsible virus is either influenza A (about 65% of cases) or influenza B (about 35% of cases). A negligible number of infections are caused by influenza C.

**COURSE:** The incubation period of influenza is about 1 to 3 days, and the acute course of the illness typically lasts less than a week. Bacterial superinfection may occur, causing secondary pneumonias, sinusitis, or otitis media. Many patients lack energy and feel fatigued during their recuperation from acute infection.

**PREVENTION:** Worldwide surveillance for new influenza antigens is an ongoing public health project; each year, updated vaccines are developed to counteract new strains of the disease. In the U.S., about 70 million people are vaccinated each year. Vaccination is offered in the late autumn, prior to the start of flu season. The trivalent vaccine offered is based on the previous year's virus. Vaccination should be offered to people over 65 and individuals with underlying cardiac, pulmonary, renal, or hepatic disease, cancer, diabetes mellitus, and other chronic or debilitating illness, as well as all health care professionals. Vaccination of the general population prevents epidemic disease and prevents significant economic losses caused by employee absenteeism. Influenza vaccines are more than 70% effective in older adults and about 90% effective in younger recipients.

**VACCINATION IN PREGNANCY:** Women in the second and third trimesters of pregnancy are among the "target groups" for immunization—that is, they more than other members of the general population should be recruited to receive influenza vaccination. Pregnant women with underlying heart, lung, or other chronic illnesses (e.g., di-

abetes mellitus) should receive influenza vaccination at any stage of pregnancy.

Recipients must be asked about hypersensitivity to eggs and egg products, as the vaccine is made from chick embryos and must not be given to anyone with such allergies. Recipients also should be advised about possible adverse effects of the vaccine: local discomfort, low-grade fever, malaise, and the rare complication of Guillain-Barré syndrome, a form of ascending flaccid paralysis.



Children with influenza-like illnesses should avoid aspirin products because of the risk of Reye's syndrome. All patients receiving influenza vaccines should review federally mandated Vaccine Information Sheets carefully before getting their injections.

**TREATMENT:** Influenza A virus is treatable with antiviral drugs. These agents have an impact on the duration of infection with either influenza A or B virus. Symptom-based treatment with acetaminophen, NSAIDs, cough remedies (like dextromethorphan, an antitussive or guaifenesin, an expectorant), and other over-the-counter remedies alleviate some of the misery the illness causes.

**PATIENT CARE:** Warm shower, baths, or heating pads help to relieve myalgias. All hospitalized patients should be protected from visitors who may have the flu (during flu season), and health care personnel should not provide patient care if they are ill or feel as if they may be coming down with flu. For the hospitalized patient, respiratory and blood and body fluid precautions are followed. Vital signs and fluid balance are monitored. Respiratory function is assessed for signs and symptoms of developing pneumonia, such as inspiratory crackles, increased fever, pleuritic chest pain, dyspnea, and coughing accompanied by purulent or bloody sputum. Prescribed analgesics, antipyretics, and decongestants are administered. Bedrest and increased oral fluid intake are encouraged, and intravenous fluids administered if prescribed. Oxygen therapy is administered if necessary. The patient is assisted to return to normal activities gradually. Nonalcoholic mouthwash or warm saline gargles are provided to ease throat soreness. The patient is taught proper cough etiquette and thorough hand hygiene to prevent spread of the virus. The patient treated at home is taught about all of the above supportive care measures as well as about signs

and symptoms of serious complications to be reported.

**Asian i.** Influenza caused by a variant strain of influenza virus type A.

**avian i.** ABBR: AI. One of several influenza A viruses that primarily infects birds and poultry, and may occasionally cause a febrile illness in human beings. Symptoms in people include cough, muscle aches, sore throat and headache. Severe cases may cause viral pneumonia or acute respiratory distress syndrome. A pandemic of avian influenza (type H5N1) in the early 20th century killed millions of people worldwide. SYN: *bird flu*.

**infolding** (in-föld'ing) Process of enclosing within a fold; an operation formerly employed in the treatment of stomach ulcer in which the walls on either side of the lesion are sutured together.

**informatics** (in-för-mät'iks) [Translation of Russian *informatika*] The theory, science, and practice of the use of computer and informational technologies to store, retrieve, transmit, and manipulate data.

**health care i.** The study of how health care data, information, knowledge, and wisdom are collected, stored, processed, communicated, and used to support the process of health care delivery to clients, providers, administrators, and organizations involved in health care delivery. It is an interdisciplinary science developed from the integration of information science, computer science, cognitive science, and the health care sciences.

**information 1.** Data that are interpreted, organized, structured, and given meaning. **2.** A message from a sender to one or more receivers.

**information science 1.** The study of models and theories common to the fields of electronic, interpersonal, group, organizational, public, and mass communication. **2.** The study of issues related to libraries and the information fields.

**information system 1.** Any structure or device that converts data input from diverse systems into outputs such as reports and screen displays. **2.** An automated or manual system that comprises people, machines, and/or methods organized to collect, process, transmit, and disseminate data that represent user information.

**information technology** ABBR: IT. The use of electronic computers or computer software to collect, store, manipulate, retrieve, exchange, or manage data. SEE: table.

**infra-** [L. *infra*, below, underneath] Prefix meaning *below*; *under*; *beneath*; *inferior to*; *after*.

**infra-axillary** (in'frä-äks'äl-ä-rē) [" + *axilla*, little axis] Below the axilla.

**infraclavicular** (in'frä-klä-vik'ü-lär) ["

**Information Technologies Used in Health Care**

The electronic medical record  
 E-mail communications (e.g., between professionals or to and from patients)  
 Health information systems  
 Internets; intranets  
 Pharmacy management (e.g., in drug bar coding; drug advisories, drug formularies)  
 Management systems for reimbursement and quality assurance  
 Robotics  
 Telehealth

+ *clavicula*, little key] Below the clavicle.

**infracostal** (in'frā-kōs'tāl) [n + *costa*, rib] Below the rib.

**infractio** (in'frāk'shūn) [L. *infractus*, to destroy] An incomplete fracture of a bone in which parts do not become displaced.

**infracture** (in'frāk'chēr) [Abbrev. of *in(complete) fracture*] The removal of nasal bones medially (inward), e.g., to narrow a widened nose.

**infradentale** (in'frā-dēn-tā'lē) A cranio-metric landmark; it is the bony point between the mandibular central incisors. SEE: *cephalometry*.

**infraglottic** (in'frā-glōt'ik) [n + Gr. *glottis*, back of tongue] Below the glottis.

**infrahyoid** (in'frā-hī'oyd) [n + Gr. *hyoides*, U-shaped] Below the hyoid bone.

**inframammary** (in'frā-mām'ā-rē) [n + *mamma*, breast] Below the mammary gland.

**inframandibular** (in'frā-mān-dīb'ū-lār) [n + *mandibula*, lower jawbone] Below the lower jaw (mandible).

**inframaxillary** (in'frā-māk'sī-lēr'ē) [n + *maxilla*, jawbone] Below the upper jaw (maxilla).

**infraocclusion** (in'frā-ō-kloo'zhūn) [n + *occlusio*, a shutting up] Location of a tooth below the line of occlusion.

**infraorbital** (in'frā-or'bitāl) [n + *orbita*, track] Beneath the orbit.

**infrapsychic** (in'frā-sī'kīk) [n + Gr. *psyche*, mind] Below the level of consciousness; automatic.

**infrapubic** (in'frā-pū'bīk) [n + *pubes*, hair covering pubic area] Below the pubis.

**infrared** (in'frā-rēd') Lying outside the red end of the visible spectrum.

**infrascapular** (in'frā-skāp'ū-lār) [n + *scapula*, shoulder blade] Beneath the shoulder blade.

**infrasonic** (in'frā-sōn'ik) [L. *infra*, below, underneath, + *sonus*, sound] Sound wave frequency lower than those normally heard.

**i. recorder** A device that can be used to determine blood pressure by detecting and recording the subaudible oscillations of the arterial wall under an occluding cuff. The resulting values are comparable to those determined by use of an intra-arterial catheter. SEE: *blood pressure, indirect measurement of; pseudohypertension*.

**infrasound** (in'frā-sownd") Sounds of low frequency used, e.g., in diagnostic and therapeutic technologies.

**infraspinous** (in'frā-spī'nūs) [n + *spina*, thorn] Beneath the scapular spine.

**infrastructure** 1. The components of information technology, including computer hardware, software, networks, and peripheral devices that are used to connect and send signals to computers and users. 2. Those buildings, supplies, policies, procedures and other assets that support the human resources of an institution.

**infratrochlear** (in'frā-trōk'lē-ār) [n + *trochlea*, pulley] Beneath the trochlea.

**infraversion** (in'frā-vēr'zhūn) [n + *versio*, a turning] A downward deviation of the eye.

**infundibulectomy** (in'fūn-dīb'ū-lēk'tō-mē) [L. *infundibulum*, funnel, + Gr. *ektome*, excision] Surgical excision of the infundibulum of any structure or organ, esp. the heart.

**infundibulum** (in'fūn-dīb'ū-lūm) [L.]

1. A funnel-shaped passage or structure. 2. The tube connecting the frontal sinus with the middle nasal meatus.

3. The stalk of the pituitary gland.

4. Any renal pelvis division. 5. The cavity formed by the fallopian fimbriae.

6. The terminus of a bronchiole. 7. The terminus at the upper end of the cochlear canal. 8. The conelike upper anterior angle of the right cardiac ventricle from which the pulmonary artery arises. SYN: *conus arteriosus*.

**ethmoidal i.** The area in the middle meatus of the nose. The anterior ethmoid sinuses and the frontal sinus open into this area.

**i. of hypothalamus** Infundibulum of the hypothalamus. The stalk that extends from the hypothalamus to the posterior lobe of the pituitary gland.

**i. of the uterine tube** The funnel-shaped opening at the lateral end of the uterine tube.

**infusate** (in-fū'zāt) [L. *infusus*, poured into] Any liquid introduced into the body.

**infusible** (in-fū'zī-bl) [L. *in-*, not, + *fusio*, fusion] Not capable of being fused or melted.

**infusible** [L. *in*, into, + *fundere*, to pour] Capable of being made into an infusion.

**infusion** (in-fū'zhūn ) [L. *infusio* ]

1. Steeping a substance in hot or cold

water in order to obtain its active principle. **2.** The product obtained from the process of steeping. **3.** Any liquid substance (other than blood) introduced into the body for therapeutic purposes.

**continuous i.** A controlled method of intravenous administration of drugs, fluids, or nutrients given without interruption, instead of by bolus. By adjusting the infusion rate, precise medication dosages or quantities of fluids can be given over time. Therapies administered continuously include some antibiotics, cancer chemotherapies, heparin, insulin, parenteral nutrition, and vasopressors, among others.

**continuous hepatic artery i.** ABBR: CHAI. The use of an infusion pump to provide a continuous supply of chemotherapeutic agents to the hepatic artery to control metastases from cancers of the gastrointestinal tract.

**intraosseous i.** A method of obtaining immediate access to the circulation by inserting a needle through the skin, subcutaneous tissues, and periosteum into the marrow cavity of a long bone, usually the proximal tibia. Once access is gained, substances may be injected into the bone marrow, where they are absorbed almost immediately into the general circulation. This avenue of access does not collapse in the presence of shock. SYN: *intraosseous injection*.



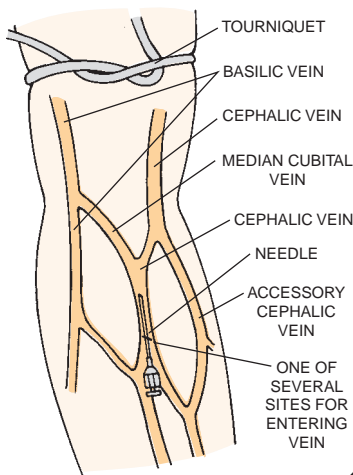
**intravenous i.** The injection into a vein of a solution, drugs, or blood components. SEE: *illus.*

**SOLUTIONS:** Many liquid preparations are given by intravenous (IV) infusion. Those commonly used include isotonic (normal) saline, Ringer's lactated, dextrose 5% in water, and potassium chloride 0.2% in 5% dextrose. The type and quantity depend on the needs of the patient. The solution is usually given continuously at the rate of 1 to 2 or more liters per day. In shock, however, rapid infusion of larger volumes may be necessary to support the circulation.

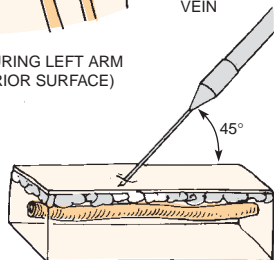
**SITE:** Intravenous infusion is usually given in the arm through the median basilic or median cephalic vein, but veins at various other sites may be used. The vein must be exposed if a cannula is used. Introduction of solution should be at the rate required to deliver the needed amount of fluid and contained electrolytes, medicines, or nutrients in a prescribed time.



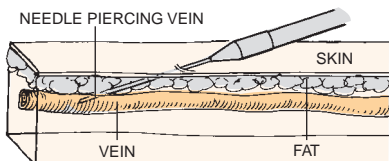
Intravenous infusions should be discontinued or infusion fluid replenished when the solution being administered is depleted. Clotting of blood in the catheter may occur when the infusion is not continuous.



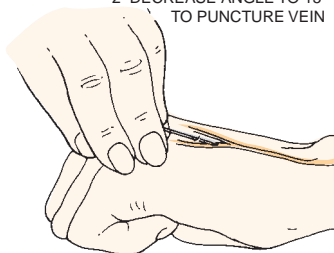
PUNCTURING LEFT ARM  
(ANTERIOR SURFACE)



TECHNIQUE 1 PIERCE SKIN AT  
IN PUNCTURING VEIN: A 45° ANGLE



2 DECREASE ANGLE TO 15°  
TO PUNCTURE VEIN



PUNCTURING VEIN OF HAND

#### INTRAVENOUS INFUSION TECHNIQUE

**PATIENT CARE:** Using scrupulous aseptic technique and universal precautions, the nurse prepares the IV infusion, selects and prepares a venous site, disinfects the skin, inserts an IV catheter or cannula to initiate the infusion (if an IV access is not in place), and secures



it in place (all according to protocol), restraining joint motion near the insertion site as necessary. The amount of fluid to be infused per hour is calculated and the flow of the prescribed fluid (and additive as appropriate) initiated at the desired flow rate. A pump or controller is typically used to ensure desired volume delivery. After initiating the infusion, the nurse ensures that the correct fluid is being administered at the designated flow rate and observes the infusion site and the patient at least every hour for signs of infiltration or other complications, such as infection, thrombophlebitis, fluid or electrolyte overload, and air embolism. The site dressing and administration set are changed according to protocol. Central venous catheters and lines are associated with more infections and more serious infections and other complications than peripheral catheters and lines. Strict protocols have been developed for their care.

**lipid i.** Hyperalimentation with a fat-containing solution administered intravenously.

**subcutaneous i.** The infusion of solutions into the subcutaneous space.

**infusion pump** A pump used to give fluids into an artery, vein, or enteral tube, beneficial in overcoming arterial resistance, controlling the rate of the fluid and drug administration, or administering thick solutions. The pump can be programmed to set the rate of administration depending on the patient's needs. **SEE:** *illus.*; *electronic infusion device*. **SYN:** *intravenous infusion pump*.



INFUSION PUMP

**electronic implantable i.p.** ABBR: EIIP. A type of infusion pump inserted in the body. The pump is placed in a subcutaneous pocket and is connected to a dedicated catheter leading to the appropriate compartment or site. The pump may be programmable or nonprogrammable.

**ingesta** (in-jēs'tā) [L. *in*, into, + *gerere*, to carry] Food and drink received into the body through the mouth.

**ingestant** (in-jēs'tānt) [l' + *gerere*, to

carry] Any substance such as food and drink taken orally.

**ingestion** (in-jēs'shūn) **1.** The process of taking material (particularly food) into the gastrointestinal tract. **2.** Phagocytosis.

**caustic i.** Exposure of the oral cavity, pharynx, larynx, or trachea to acids or alkalis, with resulting tissue damage. **SEE:** *burn of aerodigestive tract*.

**ingredient** (in-grē'dē-ēt) [L. *ingredi*, to enter] **1.** Any part of a compound or a mixture; a unit of a more complex substance. **2.** A component.

**inert i.** In pharmaceutical manufacturing, nonreactive substances (also known as fillers) used to facilitate the manufacturing of pills and other forms of medication.

**ingrowing** (in'grō-īng) [L. *in*, into, + AS. *growan*, to grow] Growing inward so that a portion that is normally free becomes covered.

**inguin-, inguino-** Combining forms meaning *groin*.

**inguinal** (ing'gwī-nāl) [L. *inguinalis*, pert. to the groin] Pert. to the region of the groin, the region of the hip creases below the abdomen and lateral to the perineum.

**i. canal** A tube made of the transversalis fascia and the aponeuroses of the abdominal wall muscles just above the inguinal ligament. The inguinal canal is a cylindrical passageway 4 cm long from the retroperitoneal space to the skin. It begins at the deep (internal) inguinal ring inside the abdominal wall, approx. halfway between the anterior superior spine of the iliac bone and the pubic symphysis, 1.25 cm above the inguinal ligament. It continues down and toward the midline, and it ends at the superficial (external) inguinal ring under the skin at the pubic crest. The inguinal canal contains an outpouching of the peritoneum, blood and lymph vessels, and the ilioinguinal nerve. In males, it also contains the spermatic cord; in females, it also contains the round ligament of the uterus. **SEE:** *illus.*

**i. reflex** Contractions of the musculature in the female groin when the upper thigh is scratched. **SEE:** *Geigel's reflex*.

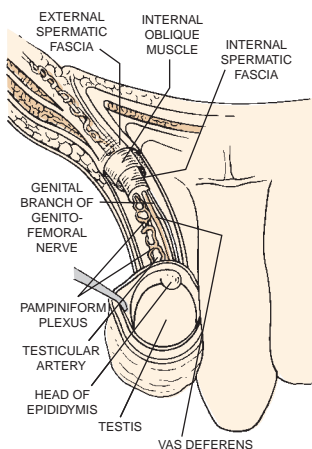
**i. region** The iliac region on either side of the pubes. **SYN:** *groin*.

**inguinal ring** The anterior opening of the inguinal canal (abdominal inguinal ring) and the end of the inguinal canal (subcutaneous inguinal ring).

**INH** *isoniazid*.

**inhalant** (in-hā'lānt) [L. *inhalare*, to inhale] A medication or compound suitable for inhaling.

**inhalant abuse** The deliberate inhalation of dusts, gases, gasolines, paints, solvents or other chemicals in order to alter perception or consciousness. Many



### INGUINAL CANAL/SPERMATIC CORD CONTENTS

inhalants used for this purpose may damage the upper or lower respiratory tracts, or cause brief or long-lasting injuries to the central nervous system.

**inhalation** (in'hă-lă'shŭn) [L. *inhalatio*]

**1.** The act of drawing breath, vapor, or gas into the lungs; inspiration. **2.** The introduction of dry or moist air or vapor into the lungs for therapeutic purposes, such as metered-dose bronchodilators in the treatment of asthma.

**inhalation fever** Any respiratory or immunological illness that results from breathing in bacteria, dust, fumes, fungi, or other aerosolized toxins. Examples include humidifier fever and metal fume fever.

**inhalation therapy** The administration of medicines, water vapor, gases (e.g., oxygen, carbon dioxide, or helium), or anesthetics by inhalation. The medicines usually are nebulized by using an aerosol or spray apparatus.

**inhale** (in-hăl') [L. *inhalare*] To draw in the breath; to inspire.

**inhaler** (in-hăl'ěr) **1.** A device for administering medicines by inhalation. **2.** One who inhales.



**metered-dose i.** ABBR: MDI. A device used for self-administration of aerosolized drugs.

**PATIENT CARE:** When used correctly, a metered-dose inhaler can deliver accurate doses of medication to the respiratory tract. The MDI is a drug canister in an L-shaped mouthpiece, which can be used alone or with a "spacer" (a holding chamber designed to aerosolize medication so it can reach the lower respiratory tract). The health care professional teaching the patient proper MDI technique should gather the drug canister and mouthpiece, the package insert, and the spacer (if one is to be

used). The MDI should be sprayed once or twice prior to initiating use, and the spacer inspected for foreign objects. The patient should wash his/her hands thoroughly, and may either sit or stand. If a peak flow meter is being used, the patient should take a reading prior to using the MDI. The patient should then clear the throat and nasal passages. The patient should hold the inhaler upright and shake it as directed, then remove the cap and hold the inhaler with the canister on top and the mouthpiece facing the patient's open mouth at the bottom. Tilting the head back slightly, the patient should breathe out slowly and completely. (When using an MDI with a spacer, the inhaler cap is removed and the mouthpiece is firmly inserted into the spacer, then the spacer and inhaler are held together upright and vigorously shaken 5 or 6 times. The space cap is then removed, the head tilted back, and the breath let out slowly and completely.) The inhaler mouthpiece may be positioned in one of two ways: 1 to 2 inches (2.5 to 5 cm) in front of the open mouth, mouth open; or with the mouthpiece in the mouth and lips sealed around it. However, this latter technique is less efficient in delivering medication and should never be used for steroids. While breathing in slowly, evenly, and deeply through the mouth, the patient should press once on the canister and continue inhaling for 3 to 5 sec. The breath should then be held for 10 sec (or as long as possible), allowing the medication to settle in the lungs. The inhaler should be removed from the mouth prior to exhaling. If a spacer is used, the patient should place the spacer mouthpiece in the mouth and seal the lips around it, then press on the canister to spray a puff of medication into the spacer and begin inhaling slowly through the mouth for 3 to 5 sec. The breath should then be held for 10 sec (or as long as possible). The spacer should be removed from the mouth prior to exhaling. If more than one puff is prescribed, the patient should wait 1 to 2 min between puffs to help the second puff to better penetrate the lungs. The patient should be taught to remember "B before C" when using an inhaled bronchodilator and corticosteroid; first inhaling the bronchodilator, waiting about 5 min, and then inhaling the corticosteroid. This helps to open the air passages for maximum absorption of the steroid. After inhaling a corticosteroid, the patient should rinse the mouth with water and expectorate it.

The spacer and the L-shaped mouthpiece and cap should be rinsed with warm, running water at least once each day, and washed with warm soapy wa-

ter, then rinsed at least once each week. The equipment should always be allowed to air-dry. The patient can calculate how long a drug canister will last by reading the total number of doses on the label, counting the number of puffs used each day, and dividing the total doses by the number of daily puffs. (Thus if a canister contains 200 doses and the patient takes 8-10 each day, a new canister will be required in a month). The health care educator should provide the patient with written instructions and illustrations for proper MDI use. The patient also should be taught about (and provided with) information on the desired effects of each medication and the possible adverse reactions. The teaching session, the patient's demonstration of the method, and any questions raised should be documented in the patient's record. **SEE: *illustration***.



#### METERED-DOSE INHALER

Hand-held inhaler with spacer device.

**inherent** (in-hĕr'ĕnt) [L. *inhaerens*, to inhere] Belonging to anything naturally, not as a result of circumstance. **SEE: *innate*** (1); ***intrinsic*** (1).

**inheritance** (in-hĕr'i-tāns) [L. *inheritare*, to inherit] The sum total of all that is inherited; that which is the result of genetic material (DNA) contained within the ovum and sperm.

**alternative i.** The inheritance of a trait from one parent.

**extrachromosomal i.** Inherited traits governed by mechanisms other than by chromosomes.

**holandric i.** Inherited traits carried only by men; thus, the operative gene is on the Y chromosome.

**hologynic i.** Transmission of traits from mothers only to daughters.

**multifactorial i.** The inheritance of traits influenced by a number of genetic and nongenetic factors, none of which has a major effect.

**sex-influenced i.** Inherited traits for which the genes are on autosomes, but their expression is influenced by the sex chromosomes (e.g., the reproductive organs).

**sex-limited i.** A trait that can be expressed in only one sex.

**sex-linked i.** The inheritance of traits regulated by either of the sex chromosomes, X or Y.

**inherited** Body traits and genetic makeup received as a result of genetic transmission rather than acquired.

**inherited bone marrow failure syndromes** ABBR: IBMFS. A group of rare disorders of stem cells detected in childhood and adolescence and characterized by aplastic anemia and a propensity to develop leukemia. These disorders include Diamond-Blackfan anemia, dyskeratosis congenita, and Fanconi's anemia.

**inhibin** (in-hib'in) A hormone secreted by the corpus luteum in females and by the testicle in males. It inhibits the secretion of gonadotropin-releasing hormone and human chorionic gonadotropin. In women, inhibin is secreted throughout the menstrual cycle and during pregnancy, but it normally is not present in postmenopausal women. It is, however, elevated in most postmenopausal women with granulosa or mucinous carcinomas of the ovary. In men, inhibin levels are elevated in prostatic hyperplasia and decreased in cancers of the prostate. **SEE: *cancer, ovarian***.

**inhibited sexual excitement** **SEE: *frigidity***.

**inhibition** (in'hī-bish'ūn) [L. *inhibere*, to restrain] **1.** The repression or restraint of a function. **2.** In physiology, a stopping of an action or function of an organ, as in the slowing or stopping of the heart produced by electrical stimulation of the vagus. **3.** In psychiatry, restraint of one mental process almost simultaneously by another opposed mental process; an inner impediment to free thought and activity.

**competitive i.** Inhibiting the function of an active material by competing for the cell receptor site. **SYN: *selective inhibition***.

**contact i.** The inhibition of cell division caused by the close contact of similar cells, a natural brake in the healing of wounds.

**noncompetitive i.** The inhibition of enzyme activity resulting only from the concentration of the inhibitor.

**psychic i.** The arrest of an impulse, thought, action, or speech.

**selective i.** Competitive i.

**inhibitor** (in-hib'i-tōr) That which inhibits (e.g., a chemical substance that stops enzyme activity or a nerve that suppresses activity of an organ innervated by it).

**ACE i.** Any of a class of drugs that block the effects of angiotensin-converting enzyme, preventing the formation of angiotensin II and therefore preventing a rise in blood pressure. Drugs from this

class are used to treat hypertension, heart failure, myocardial infarction, and in diabetics, kidney failure.

**acetylcholinesterase i.** Cholinesterase inhibitor.

**alpha-glucosidase i.** An oral drug that lowers blood sugars by preventing carbohydrate absorption from the gastrointestinal tract.

**aromatase i.** Any of several drugs that block the synthesis of estrogen in the body. A number of these agents have been developed to treat breast cancer, which is often a hormone-responsive malignancy.

**bone resorption i.** Any of a class of drugs that prevent or retard osteoporosis. Examples include the bisphosphonates.

**cholinesterase i.** Any of a class of drugs that prevent the degradation of the neurotransmitter acetylcholine, which is involved in memory and learning. Drugs from this class are used to treat Alzheimer's dementia. SYN: *acetylcholinesterase inhibitor*.

**competitive i.** 1. A chemical that binds to or blocks another reagent from participating in a reaction. 2. A medication, hormone, or other intercellular messenger that binds and blocks the cellular receptor or target enzyme of another agent. Drugs that act by competitive inhibition may treat or prevent disease by inactivating pathogenic enzymes or by blocking the effects of hormones or precursor molecules. For example, protease inhibitors interfere with production of human immunodeficiency virus (HIV) by binding and inactivating the protease enzyme; selective estrogen-receptor modulators limit the impact of estrogen by replacing this hormone on cells sensitive to its effects.

**cyclooxygenase i.** Any agent that suppresses inflammation by blocking the inflammatory effects of cyclooxygenase.

**entry i.** Any agent that prevents a pathogen (e.g., human immunodeficiency virus) from binding to cell membranes and infecting cells.

**glycoprotein IIb/IIIa receptor i.** Any of a class of drugs that block a receptor on the surface of platelets, which are crucial to blood clotting. Drugs from this class are used to treat acute myocardial infarction, unstable angina pectoris, and other acute coronary syndromes. The most common side effect of treatment with these drugs is bleeding.

**HMG CoA enzyme i.** Any of several drugs (e.g., atorvastatin) useful in treating hypercholesterolemia and other lipid disturbances; also called "statins."

**integrase i.** Any agent that prevents the human immunodeficiency virus from inserting its viral DNA into host cell chromosomes.

**matrix metalloproteinase i.** An agent that inhibits cancer cells by blocking their abilities to invade tissues, demand new blood supply, and metastasize.

**metalloprotease i.** Metalloproteinase inhibitor.

**metalloproteinase i.** Any of numerous compounds that inhibit the activity of the metalloproteinase family of enzymes. These agents share the ability to suppress or eliminate the enzyme activity of the metalloproteinases. Agents identified in this group include the tetracycline antibiotics, numerous specially designed synthetic peptides and proteins, chemicals such as ethylenediaminetetra-acetic acid (EDTA), and a variety of agents used in cancer chemotherapy. SYN: *metalloprotease inhibitor*.

**monoamine oxidase i.** SEE: *monoamine oxidase inhibitor*.

**nonnucleoside analog reverse transcriptase i.** ABBR: NNRTI. Any of a class of antiretroviral drugs used to treat patients infected with the human immunodeficiency virus. NNRTIs bind with and inhibit the activity of reverse transcriptase, an enzyme needed to transcribe viral RNA into the host cell DNA. Examples include nevirapine, delavirdine, and efavirenz.

**nucleoside reverse transcriptase i.** ABBR: NRTI. Any of a class of antiretroviral drugs used to treat patients with human immunodeficiency virus infection. NRTIs prevent transcription of viral RNA to host DNA by interfering with the action of the enzyme reverse transcriptase. Zidovudine, dideoxyinosine, zalcitabine, d4T, and abacavir are NRTIs. SEE: *reverse transcriptase inhibitor*.

**proton pump i.** Any of a class of medications that eliminate acid production in the stomach. Drugs from this class are used to treat peptic ulcers, gastroesophageal reflux disease, and related disorders. Omeprazole and lansoprazole are members of this drug class.

**reverse transcriptase i.** ABBR: RTI. Any of a class of antiretroviral agents that competitively inhibit the reverse transcriptase enzyme of human immunodeficiency virus and other viruses. SEE: *antiretroviral*.

**inhibitory** (in-hib'ĭ-tō-rē) Restraining, preventing.

**inhibitory concentration** ABBR: IC. The concentration of a medication in the blood that will inhibit the replication of a specified percentage of microorganisms. The abbreviation IC is often followed by a number, e.g., 50 or 90. The IC<sub>50</sub> of a drug to treat acquired immunodeficiency syndrome is the drug concentration that will inhibit replication of 50% of all HIV virions, and

IC90 is the concentration that will inhibit 90% of the virions.

**in-home test** A test done by patients rather than health care professionals to provide information about an individual's health status. Examples include tests to measure blood sugar (glucose), cholesterol, occult blood in feces, and blood pressure, as well as ovulation predictors and pregnancy tests. The materials and devices needed for in-home tests may be available over the counter (i.e., a prescription from a health care professional is not needed).

**iniencephalus** (in'ē-ēn-sēf'ā-lūs) [Gr. *inion*, back of the head, + *enkephalos*, brain] A congenitally deformed fetus in which the brain substance protrudes through a fissure in the occiput, so that the brain and spinal cord occupy a single cavity.

**inion** (in'ē-ōn) [Gr.] The center of the external occipital protuberance. **iniac**, **inial** (in'ē-āk, -āl), *adj.*

**iniopagus** (in'ē-ōp'ā-gūs) [i' + *pagos*, thing fixed] Twins fused at the occiput.

**iniops** (in'ē-ōps) [i' + *ops*, eye] A double deformity in which two fetuses are joined from the posterior thorax up, so that one complete face is anterior, with the suggestion of a face posteriorly.

**initial** (in-ish'āl) [L. *initium*, beginning] Relating to the beginning or commencement of a thing or process.

**inject** [L. *injicere*, to throw in] To introduce fluid into the body or its parts artificially.

**injectable** (in-jēk'tā-bl) Capable of being injected.

**injected** (in-jēkt'ēd) [L. *injectus*, thrown in] **1.** Filled by injection of fluid. **2.** Congested.

**injection** (in-jēk'shūn) **1.** The forcing of a fluid into a vessel, tissue, or cavity.

**PATIENT CARE:** All supplies used in preparing and administering an injection should be sterile. The caregiver chooses the appropriate syringe size for the volume of fluid to be injected, the appropriate needle gauge for the type of fluid, and the appropriate needle length for the administration route and site, considering the amount of muscle and adipose tissue, mobility limitations, and other site-related factors. Hands should be thoroughly cleansed before and after the procedure, and gloves worn if preparing a chemotherapeutic agent. The prescribed dose is accurately measured. An appropriate site is identified by using anatomical landmarks, and the area is cleansed with an alcohol swab (from the center outward) and time allowed for alcohol evaporation. The needle is inserted at the appropriate angle, given the prescribed route. Intradermal injections use a short fine needle with the opening faced upward; the needle is placed nearly parallel to the surface of

the skin and advanced far enough for the injected fluid to make a small bubble under the skin, then carefully removed; pressure that could cause the fluid to leak out onto the skin surface should be avoided. Subcutaneous injections should consist of no more than 1 ml. A short needle should be inserted at a 45° angle, without aspiration, and gentle pressure or no pressure applied to the site after needle removal. After insertion into muscle (the needle is inserted directed into the muscle, at a 90° angle), the syringe plunger is aspirated to ensure that no blood returns to prevent accidental injection into a blood vessel. The prescribed medication is injected slowly, then the needle is removed, and pressure is applied to the site with a dry sponge. A Z-track method helps to ensure that the medication remains in the muscle as desired and does not leak back into subcutaneous tissues. When administering an intravenous (IV) injection, the syringe is aspirated and blood obtained to be certain the needle is in the vein. When removing a needle after administering an IV injection directly into the vein, the caregiver lessens the chance of bleeding into soft tissue by applying firm pressure with a dry sponge while elevating the site above the heart for several minutes. However, the vast majority of intravenous injections are administered through an IV catheter or an IV fluid port with a needle or needleless device. Pressure is not applied when removing this device. The needle should not be recapped; both the needle and syringe should be disposed in a "sharps" container according to protocol. The injection time and site, any untoward responses to the injection, desired effects, and adverse reactions to the particular drug injected are recorded.

**2.** A solution introduced in this manner. **3.** The state of being injected; congestion. SEE: *Standard Precautions Appendix*.

**depoti.** Parenteral administration of a long-acting medication or hormone.

**i. drug user** One who gives himself drugs parenterally, usually to attain a euphoric or altered state of consciousness. The practice is rarely performed aseptically and may result in the spreading of communicable disease or self-injury.

**epidural i.** The injection of anesthetic solution or other medicines into the epidural space of the spinal cord.

**fractional i.** Injection of small amounts at a time until the total injection is complete.

**hypodermic i.** An outdated term originally indicating injection of a substance beneath the skin. It is preferable, however, to specify the route of admin-

istration (e.g., intramuscular). SEE: *anesthesia, local*.

**intra-alveolar i.** Introduction of anesthetic into the soft tissues adjacent to a tooth.

**intracardial i.** Injection into the heart.

**intracytoplasmic sperm i.** ABBR: ICSI. A commonly used assisted reproduction technique, in which spermatozoa, usually from a man with obstructive azoospermia or a low sperm count, are introduced directly into the ova of his partner. Some oocytes become fertilized and can then be transferred to the woman's uterus, where they mature.

**intra-dermal i.** Injection into the skin, used in giving serums and vaccines when a local reaction is desired.

**intra-lingual i.** The injection of medicines into the tongue, usually done as an emergency measure when a vein suitable for use is not available because of circulatory collapse.

**intramuscular i.** Injection into intramuscular tissue, usually the anterior thigh, deltoid, or buttocks. Intramuscular injections are used primarily in the administration of vaccines, immune globulins, long-acting corticosteroids, some antibiotics, some hormones, analgesics, and sedatives. In shock, medications given intramuscularly may not be rapidly absorbed. No more than 4 ml should be injected at one time into an adult with normal musculature; in children and adults with underdeveloped musculature, no more than 2 ml should be injected at one time. Patients should be advised that intramuscular injections, e.g., for vaccination, are painful. SEE: *illius*.



#### INTRAMUSCULAR INJECTION

Administration of influenza vaccination into the deltoid muscle of the upper arm



To avoid injury, newborn intramuscular injections should be administered in the middle third of the vastus lateralis muscle using a 5/8-in, 25-gauge needle.

**intraosseous i.** Intraosseous infusion.

**intra-peritoneal i.** Injection into the peritoneal cavity.

**intravenous i.** The injection into a vein or, more commonly, into an intravenous catheter of drugs, electrolytes, or fluids. The insertion of a needle directly into a vein (rarely necessary) requires a degree of skill that is easily obtained if proper instruction is obtained. The vein may be distended by applying a tourniquet with sufficient pressure to stop venous return but not arterial flow. The tourniquet is applied several inches above the injection site. If the patient does not have vascular collapse, the arterial pulse can be palpated; if not, the tourniquet is too tight. Heat applied to the area for 15 min before starting the injection will also help distend the vessels. The use of a needle attached to a 5- or 10-ml syringe will greatly facilitate controlling the course of the needle. It is best to insert the needle into the vein with the bevel side facing out and then, after the needle is in the vein, to rotate it so that the bevel is face in. There will be resistance as the needle goes through one side of the vein wall. The vein should be entered with the needle making only a narrow angle with the long axis of the vein. This will help to prevent pushing the needle completely through the vein. SEE: *cutdown; infusion, intraosseous; Standard Precautions Appendix*.

**SOLUTIONS:** Many liquid preparations are given by intravenous infusion. Those commonly used include isotonic saline, Ringer's lactate, dextrose 5% in sterile water, hyperalimentation fluids, lipids, vitamins, and numerous medications. The solution may be given continuously or by intermittent or bolus injection. The rate of infusion varies with the patient's needs.

**SITE:** Intravenous infusion usually is given through a vein in the hand or arm, but central veins or other peripheral veins may be used as indicated.

**NOTE:** In patients with collapsed veins, it may be possible to make the veins apparent by placing a tourniquet around the arm or leg and then inserting a 23- or 25-gauge catheter into a tiny superficial vein. Instillation of sterile intravenous fluid into the vein while the catheter is in place will distend the entire larger vein proximal to the small vein. A larger needle or catheter can then be inserted into the larger vein.

**jet i.** The injection of medicines and vaccines through the skin or intramuscularly without a needle. A nozzle ejects a fine spray of liquid at such speed as to penetrate but not harm the skin. The procedure is harmless and is esp. useful

in immunizing a great number of persons quickly and economically.

**rectal i.** An instillation (i.e., not an injection) into the rectum; an enema.

**sclerosing i.** The injection into a vessel or into a tissue of a substance that will bring about obliteration of the vessel or hardening of the tissues used, e.g., to manage esophageal varices or malignant pleural effusions.

**spinal i.** Introduction of fluids or medications into the spinal canal, i.e., the intrathecal space.

**subcutaneous i.** Injection beneath the skin. Typical sites include the abdomen, upper or outer arm, and the thigh.

**vaginal i.** A historical term describing the instillation of fluid into the introitus; douche.

**Z-track i.** An injection technique in which the surface (skin and subcutaneous) tissues are pulled and held to one side before the needle is inserted deep into the muscle tissue in the identified site. The medication is injected slowly, followed by a 10-sec delay, at which time the needle is removed and the tissues are quickly permitted to resume their normal position. This provides a Z-shaped track, which makes it difficult for the injected drug to seep back into subcutaneous tissues.

**injection site** A part of the body into which any medicine, e.g., insulin, an anticoagulant, or a vaccine, is injected.

**injection site rotation** The administration of parenteral medications such as insulin into a different part of the body each day to avoid local tissue trauma, atrophy, or lipodystrophies. Subcutaneous injections of insulin are typically rotated around the abdomen from the right upper quadrant, to the midepigastrium, left upper quadrant, left lower quadrant, hypogastrium, and right lower quadrant before returning to the right upper quadrant. A similar technique is used with low-molecular-weight heparins, colony-stimulating factors, and other drugs.

**injector** (in-jĕk'tor) A device for making injections.

**jet i.** SEE: *injection, jet.*

**pressure i.** A device that delivers a substance to be injected, often controlled by a timing mechanism, at a specified pressure.

**injunction** (in-jŭnk'shŭn) [L. *injungere*, to fasten, join] A court order prohibiting an individual from performing some act or demanding that a person begin to perform some act.

**injury** [L. *injuria*, injustice] Blunt or penetrating trauma or damage to a part of the body. SEE: *transportation of the injured*; table.

**SYMPTOMS:** Various symptoms may occur, depending on the nature, extent,

and severity of the damage. Mild injury produces pain, tissue swelling, redness, and temporary disruption of tissue function. Severe injury may result in irretrievable loss of the function of an organ, massive hemorrhage, or shock.

**acceleration i.** Head injury caused when the head remains stationary and is hit by a moving object (e.g., a batter being hit in the head by a baseball).

**acceleration-deceleration i.** An injury caused when the body at motion abruptly comes to a stop and the body structures are contused from within (e.g., whiplash or brain contusion, rupture of the splenic or hepatic capsules).

**acute lung i.** ABBR: ALI. A clinically severe, sudden decline in lung function, marked by infiltrates in both lung fields and significantly diminished arterial oxygen saturation. There is no evidence that the condition is caused by left-sided heart failure. The disease is similar to adult respiratory distress syndrome (ARDS). Like ARDS, ALI may be life threatening. ALI is distinguished from ARDS by the severity of hypoxemia. ALI =  $\text{PaO}_2/\text{FIO}_2$  ratio of  $< 250$ , ARDS =  $\text{PaO}_2/\text{FIO}_2 < 200$ .

**birth i.** Injury sustained by the neonate during birth.

**blast i.** An injury sustained as a result of an explosion. A blast injury primarily results from internal organ damage caused by a pressure wave in the atmosphere extending outward from the explosion. It can also produce secondary shrapnel injuries and burns.

**immersion i.** Drowning or near drowning.

**inhalation i.** Damage to the oropharynx, nasopharynx, trachea, bronchi, or lungs from exposure to smoke or heated gas. Inhalation injury is a potentially life-threatening complication of exposure to smoke and fire. It is often present in those who have suffered facial burns. Early complications of inhalation injury include bronchospasm, airway edema, airway obstruction, and respiratory failure. Late complications include hospital-acquired pneumonias and other respiratory illnesses. Patients suspected of inhalation injury should be promptly and repeatedly assessed to make certain they have an open airway. Emergent tracheal intubation is used to prevent respiratory failure.

**internal i.** Any injury to the organs occupying the thoracic, abdominal, or cranial cavities.

**SYMPTOMS:** Symptoms vary depending on the structures involved. Shock is often present, manifested by hypotension and tachycardia. The patient may be pale, cold, and perspiring freely and have an altered state of consciousness. In some internal injuries, pain may not be expressed.

## Traumatic Injuries

Type of Injury	Parts of the Body Frequently Affected	Common Causes
Amputation	Limbs	Explosions; motor vehicle accidents; falls
Avulsion	Skin	Falls; scrapes
Bite	Hands; face	Pets (dogs and cats); humans (interpersonal violence)
Blast	Exposed body parts; hearing	Explosions
Burn	Limbs	Cooking; accidental fires
Contusion	Face; limbs; trunk	Falls; interpersonal violence; sports accidents
Crush	Limbs	Building collapse; motor vehicle accidents; occupational accidents
Dislocations	Limb joints	Falls; sports; vehicular accidents
Fractures	Long bones; vertebrae	Falls; sports; vehicular accidents
Inhalation	Airways; mouth, nasopharynx	Fires
Laceration	Limbs, face	Knives, glass, other sharp objects; falls; sports
Overuse	Tendons and muscles of the limbs	Repetitive use on the job or in sports
Penetration	Any	Gunshots; sharp objects
Traumatic brain injury	Head	Falls; sports; vehicular accidents

**PATIENT CARE:** The patient's vital signs should be monitored carefully and frequently. Changes in level of consciousness should be noted. If the patient is in shock, the shoulders should be lowered and the lower extremities elevated. Intravenous infusions, oxygen, airway management, cardiac monitoring, control of hemorrhage, and bony stabilization are quickly begun pending definitive surgical management.

**primary i.** Cell death immediately associated with a traumatizing force and unrelated to subsequent hypoxic or enzymatic reactions.

**repetitive strain i.** Overuse syndrome.

**risk for i.** A state in which the person has the potential for physical harm as a result of environmental hazards and/or impairments in his adaptive and defensive resources. SEE: *Nursing Diagnoses Appendix*.

**secondary enzymatic i.** Cell death resulting from an enzymatic reaction occurring after trauma that decreases cell membrane potential and produces hydrophilic swelling. Secondary enzymatic injury does not include cells damaged by the primary trauma.

**secondary hypoxic i.** Cell death caused by the lack of oxygen in tissues after trauma. It may sometimes be prevented by resting injured body parts and applying cold to them. SYN: *post-traumatic hypoxia*.

**steering wheel i.** Blunt trauma to the chest sustained when an unrestrained driver hits the steering wheel

or column. Typical injuries include rib fractures, inflamed cartilage, pneumothorax, hemothorax, or contusion of the heart. The trauma occasionally produces dissection of the thoracic aorta.

**straddle i.** Blunt trauma to the perineum, often with fractures of the pelvis and genital and internal injuries (e.g., to the vagina, penis, testes, bladder, uterus, or other organs).

**transfusion-related acute lung i.** ABBR: TRALI. A systemic immunological reaction to the transfusion of blood products marked by breathlessness, fever, hypotension, inadequate oxygenation, and noncardiogenic pulmonary edema. It is caused by antibodies in the donor's plasma reacting against the white blood cells of the transfusion recipient. Ventilatory support is commonly needed. The reaction is life-threatening in about 10% of patients.

**traumatic brain i.** ABBR: TBI. Any injury involving direct trauma to the head, accompanied by alterations in mental status or consciousness. TBI is one of the most common causes of neurological dysfunction in the U.S. Each year about 50,000 people die from brain trauma, and an additional 70,000 to 90,000 sustain persistent neurological impairment because of it. About 5.3 million Americans live with TBI disabilities. The most common causes of TBI are motor vehicle or bicycle collisions; falls; gunshot wounds; assaults and abuse; and sports-related injuries. Twice as many males as females suffer TBIs, with the incidence highest be-



tween ages 15 and 24. People over the age of 75 (because of falls) are also frequently affected.

**PATIENT CARE:** Many traumatic injuries to the head and brain are preventable if simple precautions are followed: motorists should never drive while intoxicated; cyclists and bicyclists should always wear helmets; frail, elderly people should wear supportive footwear and use sturdy devices to assist them while walking.



If an injury to the brain has occurred or is suspected, the victim should not be moved until spinal precautions are carefully implemented. Serial neurologic assessments are carried out to identify the severity of injury and any subsequent deterioration, using the Glasgow Coma Scale.

TBIs can produce intracranial hemorrhage (epidural hematoma [EDH]), subdural hematoma (SDH), intracerebral hemorrhage (ICH), and traumatic subarachnoid hemorrhage (SAH); cerebral contusions; concussion (with post-concussive syndrome); and diffuse axonal injury (DAI). Treatments vary depending upon the type of injury that occurred. SEE: table.

**ventilator-induced lung i.** ABBR: VILI. Damage to alveoli or alveolar capillaries caused by high airway pressures, excessive tidal volumes, or repeated expansion and collapse of the alveoli during mechanical ventilation. It can produce local inflammatory lung destruction and the release of inflammatory molecules throughout the systemic circulation.

#### **injury, risk for perioperative positioning**

At risk for inadvertent anatomical and physical changes as a result of posture or equipment used during an invasive/surgical procedure. SEE: *Nursing Diagnoses Appendix*.

**Inkoo virus** (īng'koo, kō) [*Inkoo*, a town

in Finland] ABBR: INK. A European arbovirus of the California family of bunyaviruses. It is transmitted to humans by the bite of infected mosquitoes. It causes fevers, encephalitis, and meningitis in humans.

**ink poisoning** SEE: under *poisoning*.

**inlay** (īn'lā) [L. *in*, in, + AS. *lecan*, to lay] A solid filling made to the precise shape of a cavity of a tooth and cemented into it; usually the inlay is made of casting alloy, but it may be porcelain.

**inlet** A passage leading to a cavity.

**i-NMDS** *International Nursing Minimum Data Set*.

**INN** *International Nonproprietary Names*, a list of pharmaceuticals published periodically by the World Health Organization.

**innate** (īn-nāt') [n + *natus*, born]

1. Belonging to the essential nature of a living being. SYN: *inherent*; *intrinsic*.
2. Existing at birth.

**innate immune system** Innate immunity.

**innervate** (īn-nēr'vāt, īn'ēr-vāt) [n + *nervus*, nerve]

1. To send axons to synapse with another structure (as in, "a motor nerve innervates a muscle").
2. To send axons to receive signals from a structure (as in, "a sensory nerve innervates the skin").

**innervation** (īn'ēr-vā'shūn) **1.** The stimulation of a part through the action of nerves. **2.** The distribution and function of the nervous system. **3.** The nerve supply of a part.

**collateral i.** Development of the nerve supply in a nerve tract adjacent to the original nerve supply that has been injured or destroyed.

**double i.** Innervation of an organ with both sympathetic and parasympathetic fibers.

**reciprocal i.** Innervation of muscles, as around a joint, in which contraction of one set of muscles leads to the relaxation of opposing muscles.

**in network** Contained within or supervised by a health maintenance organization or other managed care health provider. People insured by this kind of provider typically obtain better prices for services covered by their insurer than those insured by health care providers who have not agreed to the contractual obligations of the network.

**innocent** (īn'ō-sēnt) [L. *innocens*] Harmless or benign; clinically unimportant; not pathological (as referring to a heart murmur). SYN: *innocuous*.

**innocuous** (ī-nōk'ū-ūs) [L. *innocuus*] Innocent.

**innominate** (ī-nōm'ī-nīt) [L. *innominatus*, unnamed] Nameless.

**inochondritis** (īn'ō-kōn-drī'tīs) [Gr. *inos*, fiber, + *chondros*, cartilage, + *itis*, inflammation] The inflammation of a fibrocartilage.

### Mechanisms of Brain Injury

Type of Injury	Examples
Penetrating injury	Gunshot wounds
Contact injury	Injuries during boxing or helmet-to-helmet collisions in football
Acceleration-deceleration injury	Automotive collisions
Rotational acceleration-deceleration injury	Falls from a height

**inochondroma** (in'ō-kōn-drō'mă) [" + " + *oma*, tumor] Fibrochondroma.

**inoculable** (in-ōk'ū-lă-bl) **1.** Transmissible by inoculation. **2.** Susceptible to a transmissible disease. **3.** Capable of being inoculated.

**inoculate** (in-ōk'ū-lăt") To inject an antigen, antiserum, or antitoxin into an individual to produce immunity to a specific disease. SEE: *vaccine*.

**inoculation** (in-ōk'ū-lă'shūn) **1.** The injection or introduction of an antigen or microbe into a person, animal, or organ or into a solution, growth medium, or other laboratory apparatus. **2.** Vaccination. This can be accomplished parenterally (through the skin), orally, or intranasally; by using an aerosol mist; or by scarification of the skin.

**animal i.** The injection of serums, microorganisms, or viral organisms into laboratory animals for the purpose of immunizing them or of investigating the effects of the inoculated material on them.

**inoculum** (in-ōk'ū-lŭm) [L.] A substance introduced by inoculation.

**inoculum effect** In pharmacology, an increase in drug resistance that occurs with a larger burden of infecting organisms.

**inocyst** (in'ō-sĭst) [Gr. *inos*, fiber, + *kystis*, a bladder] A fibrous capsule.

**inoperable** (in-ōp'ēr-ă-bl) [L. *in-*, not, + *operari*, to work] Unsuitable for surgery. In the case of a tumor, the disease may have spread so extensively as to make surgery ineffective, or the patient's general condition may be so poor that surgery could result in the patient's death.

**inorganic** (in'or-găn'ĭk) [L. *in-*, not, + Gr. *organon*, an organ] **1.** In chemistry, occurring in nature independently of living things; sometimes considered to indicate chemical compounds that do not contain carbon. **2.** Not pert. to living organisms.

**inoculate** (in-ōs'kŭ-lăt") [L. *in*, in, + *osculum*, little mouth] Anastomose.

**inoculation** (in-ōs'kŭ-lă'shūn) Anastomosis.

**inose** (in'ōs) Inositol.

**inosemia** (in-ō-sē'mē-ă) [Gr. *inos*, fiber, + *haima*, blood] **1.** An excessive amount of fibrin in the blood. **2.** The presence of inositol in the blood.

**inosite** (in'ō-sĭt) Inositol.

**inosis** (in'ō-sĭ'tis) [" + *itis*, inflammation] Inflammation of fibrous tissue.

**inositol** (in-ōs'ĭ-tōl) Hexahydroxycyclohexane, C<sub>6</sub>H<sub>6</sub>(OH)<sub>6</sub>; a sugar-like crystalline substance found in the liver, kidney, skeletal muscle, and heart muscle, as well as in the leaves and seeds of most plants. It is part of the vitamin B complex. Deficiency of inositol in experimental animals results in hair loss, eye defects, and growth retardation. Its sig-

nificance in human nutrition has not been established. SYN: *inose*; *inosite*.

**inositol hexaniacinate** (hĕk'să-nĭ-ăs'ĭn-ăt) ABBR: IHN. A dietary supplement that is a slow-release compound of niacin (vitamin B<sub>3</sub>). It causes less flushing and other niacin-related side effects. It is used to lower serum cholesterol levels and to improve high-density lipoprotein levels.

**inositol-1,4,5-triphosphate** (in-ōs'ĭ-tōl) ABBR: IP3. An intracellular second messenger molecule that stimulates the endoplasmic reticulum of the cell to release calcium.

**inosituria** (in'ō-sĭ-tŭ'rĕ-ă) [*inositol* + Gr. *ouron*, urine] Inosuria.

**inosuria** (in-ō-sŭ'rĕ-ă) [*inositol* + Gr. *ouron*, urine] **1.** Inositol in the urine. SYN: *inosituria*. **2.** Fibrinous excess in urine.

**inotropic** (in'ō-trōp'ĭk) [Gr. *inos*, fiber, + *trepein*, to influence] **1.** Influencing the force of muscular contractility. **2.** An agent that increases the force of muscular contraction.

**inpatient** (in'pă'shĕnt) A patient who is hospitalized. SEE: *outpatient*.

**in-person** Face-to-face. In-person discussions or interviews, for example, are direct meetings between two or more people (e.g., in the taking of a health care history).

**inquest** (in'kwĕst) [L. *in*, into, + *quaerere*, to seek] **1.** In legal medicine, an official examination and investigation into the cause, circumstance, and manner of sudden, unexpected, violent, or unexplained death. **2.** The act of inquiring.

**INR** *International normalized ratio*.

**insalivation** (in-săl'ĭ-vă'shūn) [" + *saliva*, spittle] The process of mixing saliva with food, as in chewing.

**Insall-Salvati index** A radiographical measure used to identify patella alta. The length of the patellar tendon is divided by the length of the patella. Values greater than 1.2 denote patella alta.

**insane** (in-săn') [" + *sanus*, sound] Mentally deranged and, therefore, legally incompetent.

**insanitary** (in-săn'ĭ-tăr-ĕ) Not conducive to health; unhealthful, unhygienic.

**insanity** [L. *insemitas*, insanity] In legal medicine, the inability to manage one's own affairs or take responsibility for one's actions as a result of cognitive deficits, absence of self-control, or psychosis. The term is typically employed in courts of law or the popular press, but is not used in standard psychiatric or medical speech.

**i. defense** In legal and forensic medicine, the premise that an insane individual who commits a crime is not legally responsible for that act.

**insatiable** (in-să'shă-bl') [L. *insatiabilis*] Incapable of being satisfied or appeased.

**inscription** (in-skrip'shūn) [L. *in*, upon, + *scribere*, to write] The body of a prescription, which gives the names of the drug(s) prescribed and the dosage.

**insect** [L. *insectum*] The common name for any of the class Insecta of the phylum Arthropoda. Insects of medical importance are flies, mosquitoes, lice, fleas, bees, hornets, and wasps. For more information, see entries for individual insects.

**Insecta** (in-sĕk'tă) A class of the phylum Arthropoda characterized by three distinct body divisions (head, thorax, abdomen), three pairs of jointed legs, tracheae, and usually two pairs of wings. Insects are of medical significance in that some are parasitic, some are vectors of pathogenic organisms, and some are annoying pests causing injury by their bites or stings. SYN: *Hexapoda*.

**insecticide** (in-sĕk'ti-sīd) [L. *insectum*, insect, + *caedere*, to kill] **1.** An agent used to exterminate insects. **2.** Destructive to insects.

**Insectivora** (in'sĕk-tiv'ō-ră) [ʹ + *vorare*, to devour] An order of small mammals, including moles and shrews.

**insectivore** (in-sĕk'ti-vor) A member of the order Insectivora.

**insecurity** (in'sĕ-kūr'i-tĕ) **1.** Vulnerability (e.g., of a computer system to hackers). **2.** A subjective sense of vulnerability, esp. when confronted with particular challenges or social situations.

**insemination** (in-sĕm'in-ă'shūn) [L. *in*, into, + *semen*, seed] **1.** The discharge of semen from the penis into the vagina during coitus. **2.** The fertilization of an ovum.

**artificial i.** ABBR: AI. Mechanical placement of semen containing viable spermatozoa into the vagina. SYN: *artificial impregnation*.

**donor artificial i.** ABBR: AID. Artificial insemination of a woman with sperm from an anonymous donor. This procedure is generally done in cases in which the husband is sterile. SEE: *Standard Precautions Appendix*.

**heterologous artificial i.** ABBR: AID. Artificial insemination in which the semen is obtained from a donor other than the husband or partner.

**homologous artificial i.** ABBR: AIH. Artificial insemination in which the semen is obtained from the husband or partner.

**husband artificial i.** ABBR: AIH. Use of a husband's sperm to artificially inseminate his wife.

**insenescence** (in'sĕ-nĕs'ĕns) [ʹ + *senescens*, growing old] The process of growing old or the approaching of old age.

**insensible** (in-sĕn'si-bl) [L. *in-*, not, + *sensibilis*, appreciable] **1.** Unconscious;

without feeling or consciousness. **2.** Not perceptible. **3.** Not measurable.

**insensible protein losses** The loss of nitrogen-containing compounds in sweat and other body fluids exuded from the body through hair and skin.

**insertion** (in-sĕr'shūn) [L. *in*, into, + *serere*, to join] **1.** The movable attachment of the distal end of a muscle, which produces shape changes or skeletal movement when the muscle contracts. **2.** The placement or implanting of something into something else (e.g., in dentistry, the process of placing a filling or inlay in a cavity preparation or placing dentures or other prostheses in the mouth).

**blind i.** The placement of a device into a body part or cavity without directly visualizing the organ in which the device will come to rest.

**velamentous i.** The attachment of the umbilical cord to the edge of the placenta.

**insidious** (in-sīd'ĕ-ūs) [L. *insidiosus*, cunning] Of gradual, subtle, or indistinct onset; said of some slowly developing diseases.

**insight** **1.** Self-understanding; comprehension of one's circumstances; the opposite of denial. **2.** In psychiatry, the patient's comprehension that he is mentally ill and awareness of the character of the illness or of the unconscious factors responsible.

**in silico** (sī'li-kō) [NL fm. L. *silix*, flint] The mimicking or modeling of biological processes within computer hardware and software.

**in situ** (in sī'tū, sit'ū) [L.] **1.** In position, localized. **2.** In the normal place without disturbing or invading the surrounding tissue.

**insolation** (in'sō'lă-shūn) [L. *insolare*, to expose to the sun] **1.** Any exposure to the rays of the sun. **2.** Heatstroke or sunstroke. SEE: *heat*; *heat exhaustion*; *hyperpyrexia*.

In the past it was felt that exposure to the sunlight was therapeutic. It is now known that exposure to excess sunlight on either an acute or a chronic basis may be unwise. Acute overexposure leads to sunburn. Chronic exposure to the sun increases the likelihood of skin cancers.

**insoluble** (in-sōl'ū-b'l) [L. *insolubilis*] Incapable of solution or of being dissolved.

**insomnia** (in-sōm'nĕ-ă) The subjective experience of insufficient sleep or of sleep that is not refreshing. SEE: *sleep disorder*; *table*.

**ETIOLOGY:** Insomnia is called primary when it occurs in the absence of underlying diseases or conditions. It more often occurs as a secondary problem (e.g., from alcohol or drug dependence, mood disorders, restless leg syn-

### Natural and Artificial Stimulants That May Contribute to Insomnia

Alcohol  
 Bright light; sunlight  
 Coffee, tea, and other caffeinated drinks (like carbonated cola beverages, guarana, and yerba maté, below)  
 Corticosteroids, such as prednisone  
*Ephedra sinica*—an herbal stimulant  
 Ephedrine; pseudoephedrine  
 Guarana  
 Ma huang—Chinese name for ephedra  
 Methamphetamines, including methamphetamine  
 Modafinil—a drug used to treat narcolepsy  
 Nicotine, a psychoactive chemical found in tobacco smoke  
 Selective serotonin reuptake inhibitors (SSRIs), including fluoxetine, paroxetine, sertraline  
 Theophylline, a medication used to treat asthma  
 Venlafaxine, an antidepressant  
 Yerba maté  
 Yohimbine, an aphrodisiac and bodybuilding drug

drome, sleep apnea, or travel across time zones).

**SYMPTOMS:** People troubled by insomnia often report difficulty falling asleep, frequent nighttime awakenings, or excessively early arousal in the morning. They also typically experience fatigue during the daytime, often with an inability to concentrate, to feel energetic, or to be productive.

**PATIENT CARE:** When poor-quality sleep affects daytime functioning, increasing exercise during the day and following sleep hygiene recommendations often improve sleep quality and duration. Cognitive behavioral therapies and relaxation techniques (e.g., listening to soothing music or closing the eyes and breathing deeply and quietly) also significantly improve sleep. Medications for sleep (e.g., the benzodiazepines [e.g., temazepam] or the nonbenzodiazepine sleep aids [e.g., zolpidem]) are generally thought to be safe and effective for acute insomnia. Melatonin may help some people improve sleep with jet lag or shift work. Patients with chronic insomnia may benefit from a variety of interventions. Few sleep medications are currently approved for long-term use by the Food and Drug Administration.

**altitude i.** A form of altitude sickness in which insomnia results from inadequate environmental oxygen. It occurs commonly in mountaineers and to a lesser extent in aviators. It is often accompanied by appetite disturbances, fa-

tigue, headaches, and shortness of breath.

**fatal familial i.** ABBR: FFI. An inherited, rapidly progressive prion disease of middle or later life. Signs and symptoms include intractable insomnia, autonomic dysfunction, endocrine disturbances, dysarthria, myoclonus, coma, and death. There is no specific therapy. SEE: *prion disease*.

**insomnia** A disruption in the amount and quality of sleep that impairs functioning. This diagnosis was previously titled “disturbed sleep pattern.” SEE: *Nursing Diagnoses Appendix*.

**insomniac** (in-sóm'nē-āk) One who has insomnia.

**insorption** (in-sorp'shūn) [L. *in*, into, + *sorbere*, to suck in] The passage of material into the blood, as when substances move from the gastrointestinal tract into the bloodstream.

**inspect** [L. *inspectare*, to examine] To examine visually.

**inspection** Visual examination of the external surface of the body as well as of its movements and posture. SEE: *abdomen*; *chest*; *circulatory system*.

**inspiration** (in'spīr-ā'shūn) [L. *in*, in, + *spirare*, to breathe] Inhalation; drawing air into the lungs; the opposite of expiration. The average rate is 12 to 18 respirations per minute in a normal adult at rest. SEE: *diaphragm* for illus.; *respiration*.

Inspiration may be costal or abdominal, the latter being deeper. The muscles involved in forceful inspiration are the external intercostals, diaphragm, levatores costarum, pectoralis minor, scaleni, serratus posterior, superior sternocleidomastoid, and sometimes the platysma.

**crowing i.** The peculiar noise heard in stridor or croup. SEE: *croup*, *spasmodic*.

**forcible i.** Inspiration in which the muscles of inspiration are assisted by accessory muscles of respiration, such as the sternocleidomastoids, intercostals, and serratus posterior. Forced inspiration is normal during vigorous exercise, but indicative of hypoxia, hypercarbia, or acidosis when it occurs at rest.

**full i.** Inspiration in which the lungs are filled as completely as possible (voluntarily, as in determining the vital capacity, or involuntarily, as in cardiac dyspnea).

**sustained maximal i.** A deep-breathing maneuver that mimics the normal physiological sigh mechanism. The patient inspires from a resting expiratory level up to maximum inspiratory capacity, with a pause at end inspiration.

**inspiratory** (in-spīr'ā-tor'e) Pert. to inspiration.

**i. capacity** The maximum amount of air a person can breathe in after a resting expiration.

**i. hold** A ventilating maneuver in which the delivered volume of gas is held in the lung for a while before expiration; called a plateau or ledge at end inspiration. Also called *grunt breathing*.

**inspiratory impedance threshold valve, inspiratory impedance threshold device** ABBR: ITV. A valve placed between a patient's airway and his or her source of respiratory gas, e.g., ambient air or, in the case of critically ill patients, a ventilator or bag-valve mask. It lowers tracheal and intrathoracic pressure and as a result increases blood pressure and blood flow to the brain and coronary arteries. It is used in cardiopulmonary resuscitation and advanced cardiac life support to support the circulation in the absence of volume resuscitation. It can also be used to prevent hypotension and syncope in patients with hypovolemia or reduced stroke volumes.

**spirometer** (in'spī-rōm'ē-tēr) [ " + " + Gr. *metron*, measure] A device for determining the amount of air inspired.

**inspissate** (in-spīs'āt) [L. *inspissatus*, thickened] To thicken by evaporation or absorption of fluid.

**inspissated** (in-spīs'ā-tēd) Thickened by absorption, evaporation, or dehydration.

**inspissation** (in-spī-sā'shūn) 1. Thickening by evaporation or absorption of fluid. 2. Diminished fluidity or increased thickness.

**instability** The lack of ability to maintain alignment of bony segments, usually due to torn or lax ligaments and weak muscles.

**patellofemoral i.** Laxity and/or tightness of the patellar restraints that results in abnormal tracking of the patella within the femoral trochlea. Patellofemoral instability causes pain during activity and may predispose the patient to recurring patellar subluxation or dislocation and to subsequently present with the clinical signs and symptoms of chondromalacia.

**TREATMENT:** Nonoperative treatment consists of strengthening weak muscles and/or stretching the tight soft tissue that leads to abnormal patellar tracking. Surgical intervention may be required to release overly taut tissue and shave the articular cartilage associated with chondromalacia.

**instar** (in'stār) Any one of the various stages of insect development during successive molts.

**instep** (in'stēp) The arched medial portion of the foot.

**instillation** (in'stīl-ā'shūn) [L. *in*, into, + *stillare*, to drop] Slowly pouring or

dropping a liquid into a cavity or onto a surface.

**instillator** (in'stī-lā'tor) An apparatus for introducing, drop by drop, liquids into a cavity. To maintain sterility, the instillator must not touch the part of the body where its fluids are applied.

**instinct** (in'stīngkt) [L. *instinctus*, instigation] An inherited tendency to react to an environmental stimulus in a predictable but limited fashion.

**death i.** In psychoanalytic theory, the unconscious will to destroy oneself.

**herd i.** The desire to be associated with a group.

**Institute of Electrical and Electronic Engineers** ABBR: IEEE. An organization partially responsible for standards regulating electrical devices and equipment.

**Institute for Safe Medication Practices** ABBR: ISMP. A nonprofit organization that disseminates information about adverse drug events to health care professionals, institutions, and the public. It operates the Medication Errors Reporting System. Website: www.ih.org.

**institutionalization** (in'stī-too'shūn-āl-ī-zā'shūn) 1. Residence in or confinement to a nursing home or other long-term care setting for an extended period. 2. Arranging for a person to be placed in a health care facility. 3. The process in which people who live together gradually develop certain common patterns of behavior and thought (e.g., assumption of illness and depression apathy, behaviors frequently associated with nursing home residency). The current movement in medicine and nursing is away from institutionalism to a more homelike environment.

**institutional review board** ABBR: IRB. A medical oversight committee that governs or regulates medical investigations involving human subjects. The purpose of the board is to protect the rights and health of participants in clinical trials. SEE: *informed consent*.

**instruction** 1. A direction or command. 2. The act of teaching or furnishing information.

**computer-assisted i.** ABBR: CAI. Computer-based instructional programs for individual learners. The term most often refers to drill and practice, tutorial, or simulation exercises used as stand-alone instruction or as supplementary materials. A more recent term is e-learning.

**dental hygiene i.** A program in which patients are taught the methods of oral hygiene and the importance of plaque control through proper toothbrushing, flossing, and appropriate nutrition.

**instrument** (in'stroo-mēnt) [L. *instrumentum*, tool] 1. A mechanical device. 2. A special tool for accomplishing a specific task. Thus a reflex hammer, micro-

scope, stethoscope, cystoscope, and surgeon's scalpel are all examples of instruments.

**dental i.** Any instrument used in the practice of dentistry including a variety of hand or machine-driven cutting instruments for soft and calcified tissues, forceps, elevators, clamps, reamers, wire pliers, pluggers, carvers, explorers, and other instruments unique to the dental specialties (i.e., oral surgery, endodontics, orthodontics, periodontics, prosthodontics, and restorative dentistry).

**instrumental** 1. Pert. to instruments. 2. Important in achieving a result or goal.

**i. activities of daily living** ABBR: IADL. Those daily living skills, such as cleaning, cooking, managing finances, and shopping, that are needed to maintain life at home.

**instrumentarium** (in'stroo-mĕn-tā'rĕ-ŭm) Instruments required for a surgical or other procedure.

**instrumentation** (in'stroo-mĕn-tā'shŭn) 1. The use of instruments and their care. 2. The accomplishment of a task by use of instruments (e.g., removal of a foreign body from the bronchus by means of a bronchoscope).

**biomedical i.** The use of mechanical and electronic devices in medical diagnosis, therapy, or measurement.

**spinal i.** 1. An imprecise term for any hardware used to stabilize or align the vertebrae, including hooks, rods, or screws. 2. Any spinal surgery in which such hardware is inserted into the body.

**insufficiency** (in'sŭ-fish'ĕn-sĕ) [L. *in-*, not, + *sufficiens*, sufficient] Inadequacy for a specific purpose.

**active i.** The loss of the ability to generate muscle tension because of muscle shortening.

**adrenal i.** Abnormally low production of cortisol. Primary adrenal insufficiency results in inadequate cortisol production by the adrenal glands, such as Addison's disease. Secondary adrenal insufficiency results from a decrease in the production of adrenocorticotropic hormone (ACTH) or its release from the pituitary gland.

**aortic i.** ABBR: AI. An imperfect closure of the aortic semilunar valve at the junction of the left ventricle and the aorta, due to distortion of the valve leaflets or dilation of the aortic annulus. This causes blood that has been ejected into the aorta to fall back into the left ventricle. It may produce volume overload of the ventricle, leading to left ventricular dilation and hypertrophy, and congestive heart failure. Stroke volume and ejection fraction (EF) fall. SYN: *aortic incompetence*; *aortic regurgitation*.

Chronic aortic insufficiency produces a gradual volume overload of the heart

and eventual congestive heart failure. It may occur in patients with poorly controlled hypertension, tertiary syphilis, Marfan's disease, or other disorders that affect aortic valve competence. Management often includes antihypertensive vasodilators, such as nifedipine. If congestive heart failure becomes severe enough, valve replacement may be recommended for patients who are good operative candidates. Surgery usually is recommended to be done before EF falls below 55%.

**SYMPTOMS:** Chronic AI may be asymptomatic until heart failure (HF) occurs. With HF, patients often report difficulty breathing (e.g., during exercise or sleep) and lower extremity swelling. Patients may occasionally report palpitations or a subjective awareness of their heart beating.

**PHYSICAL FINDINGS:** The murmur of AI occurs in diastole, is high-pitched (best heard using the diaphragm of the stethoscope), and is usually described as "blowing" and "decrescendo" (i.e., it begins loudly and gradually softens). It is best heard at the left second to fourth intercostal spaces, radiating to the apex and sometimes the right sternal border, after the patient exhales and sits leaning forward, holding his or her breath. Patients with AI often have a widened pulse pressure with a water-hammer pulse and may have head bobbing, bobbing of the uvula, or visible movement of blood under the nails when the tips of the nails are gently compressed (Quincke's pulse). The patient may experience dyspnea, orthopnea, paroxysmal nocturnal dyspnea, and fatigue.

**PATIENT CARE:** A history of related cardiac illnesses and symptoms is obtained. Fever and other signs of infection are noted. Vital signs, weight, and fluid intake and output are monitored for indications of fluid overload. Activity tolerance and degree of fatigue are assessed regularly, and the patient is taught to intersperse periods of activity with rest.

Desired outcomes include adequate cardiopulmonary tissue perfusion and cardiac output, reduced fatigue with exertion, and ability to manage the treatment regimen.

**cardiac i.** Heart failure.

**coronary i.** Obstruction to the flow of blood through the coronary arteries, resulting in an inadequate supply of blood relative to the metabolic demands of the heart muscle. SEE: *angina pectoris*; *coronary artery disease*.

**gastric i.** An inability of the stomach to empty itself.

**hepatic i.** An inability of the liver to produce albumin, bile, or proteins, or to

detoxify xenobiotics that are taken up by the gastrointestinal tract.

**ileocecal i.** Ileocecal incompetence.

**mitral i.** Mitral regurgitation.

**muscular i.** A condition in which a muscle is unable to exert its normal force and bring about normal movement of the part to which it is attached.

**i. of ocular muscles** An absence of dynamic equilibrium of ocular muscles.

**passive i.** Restriction in motion caused by inadequate length of an antagonist muscle or muscles.

**pulmonary valvular i.** An imperfect closure of the pulmonary semilunar valve at the junction of the right ventricle and the pulmonary artery. The clinical consequences may include right ventricular failure.

**renal i.** A reduced capacity of the kidney to remove waste products from the blood. It is preferentially known as "chronic kidney disease." It is defined as >30 mg of urinary albumin excretion per gram of urinary creatinine, or a glomerular filtration rate of < 60mL/min/1.73m<sup>2</sup>.

**respiratory i.** Inadequate oxygen intake or carbon dioxide removal associated with abnormal breathing and signs and symptoms of distress.

**thyroid i.** Hypothyroidism.

**uteroplacental i.** Inadequate blood flow through the placental intervillous spaces to enable sufficient transmission of nutrients, oxygen, and fetal wastes. It may be caused by diminished maternal cardiac output due to anemia, heart disease, regional anesthesia, or supine hypotension; vasoconstriction due to chronic or pregnancy-related hypertension; or uterine overstimulation; vasospasm due to pregnancy-induced hypertension; vascular sclerosis due to maternal diabetes or collagen disease; or intrauterine infection. It increases the risk for intrauterine growth retardation.

**valvular i.** Valvular incompetence.

**velopharyngeal i.** Failure of the palatal sphincter to close, with inadequate separation of the nasopharynx from the oropharynx. This may result in snoring, nasal speech, or inhalation of food into the nasal passages SYN: *velopharyngeal incompetence*. SEE: *cleft palate*.

**venous i.** A failure of the valves of the veins to function, which interferes with venous return to the heart, and may produce edema.

**insufflate** (in-sūf'-lāt) [L. *insufflare*, to blow into] **1.** To introduce a gas or air into the lungs. **2.** To blow a medicated powder or medicinal vapor into a cavity.

**insufflation** (in'sū-flā'shūn) The act of blowing a gas, vapor, or powder into a cavity, as the lungs.

**CO<sub>2</sub> i.** The introduction of carbon dioxide gas into a body cavity such as the

peritoneum during laparoscopic surgery.

**transtracheal i.** The introduction of oxygen into the trachea during mechanical ventilation in order to decrease dead space.

**tubal i.** Test for patency of the fallopian tubes. SEE: *Rubin's test*.

**insufflator** (in'sū-flā'tor) A device for blowing powders or a gas into a cavity.

**insula** (in'sū-lā) [L.] **1.** The lobe of the cerebral cortex comprising a triangular area lying in the floor of the lateral or sylvian fissure. It is overlapped and hidden by the gyri of the fissure, which constitute the operculum of the insula. SYN: *island of Reil*. **2.** Any structure resembling an island.

**insular** (in'sū-lār) [L. *insula*, island] Relating to any insula, e.g., the insular cortex of the brain.

**insulation** [L. *insulare*, to make into an island] **1.** The protection of a body or substance with a nonconducting medium to prevent the transfer of electricity, heat, or sound. **2.** The material or substance that insulates.

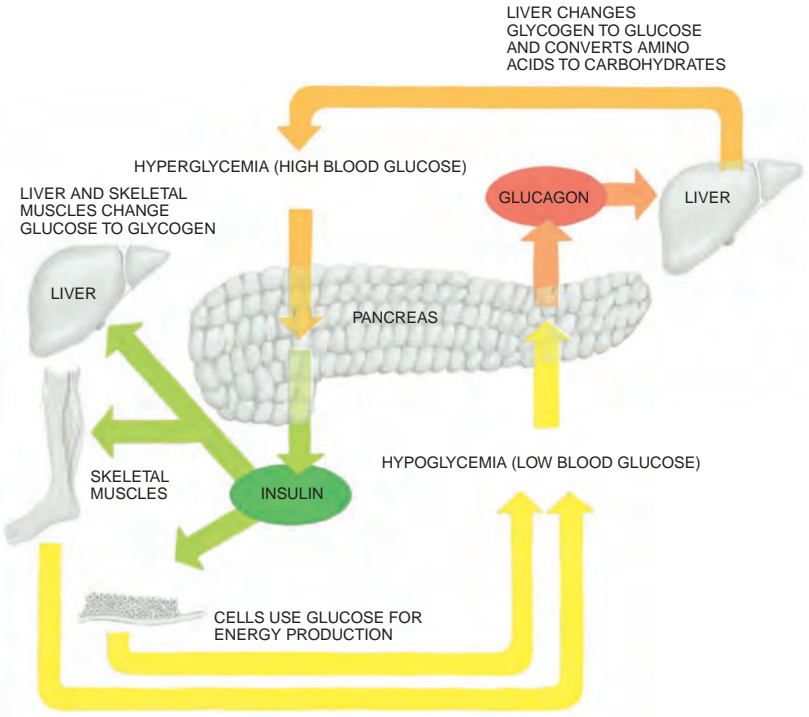
**insulator** That which insulates.

**insulin** (in'sū-līn) [L. *insula*, island] A hormone secreted by the beta cells of the pancreas that controls the metabolism and cellular uptake of sugars, proteins, and fats. As a drug, it is used principally to control diabetes mellitus. Insulin therapy is required in the management of type 1 diabetes mellitus because patients with this illness do not make enough insulin on their own to survive. The drug also is used in the care of patients with gestational diabetes to prevent fetal complications caused by maternal hyperglycemia (insulin itself does not cross the placenta or enter breast milk). In type 2 diabetes mellitus, its use typically is reserved for those patients who have failed to control their blood sugars with diet, exercise, and oral drugs. SEE: *illus.*; *diabetes mellitus*.

Insulin preparations differ with respect to the speed with which they act and their duration and potency following subcutaneous injection. SEE: *table*.

In the past, insulin for injection was obtained from beef or porcine pancreas. These peptides differed from human insulin by a few amino acids, causing some immune reactions and drug resistance. Most insulin now in use is made by recombinant DNA technology and is equivalent to human insulin from an immunological perspective.

**PHYSIOLOGY:** In health, the pancreas secretes insulin in response to elevations of blood glucose, such as occur after meals. It stimulates cells, esp. in muscular tissue, to take up sugar from the bloodstream. It also facilitates the storage of excess glucose as glycogen in



**COMPLEMENTARY FUNCTIONS OF INSULIN AND GLUCAGON**

**Duration of Effect of Various Insulins When Given by Subcutaneous Injection\***

Type of Insulin	Synonym or Trade Name	Onset (hr)	Maximum (hr)	Duration (hr)
Very rapid onset	Aspart NovoLog	0.2–0.5	0.5–2.0	3–6
Very rapid onset	Lispro Humalog	0.2–0.5	0.5–2.0	3–6
Rapid onset (crystalline zinc)	Regular	0.5–1.0	2–3	4–6
Human insulin (recombinant)	Humulin, Novolin	Variable, depending on mixture used		5–8
Intermediate-acting	Lente, NPH	2–4	4–12	10–18
Fixed-dose combination insulins	70/30, 50/50, etc. (ratio: long/rapid acting)	Variable, depending on mixture used		
Very long-acting	Ultralente	8–14	10–14	18–24
Very long-acting	Glargine	2–4	None	20–24
Animal insulins	Pork or beef insulin	Because of antigenicity, animal insulins are rarely employed		

\* These times are estimates and may vary in individual patients.



the liver and prevents the breakdown of stored fats. In type 1 diabetes mellitus, failure of the beta cells to produce insulin results in hyperglycemia and ketoacidosis.

**DOSAGE:** The insulin dosage should always be expressed in units. There is no average dose of insulin for diabetics; each patient must be assessed and treated individually. Doses are titrated gradually to achieve near normal glucose levels, about 90–125 mg/dl.

**STORAGE:** The FDA requires that all preparations of insulin contain instructions to *keep in a cold place and to avoid freezing.*



Persons who use insulin should wear an easily seen bracelet or necklace stating that they have diabetes and use the drug. This helps to ensure that patients with hypoglycemic reactions will be diagnosed and treated promptly.

**i. analogue** Any synthetic insulin in which small changes in the amino acid structure of the polypeptide result in changes in the onset, peak effect, or duration of the molecule's physiological effects. Insulin aspart, glargine, and lispro are insulin analogues.

**i. aspart** A rapidly acting insulin administered subcutaneously, with action similar to that of insulin lispro. Aspartic acid replaces proline at a crucial position in the insulin molecule.

**i. glargine** A form of insulin that provides basal insulin coverage throughout the day, with little variation in drug levels. It is typically administered as a single injection (often at bedtime) and is usually part of a regimen that includes multiple injections of short-acting insulins or multiple doses of metformin at meal time. It is made by changing the glycine and arginine content of the insulin polypeptide.

**human i.** Insulin prepared by recombinant DNA technology utilizing strains of *Escherichia coli*. In its effect it is similar to insulins secreted by the human pancreas. Trade names are Humulin and Novolin. SYN: *Novolin 70/30*. SEE: *Humulin 50/50*; *Humulin 70/30*; *insulin* for table.

**inhaled i.** Insulin given by inspiration, with the use of an inhaler. It may be composed of liquid droplets or a dry powder. One inhaled insulin product was removed from use in 2008 because of its adverse effects on the lungs.

**i. injection site** The places on the body that are suitable for injecting insulin. Because insulin is administered at least once daily, it is important to have a plan for selecting the site. The best sites for insulin injection are in the subcutaneous tissue of the abdomen.

The arms and legs can also be used, but insulin uptake from these sites is less uniform. It is advisable to map out a number of injection sites in one area, use those, and then use other sites.

**i. isophane suspension** Intermediate-acting insulin with onset in ½ to 1 hr and a duration of 18 to 28 hr. SEE: *insulin* for table.

**i. lipodystrophy** SEE: *lipodystrophy*, *insulin*.

**i. lispro** A synthetic insulin with a very rapid onset and short duration of action. Diabetic patients typically use it immediately before meals to prevent postprandial hyperglycemia. Its absorption is more rapid than regular insulin. It is made by reversing the amino acids lysine and proline in the beta chain of the insulin polypeptide (hence its name *lispro*).

**monocomponent i.** Single component i.

**i. protamine zinc suspension** Long-acting insulin with onset in 6 to 8 hr and a duration of 30 to 36 hr. SEE: *insulin* for table.

**i. pump** A small battery-driven pump that delivers insulin subcutaneously into the abdominal wall. The pump can be programmed to deliver varying doses of insulin as a patient's need for insulin changes during the day (e.g., before exercise or meals, when physical or psychological levels of stress change). SEE: *illus.*



INSULIN PUMP

**i. shock** shock, hypoglycemic.

**single component i.** Highly purified insulin that contains less than 10 parts per million of proinsulin, a substance that is capable of inducing formation of anti-insulin antibodies. SYN: *monocomponent insulin*.

**synthetic i.** Insulin made by the use of recombinant DNA methodology.

**i. zinc extended suspension** Long-acting insulin with onset in 5 to 8 hr and duration of more than 36 hr.

**insulinase** (in'sū-lin-ās) An enzyme that degrades or inactivates insulin.

**insulin autoantibodies** ABBR: IAA. Antibodies to the hormone insulin. They are, in addition to antibodies to glutamic acid decarboxylase and protein

tyrosine phosphatase-like molecules, one of the markers of type 1 diabetes mellitus.

**insulin autoimmune syndrome** A rare cause of hypoglycemia, in which low levels of blood glucose are found in the setting of high levels of immunoreactive insulin, low levels of free insulin, and the presence of anti-insulin antibodies in the blood. The disease is often associated with other autoimmune disorders and frequently follows the treatment for those disorders (e.g., Graves' disease) with medications (such as methimazole) that contain sulphydryl moieties. SYN: *Hirata's disease*.

**insulinemia** (in'sū-līn-ē'mē-ā) [L. *insula*, island, + Gr. *haima*, blood] Hyperinsulinemia.

**insulin-like growth factor** ABBR: IGF. A group of related peptides, synthesized by the liver as a result of human growth hormone secretion. The IGF family of polypeptides is structurally similar to insulin in that it is composed of two subunits that are short polypeptides. IGF-1 and IGF-2, for example, each contain about 70 amino acids. They have a wide variety of functions, including the stimulation of cell growth and proliferation (e.g., in the developing embryo and neonate), DNA synthesis, bone growth, and the replication of cancer cells. Drugs that block IGF have been tested for use in cancer chemotherapy.

**insulinogenesis** (in'sū-līn-ō-jĕn'ĕ-sīs) [" + Gr. *genesis*, generation] The production of insulin by beta cells of the islets of Langerhans of the pancreas.

**insulinogenic** (in'sū-līn-ō-jĕn'ĭk) [" + Gr. *genan*, to produce] 1. Caused by insulin whether administered therapeutically or produced naturally by the pancreas. 2. Pert. to the production of insulin.

**insulinoid** (in'sū-līn-oyd) [" + Gr. *eidōs*, form, shape] Resembling or having the properties of insulin.

**insulinoma** (in'sū-līn-ō'mă) [" + Gr. *oma*, tumor] A tumor of the islets of Langerhans of the pancreas. These rare tumors secrete insulin and cause hypoglycemia. SEE: *hypoglycemia*; *neuroglycopenia*.

**insulin pen** An injector filled with insulin, used to administer specific doses of insulin subcutaneously.

**insulin tolerance test** ABBR: ITT. A test to determine a patient's hormonal responses to induced hypoglycemia. After 0.1 IU of insulin/kg is given intravenously, blood is drawn at regular intervals to measure serum cortisol in patients with suspected adrenal insufficiency or growth hormone in suspected growth hormone deficiency. The goal of the test is to stress the body with low blood glucose levels (>40 mg/dl).



The test should be administered only by experienced professionals in order to reduce the risk of severe hypoglycemic reactions.

**insulitis** (in'sū-lī'tīs) [" + Gr. *itis*, inflammation] Inflammation of the islets of Langerhans of the pancreas.

**insult** (in'sūlt) In medicine, an injury or trauma.

**insure** (in-shoor') [ME. *insuren*, *ensuren*]

1. To make sure or certain.
2. To make safe or secure.
3. To protect against injury, loss, or expense.
4. To make a contract specifying the terms of such protection.
5. To buy or sell insurance.

**insusceptibility** (in'sū-sĕp'tī-bīl'ī-tĕ) [L. *in*, not, + *suscipere*, to take up] 1. Immunity or lack of susceptibility to infection or disease. 2. The resistance of a microorganism to treatment.

**intake** (in'tāk') That which is taken in, esp. food and liquids.

**intake and output** ABBR: I and O. Measurement of a patient's fluid intake by mouth, feeding tubes, or intravenous catheters and output from kidneys, gastrointestinal tract, drainage tubes, and wounds. Accurate 24-hr measurement and recording is an essential part of patient assessment.

**integrase** (in'tĕ-grās) A retroviral enzyme that incorporates DNA derived from the virus into host cell chromosomes. The enzyme is a target for experimental antiretroviral therapies.

**integration** (in'tĕ-grā'shŭn) [L. *integrare*, to make whole] 1. The bringing together of various parts or functions so that they function as a harmonious whole. 2. The combining of peoples from diverse cultural, social, or ethnic backgrounds in communities, houses of worship, schools, workplaces, or other institutions.

**primary i.** The early recognition of the body and its psyche as apart from one's environment.

**secondary i.** The development of the adult personality so that the individual becomes fully socialized, engaged, and happy.

**integrin** (int'ĕ-grĭn) A polypeptide receptor of cell membranes that is involved in intercellular communication and adhesion. SEE: *cytokine*; *interleukin*.

**integrity** (in-tĕg'rĭ-tĕ) 1. Having an undiminished or unimpaired state. 2. Ethical purity.

**joint i.** The soundness of the anatomical and kinematic properties of a joint. Joint integrity can be diminished by anatomical, congenital, infectious, pathological, or traumatic processes.

**integument** (in-tĕg'ū-mĕnt) [L. *integumentum*, a covering] A covering; the skin, consisting of the corium, or dermis, and epidermis.

**integumentary** (in-tĕg-ŭ-mĕn'tă-rĕ) Rel. to the integument.

**integumentary system** The skin and its derivatives (hair, nails) and the subcutaneous tissue.

**intein** (in'tĕ-ĭn) [*in* + (*pro*)*tein*] An internal sequence or segment of a protein that may be spliced out of the larger molecule after it is translated, leaving the remaining segments (the "exteins") to rejoin and form a new protein.

**intellect** [L. *intelligere*, to understand] The mind, or understanding; conscious brain function.

**intellectual** 1. Pert. to the mind. 2. Possessing intellect.

**intellectual disability** Learning disorder.

**intellectualization** (in'tĕ-lĕk'chŭ-ăl-ĭ-ză'shŭn) A coping mechanism that relies on purely cognitive solutions to problems, without engaging or incorporating one's emotional responses to them.

**intelligence** [L. *intelligere*, to understand] The capacity to comprehend relationships; the ability to think, solve problems, and adjust to new situations. The use of a single test to estimate the intelligence of persons from different social, racial, cultural, or economic backgrounds, however, is unreliable.

**artificial i.** ABBR: AI. The ability of a computer to simulate intelligent thought or behavior.

**intelligence quotient** SEE: under *quotient*.

**intelligence test** A test to assess specific cognitive functions, including verbal abilities, visuospatial construction, mathematical skills, reasoning, and logic. Results obtained from intelligence testing are used to calculate the intelligence quotient (IQ). The most commonly used intelligence tests (e.g., Wechsler or Stanford-Binet) have been validated in broad population studies. Nonetheless, IQ tests have been criticized on a variety of grounds because they may in some cases assess achievement, experience, or sociocultural advantages rather than intelligence. SEE: *intelligence; quotient; intelligence*.

**intensifying** [L. *intensus*, intense, + *facere*, to make] Making intense; magnifying or amplifying.

**i. screen** SEE: under *screen*.

**intensity** A state of increased force, muscle vigor, or energy.

**signal i.** The relative brilliance of a radiographic image, radioactive tracer, or biological marker.

**spatial average i.** ABBR: SAI. The measure of power per unit area of ultrasound application, expressed in watts per square centimeter (w/cm<sup>2</sup>). The spatial average intensity is calculated by dividing the ultrasonic output, expressed in watts, by the effective radiating area of the sound head (e.g., 20

watts/10 cm<sup>2</sup> sound head = 2.0 w/cm<sup>2</sup> SAI).

**temporal average i.** ABBR: TAI. The amount of therapeutic ultrasonic energy delivered to tissues over a given time. The temporal average intensity is calculated by multiplying the spatial average intensity by the percent duty cycle (e.g., 20 w/cm<sup>2</sup> × 50% duty cycle = 1 w/cm<sup>2</sup> TAI). The temporal average intensity is meaningful only during the application of pulsed ultrasound.

**intensity modulated radiation therapy** ABBR: IMRT. A form of radiation therapy in which tumors are localized three dimensionally and then treated with small beams of radiation adjusted for the tumor's size, unique shape, and location. This therapy is used to treat 1. tumors that have been previously treated with external beam radiotherapy, 2. tumors for which external beam radiation is also planned, and 3. tumors that are difficult to reach or that have encircled healthy organs or tissues.

**intensive** (in-tĕn'sĭv) Rel. to or marked by intensity.

**intensive care unit** ABBR: ICU. A special hospital unit for patients who, because of the nature of their illness, injury, or surgical procedure, require almost continuous monitoring by specially trained staff. In large hospitals, units may be devoted to a single group of patients such as surgical cases, compromised newborns, or patients with burns, trauma, emergency cardiac care needs, or infectious diseases.

**intensivist** (in-tĕn'sĭv-ĭst'') A medical professional who specializes in the care of patients in intensive care units, e.g., patients with acute respiratory failure, heart failure, kidney failure, liver failure, sepsis, bleeding, and other severe illnesses.

**intent** (in-tĕnt') A state of mind that reflects one's aims, goals, or objectives. Intent is the key element of and basis for lawsuits brought against plaintiffs in a court of law.

**intention** (in-tĕn'shŭn) [*in* + *tendere*, to stretch] 1. A natural process of healing. 2. Goal or purpose.

**first i.** Healing by first intention.

**second i.** Healing by second intention.

**third i.** Healing by third intention.

**intentional infliction of emotional distress** ABBR: IIED. Deliberate destruction of a person's peace of mind; a common law tort. The conduct must be outrageous and beyond all bounds of decency; ordinary rude or insulting behavior is not enough. In those rare cases in which a health care provider inflicts intentional distress on a patient, he or she may be held liable for damages in a court of law.

**inter-** [L.] Prefix meaning *among* or *between*.

**interacinar** (in'tēr-ās'ī-nār) [L. *inter*, between, + *acinus*, grape] Located between acini of a gland.

**interaction, dielectric** A term used to quantitate the electrical polarity or dipole moment of a molecule. SEE: *dipole*.

**interaction, photoelectric** The interaction between x-rays and matter that completely absorbs the incoming photon. In radiology, photoelectric absorption is the cause of image contrast as well as increasing patient exposure.

**interalveolar** (in'tēr-āl-vē'ō-lār) [" + *alveolus*, little tube] Between the alveoli, esp. the alveoli of the lungs.

**interarticular** (in'tēr-ār-tīk'ū-lār) [" + *articulus*, joint] 1. Between two joints. 2. Situated between two articulating surfaces.

**interbody cage** (in'tēr-bōd'ē) A hollow, tube-shaped device placed between adjacent vertebral bodies in spinal fusion surgeries to improve or enhance bony fusion ("arthrodesis"). The cage is filled with either a bone graft or with bone graft substitutes.

**intercalary, intercalated** (in'tēr-kā-lēr'ē, -kāl-āt'ēd) [" + *calare*, to call] 1. Inserted or interposed between. SYN: *extraneous*. 2. Pert. to an upstroke or cardiac extrasystole that comes between two heartbeats.

**intercalate** To insert between the bases of a DNA molecule.

**intercanalicular** (in'tēr-kān'ā-lik'ū-lār) [" + *canalicularis*, pert. to a canaliculus] Between the canaliculi of a tissue.

**intercellular** (in'tēr-sēl'ū-lār) [" + *cella*, compartment] Between the cells of a structure.

**i. junctions** The microscopic space between cells. These spaces are important in assisting the transfer of small molecules across capillary walls. These junctions may be widened by chemical or physical factors and are acted on by chemical mediators of inflammation to increase vascular permeability.

**intercept** (in-tēr-sēpt') The point at which the line representing a function intersects an axis.

**intercerebral** (in'tēr-sēr'ē-brāl) [" + *cerebrum*, brain] Between the two cerebral hemispheres.

**interchange** (in-'tēr-chānj") In dispensing drugs, the use of a generic form of the drug in place of the proprietary form.

**intercoccygeal** (in'tēr-kōk-sij'ē-āl) [" + Gr. *kokkyx*, coccyx] Between the segments of the coccyx.

**intercostal** (in'tēr-kōs'tāl) [" + *costa*, rib] Between the ribs.

**intercostobrachial** (in'tēr-kōs'tō-brā'kē-āl) [" + " + *brachium*, arm] Pert. to the intercostal space and the arm, as the posterior lateral branch of the sec-

ond intercostal nerve supplying the skin of the arm, or a similar branch of the third intercostal nerve; formerly called intercostohumeralis.

**intercourse** (in-'tēr-kors") [L. *intercur-sus*, running between] The social interaction between individuals or groups; communication.

**sexual i.** SEE: *sexual intercourse*.

**intercricothyrotomy** (in'tēr-kri'thō-thī-rōt'ō-mē) [L. *inter*, between, + Gr. *krikos*, ring, + *thyreos*, shield, + *tome*, incision] The surgical separation of the cricothyroid membrane in order to incise the larynx.

**intercristal** (in'tēr-kris'tāl) [" + *crista*, crest] Between two crests of a bone, organ, or process.

**intercurrent** (in'tēr-kūr'ēnt) [" + *currere*, to run] 1. Intervening. 2. Pert. to a disease attacking a patient with another disease.

**intercurrent disease** A disease occurring during the course of an unrelated disease.

**intercuspatation** (in'tēr-kūs-pā'shūn) [" + *cuspis*, point] The cusp-to-fossa relation of the upper and lower posterior teeth in occlusion. SEE: *occlusion*.

**interdental** (in'tēr-dēnt'āl) [" + *dens*, tooth] Between adjacent teeth in the same arch. SEE: *interproximal*; *interocclusal*.

**interdentium** (in'tēr-dēn'shē-ūm) The space between any two contiguous teeth.

**interdigit** (in'tēr-dij'jīt) The area between any two contiguous toes or fingers or their associated metatarsals or metacarpals. SEE: *intermetacarpal*; *intermetatarsal*.

**interdigitation** (in'tēr-dij'j-i-tā'shūn) [" + *digitus*, digit] 1. Interlocking of toothed or finger-like processes. 2. Processes so interlocked.

**interdisciplinary** (in'tēr-dī'sī-plī-nār'ē) Involving or overlapping of two or more health care professions in a collaborative manner or effort.

**interest checklist** Any assessment approach used to determine an individual's unique play, leisure, or work interests.

**interface** A connection between systems allowing access and exchange of information. An interface can occur between humans and devices (user interface), networks, or software components.

**interference** (in'tēr-fēr'ēns) [" + *ferire*, to strike] 1. Clashing or colliding. 2. Dental malocclusion, esp. when it inhibits fluid mandibular movement.

**i. of impulses** A condition in which two excitation waves, upon approaching each other and meeting in any part of the heart, are mutually extinguished.

**semantic i.** Anything that blocks the acquisition, recall, or retention of words.

**interferential current** (in'tēr-fēr'ēn'shāl)

ABBR: IFC. A form of electrotherapy in which currents of a specific frequency (4000 Hz) are used to alleviate pain or facilitate healing in deep body tissues.

**interferometer** (in'tēr-fēr-ōm'ē-tēr) An optical device that acts on the interference of two beams of light, permitting examination of the structure of spectral lines. It is also used in examining prisms of lenses for faults.

**interferon** (in-tēr-fēr'ōn) ABBR: IFN. Any of a group of glycoproteins with antiviral activity. The antiviral type I interferons (alpha and beta interferons) are produced by leukocytes and fibroblasts in response to invasion by a pathogen, particularly a virus. These interferons enable invaded cells to produce class I major histocompatibility complex surface antigens, increasing their ability to be recognized and killed by T lymphocytes. They also inhibit virus production within infected cells. Type I alpha interferon is used to treat condylooma acuminata, chronic hepatitis B and C, and Kaposi's sarcoma. Type I beta interferon is used to treat multiple sclerosis.

Type II gamma interferon is distinctly different from and less antiviral than the other interferons. It is a lymphokine, excreted primarily by CD8+ T cells and the helper T subset of CD4+ cells that stimulates several types of antigen-presenting cells, particularly macrophages, to release class II MHC antigens that enhance CD4+ activity. It is used to treat chronic granulomatous disease. SEE: *cell, antigen-presenting; macrophage.*

**interferon gamma assay for tuberculosis**

Any test for latent tuberculosis that relies on the amount of interferon gamma (IFN $\gamma$ ) released by T cells that have been previously exposed to mycobacterial antigens. One such test, the whole blood assay, is performed by withdrawing about 1 ml of whole blood from the vein of a patient. This blood is heparinized, to prevent clotting, and then mixed with specific mycobacterial antigens and control substances. After overnight incubation, samples of plasma from the blood are tested for INF $\gamma$  levels. The test is considered positive if INF $\gamma$  in a sample exposed to mycobacterial antigens is >0.35 IU/ml.

**interfibrillar, interfibrillary** (in'tēr-fīb'rī-lār, -rī-lār'ē) [ + *fibrilla*, a small fiber] Between fibrils.

**interfilamentous** (in'tēr-fil'ā-mēn'tūs) [ + *filamentum*, filament] Between filaments.

**interfilar** (in-tēr-fil'ār) [ + *filum*, thread] Between the fibrils of a reticulum.

**intergemmal** (in'tēr-jēm'āl) [ + *gemma*, bud] Between taste buds.

**intergluteal** (in'tēr-gloo'tē-āl) [ + Gr. *gloutos*, buttock] Between the buttocks.

**intergonial** (in'tēr-gō'nē-āl) An anthropometric line between the tips of the two angles of the mandible.

**intergyral** (in'tēr-jī'rāl) [ + Gr. *gyros*, circle] 1. Between the cerebral gyri. 2. Connecting two gyri.

**interictal** (in'tēr-ik'tāl) [ + *ictus*, a blow] Between seizures.

**interim** (in'tēr-īm) [L. *interim*, in the meantime] 1. An intervening period. 2. Temporary, preliminary, or provisional.

**interior** [L. *internus*, within] The internal portion or area of something; situated within.

**interischadic** (in'tēr-īs'kē-ād'ik) [L. *inter*, between, + Gr. *ischion*, hip] Between the ischia of the pelvis.

**interkinesis** (in'tēr-kī-nē'sis) [ + Gr. *kinesis*, movement] The interval between the first and second meiotic divisions of cells.

**interlabial** (in'tēr-lā'bē-āl) Between the lips or any two labia.

**interleukin** (in'tēr-loo'kīn) ABBR: IL. A type of cytokine that enables communication among leukocytes and other cells active in inflammation or the specific immune response. The result is a maximized response to a microorganism or other foreign antigen. SEE: *cell-mediated immunity; cytokine; inflammation.*

**i-1** ABBR: IL-1. A cytokine released by almost all nucleated cells that activates the growth and function of neutrophils, lymphocytes, and macrophages; promotes the release of additional mediators that influence immune responses; enhances production of cerebrospinal fluid; and modulates certain adrenal, hepatic, bone, and vascular smooth muscle cell activity. Interleukin-1 and tumor necrosis factors, whose actions are almost identical to those of IL-1, are involved in fever production and other systemic effects of inflammation. SEE: *tumor necrosis factor.*

**i-1-beta** ABBR: IL-1- $\beta$ . A protein released by activated macrophages that stimulates B cells and thymocytes to proliferate and mature and increases the secretion of interleukin 2. It is found in high levels in the blood of patients with septic shock and in the cerebrospinal fluid of patients with meningitis. SYN: *catabolin.*

**i-2** ABBR: IL-2. A cytokine released primarily by activated CD4+ helper T lymphocytes. It is a major mediator of T cell proliferation, promotes production of other cytokines, enhances natural killer cell function, and is a cofactor for immunoglobulin secretion. SYN: *T-cell growth factor.*

**i-3** ABBR: IL-3. A cytokine produced by activated T cells that promotes proliferation of bone marrow stem cells.

SYN: *mast cell growth factor; multi-colony stimulating factor.*

**i-4** ABBR: IL-4. A cytokine released by activated T cells and mast cells that stimulates B and T lymphocyte production and activity, prevents macrophages from releasing monokines, and promotes mast cell, immunoglobulin E, and eosinophil activity. SYN: *B cell growth factor; mast cell growth factor II; T-cell growth factor II.*

**i-5** ABBR: IL-5. A cytokine produced by T cells, eosinophils and mast cells that acts as the primary stimulant for eosinophil production. SYN: *eosinophil colony-stimulating factor; eosinophil differentiation factor.* SEE: *basophil(e); eosinophil.*

**i-6** ABBR: IL-6. A lymphokine produced by many cell types, including mononuclear phagocytes, T cells, and endothelial cells. It mediates the acute phase response, enhances B cell production and differentiation to immunoglobulin-secreting plasma cells, and stimulates megakaryocyte production. SYN: *B cell stimulatory factor II; hepatocyte stimulatory factor.* SEE: *acute phase reaction; lymphokine.*

**i-7** ABBR: IL-7. A cytokine produced by the thymus, spleen, and bone marrow stromal cells. It stimulates growth of B-cell precursors, development of thymocytes, and activity of cytotoxic T-cells. SYN: *lymphopoietin 1; pre-B cell growth factor.*

**i-8** ABBR: IL-8. A cytokine produced by many cell types. It acts as a neutrophil chemoattractant.

**i-9** ABBR: IL-9. A cytokine produced by T cells. Among other functions, it promotes the proliferation and multiplication of mast cells.

**i-10** ABBR: IL-10. A cytokine derived from mononuclear phagocytes, T cells, and keratinocytes. It inhibits cytokine synthesis by macrophages, T cells, and natural killer cells, and enhances B cell growth and secretion of immunoglobulin.

**i-11** ABBR: IL-11. A cytokine produced by bone marrow stromal cells. It mediates acute phase protein synthesis, enhances B cell growth and differentiation to plasma cells, and promotes megakaryocyte production. SYN: *plasmacytoma stimulating factor.*

**i-12** ABBR: IL-12. A cytokine produced by mononuclear phagocytes and B cells. It induces interferon gamma production from T cells and natural killer cells, and enhances T cell and natural killer cell cytotoxicity. SYN: *natural killer cell stimulating factor.*

**i-13** ABBR: IL-13. A cytokine produced by T cells. It induces major histocompatibility class II expression on mononuclear phagocytes and B cells, B

cell proliferation, and immunoglobulin production.

**i-14** ABBR: IL-14. A cytokine produced by T lymphocytes and follicular dendritic cells. It stimulates proliferation of activated B lymphocytes and inhibits immunoglobulin secretion from activated B lymphocytes.

**i-15** ABBR: IL-15. A cytokine released by epithelial cells in the kidney, skeletal muscle, liver, lungs, heart, and bone marrow, which stimulates production of T cells, esp. cytotoxic T cells and natural killer cells. It can bind with interleukin-2 receptors and mimic IL-2's effects. SEE: *interleukin-2.*

**i-16** ABBR: IL-16. A cytokine produced by T lymphocytes that stimulates movement of monocytes, CD4+ T cells, and eosinophils to the area. It was previously known as lymphocyte chemoattractant factor.

**i-17** ABBR: IL-17. A cytokine produced by memory T lymphocytes that stimulates the proliferation of T cells and the differentiation of neutrophils.

**i-18** ABBR: IL-18. A cytokine produced by macrophages that stimulates the production of gamma interferon and other chemical mediators that enhance cell-mediated immune responses. It is similar in structure to IL-1.

**interlobitis** (in'tēr-lō-bī'tis) [l' + " + Gr. *itis*, inflammation] Inflammation of the pleura separating the pulmonary lobes.

**intermamillary** (in'tēr-mām'i-lār'ē) [l' + *mamma*, nipple] Between the nipples of the breasts.

**intermammary** (in'tēr-mām'ā-rē) [l' + *mamma*, breast] Between the breasts.

**intermaxillary** (in'tēr-māk'sī-lēr'ē) [l' + *maxilla*, jawbone] **1.** Between the two maxillae, as in an intermaxillary suture. **2.** Formerly meaning between the two jaws.

**intermediary** (in'tēr-mē'dē-ār-ē) [l' + *medius*, middle] **1.** Situated between two bodies. **2.** Occurring between two periods of time.

**intermediate** (in'tēr-mē'dē-īt) [l' + *medius*, middle] Between two extremes; sequentially, after the beginning and before the end.

**intermediate allele** Premutation.

**intermediate reaction** The production of a compound during the synthesis of another compound. The first compound is ultimately converted to the final product.

**intermedin** (in'tēr-mē'din) Melanocyte-stimulating hormone.

**intermediolateral** (in'tēr-mē'dē-ō-lāt'ēr-āl) [l' + " + *latus*, side] Intermediate but not central.

**intermedius** (in'tēr-mē'dē-ūs) [l' + *medius*, middle] The middle of three structures.

**intermembranous** (in'tēr-mēm'brā-nūs)

[" + *membrana*, membrane] Between membranes.

**intermenstrual** (in'tēr-mĕn'stroo-ăl) [" + Gr. *men*, month] Between the menses or menstrual periods.

**intermetacarpal** (in'tēr-mĕt'ă-kăr'păl) [" + Gr. *meta*, beyond, + *karpos*, wrist] Between any two contiguous metacarpals.

**intermetatarsal** (in'tēr-mĕt'ă-tăr'săl) Between any two contiguous metatarsals.

**intermission** [" + *mittere*, to send]

1. The interval between two paroxysms of a disease, e.g., the quiet period between two seizures or the comfortable period between two episodes of fever.

2. A temporary cessation of symptoms.

**intermittence** (in'tēr-mit'ĕns) [" + *mittere*, to send] 1. A condition marked by intermissions in the course of a disease or of a process. 2. A loss of one or more pulse beats.

**intermittent** (in'tēr-mit'ĕnt) Suspend-ing activity at intervals; coming and going.

**intermittent explosive disorder** A personality disorder marked by episodes of impulsive aggressiveness disproportionate to precipitating events. In contrast to amok, a culture-specific, one-time outburst, intermittent explosive disorder is a pattern of behavior. It may result in serious assaults or destruction of property.

In recent years the disorder has gained media attention, e.g., after several instances of aggressive, violent, or homicidal behavior by previously normal high school students resulted in the deaths of classmates, teachers, or family members. The disorder is more common in young men than in women. It is only diagnosable when other causes of violent behavior (e.g., conduct disorder, cognitive impairment, delirium, hallucinations) or other psychiatric illnesses have been excluded.

**intermittent positive-pressure breathing** SEE: under *breathing*.

**intern** (in'tĕrn) [L. *internus*, within] A physician or surgeon on a hospital staff, usually a recent graduate receiving a year of postgraduate training before being eligible to be licensed to practice medicine. SEE: *extern*.

**internal** [L. *internus*, within] Within the body; within or on the inside; enclosed; inward; the opposite of external.

**internal injury** SEE: under *injury*.

**internalization** (in-tĕr'năl-ĭ-ză'shŭn) Incorporation of the values and standards of family or community as one's own; acculturation

**internal medicine** SEE: under *medicine*.

**International Association for Dental Research** ABBR: IADR. An association founded in 1920 to provide research in dental science and application of re-

search to develop dental treatment and oral health.

**International Classification of Diseases** ABBR: ICD. A codification of diseases, injuries, causes of death, and procedures including operations and diagnostic and nonsurgical procedures. The ICD's principal use is to standardize reporting of illness, death, and procedures. The publication is essential to the compilation of statistical information about diseases in a format that allows international comparison of those data.

**International Classification of Functioning, Disability, and Health** ABBR: ICF. An international standard published by the World Health Organization to describe and measure health and disability. The ICF replaces the International Classification of Impairment, Disability, and Handicap. It specifies how people cope with health conditions and acknowledges the impact of environmental factors and body structure on levels of activity and social participation.

**International Classification of Nursing Practice** ABBR: ICNP. An international nursing vocabulary classification system standardizing nursing phenomena, nursing interventions, and nursing outcomes useful in both paper and electronic records.

**International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use** ABBR: ICH. A global effort of pharmaceutical regulatory agencies in Asia, Europe, and the United States to standardize and streamline the approval of new drugs for use in human patients.

**International Federation of Gynecology and Obstetrics** ABBR: FIGO. A multinational organization that promotes the profession of obstetrics and gynecology and a wide variety of women's health issues.

**international normalized ratio** ABBR: INR. The standard measurement of oral anticoagulation, introduced by the World Health Organization (WHO) in 1983 to replace the prothrombin time (PT). When a patient's blood is tested to determine its level of anticoagulation, the sample is treated with a thromboplastin, a laboratory reagent that may vary considerably depending on its chemical constituents. As a result, a single sample of blood tested in several different laboratories may give different PT results. To resolve the potential difficulties that this may create for patients who need to achieve a stable level of anticoagulation, the WHO has created the INR to be a rating scale for thromboplastins used around the world

that standardizes the PT result. SEE: *International Sensitivity Index*.

**PATIENT CARE:** The INR is used in managing oral anticoagulant (warfarin) therapy. SEE: table.

### Desirable Levels of Anticoagulation in Terms of INR

Disease or Condition	Optimal Anticoagulant Range (INR)
Deep venous thrombosis	2.0 – 3.0
Pulmonary embolism	2.0 – 3.0
Stroke prevention in atrial fibrillation	2.0 – 3.0
Prevention of clots in patients with mechanical heart valves	2.5 – 3.5
Hypercoagulable states	Variable, but often 3.0 or higher

### International Nursing Minimum Data Set

**ABBR:** i-NMDS. An international project under the auspices of the International Council of Nurses and the International Medical Informatics Association Nursing Informatics Special Interest Group to develop international standards. The project builds upon and supports data set work already done in individual countries as well as the work of the International Classification of Nursing Practice (ICNP).

**International Psychogeriatric Association** **ABBR:** IPA. An organization of health care professionals and scientists with an interest in the behavioral and biological aspects of mental health in the elderly.

**International Sensitivity Index** **ABBR:**

ISI. A laboratory standard for thromboplastins, the reagents used to determine the prothrombin time (PT). Because thromboplastin contents vary, PT results performed on the same sample of blood in different laboratories can be markedly different, even though the patient's actual level of anticoagulation is a constant. The ISI is used to calculate the international normalized ratio, a standardized measure of anticoagulation, thus enabling health care professionals working with different laboratories to compare results and adjust anticoagulant doses according to a single set of guidelines.

**International Symbol of Access** A symbol used to identify buildings and facilities that are barrier-free and therefore accessible to disabled persons with restricted mobility, including wheelchair users. **SEE:** *illus*.



### INTERNATIONAL SYMBOL OF ACCESS

**International System of Units** **ABBR:** SI.

An internationally standardized system of units. The basic quantity measured and the names of the units are meter (length), kilogram (mass), second (time), ampere (electric current), kelvin (temperature), candela (luminous intensity), and mole (amount of a substance). All other units of measurement are derived from these seven basic units. SEE: SI Units Appendix.

**International Union of Pure and Applied Chemistry** **ABBR:** IUPAC. An organization composed of experts from many countries whose charter is to standardize aspects of the basic science of chemistry, including nomenclature, structural formulae, and so forth.

**international unit** **ABBR:** I.U. An internationally accepted amount of a substance. Usually this form of expressing quantity is used for fat-soluble vitamins and some hormones, enzymes, and biologicals such as vaccines. These units are defined by the International Conference for Unification of Formulae.



The abbreviation "I.U." should not be used in the medical record. It is easily mistaken for other symbols or abbreviations; e.g., for the abbreviation for intravenous, "IV"

**interneuron** (in'tēr-nū'rōn) [L. *inter*, between, + Gr. *neuron*, nerve] A neuron within the central nervous system (not directly connected to the periphery) that is neither sensory nor motor. There are two principal types: (a) those that convey information over short distances and are called local interneurons, interneuronal neurons, local circuit neurons, or Golgi type II neurons, and (b) those that convey information from region to region and are called relay, principal, projection, or Golgi type I neurons.

**internist** (in'tēr'nīst) A physician who specializes in internal medicine.

**internode** (in'tēr-nōd) [I + *nodus*, knot] The space between adjacent nodes.

**internship** (in'tēr'n-shīp) The period an intern spends in training, usually in a hospital.

**interocclusal** (in'tēr-ō-kloo'zāl) [L. *inter*,



between, + *occlusio*, a shutting up] Between the occlusal surfaces or cusps of opposing teeth of the maxillary and mandibular arches. SEE: *interdental*; *interproximal*.

**interceptive** (in"tēr-ō-sēp'tiv) [L. *inter-nus*, within, + *capere*, to take] In nerve physiology, concerned with sensations arising within the body itself, as distinguished from those arising outside the body.

**interceptor** Sensory receptor. SEE: *under receptor*.

**interoinferior** (in"tēr-ō-īn-fē'rē-or) [" + *inferus*, below] Pert. to an inward and downward position.

**interoperability** (in"tēr-ōp'ēr-ū-bīl'ī-tē) [" + "] The ability of different software programs, e.g., the ones that drive electronic medical records, to share information with each other.

**interorbital** (in"tēr-or'bit-āl) [" + *orbita*, orbit] Between the orbits.

**interosseous** (in"tēr-ōs'ē-ūs) [" + *os*, bone] Situated or occurring between bones, as muscles, ligaments, or vessels; specific muscles of the hands and feet.

**interpalpebral** (in"tēr-pāl'pē-brāl) [" + *palpebra*, eyelid] Between the eyelids.

**interparoxysmal** (in"tēr-pār'ōk-sīz'māl) [" + Gr. *paroxysmos*, spasm] Between paroxysms.

**interpeduncular** (in"tēr-pē-dūnk'ū-lār) [L. *inter*, between, + *pedunculus*, peduncle] Between peduncles.

**interpersonal** (in"tēr-pēr'sōn-āl) Concerning the relations and interactions between persons.

**interpersonal therapy** A form of brief psychotherapy (typically lasting 20 sessions or less) in which patients explore the stresses of interpersonal relationships and how those stresses impact their attitudes and coping abilities.

**interphalangeal** (in"tēr-fā-lān'jē-āl) [" + Gr. *phalanx*, closely knit row] In a joint between two phalanges.

**interphase** (in'tēr-fāz") **1.** The stage of a cell between mitotic divisions during which DNA replication takes place. **2.** The area or zone where two phases of a substance, such as a gas and a liquid, contact each other.

**interphase cell death** The death of a cell before its next mitosis.

**interpolation** (in-tēr-pō-lā'shūn) **1.** In surgery, the transfer of tissues from one site to another. **2.** In statistics, the estimation of an intermediate value from observed data that are larger and smaller.

**interposed** (in'tēr-pōzd) Inserted between.

**interpregnancy interval** The time between the birth of one child and the conception of the next.

**interpretation** (in-tūr'prī-tā'shūn) **1.** In psychotherapy, the analysis of the meaning of what the patient says or

does. It is explained to the patient to help provide insight. **2.** In dentistry or radiology, the analysis of a diagnostic radiograph and the integration of the findings with the case history and the laboratory and clinical evidence.

**interproximal** (in"tēr-prōk'sī-māl) [" + *proximus*, next] Between two adjoining surfaces. SEE: *interdental*.

**interpubic** (in-tēr-pū'bik) [" + *pubes*, pubes] Between the pubic bones.

**interradicular** (in"tēr-rā-dīk'ū-lār) Between the roots of teeth; the furcation area.

**interrater reliability, interobserver reliability** Consistency in the scoring of research data results by two or more data analysts. Many health care investigators analyze data that are graduated rather than binary. In an analysis of anxiety, for example, a graduated scale may rate research subjects as "very anxious," "somewhat anxious," "mildly anxious," or "not at all anxious," whereas a binary method of rating anxiety might include just the two categories "anxious" and "not anxious." If the study is carried out and coded by more than one psychologist, the coders may not agree on the implementation of the graduated scale; some may interview a patient and find him or her "somewhat" anxious, while another might assess the patient as being "very anxious." The congruence in the application of the rating scale by more than one psychologist constitutes its interrater reliability.

**interrogatory** (in"tēr-rōg'ā-tor'ē) In law, a written question sent by one party to another requesting information about issues and witnesses surrounding the allegations in a lawsuit.

**interscapular** (in"tēr-skāp'ū-lār) Between the shoulders or scapulae.

**intersection** (in'tēr-sēk'shūn) The site where one structure crosses another or joins a similar structure.

**intersectoral collaboration** (in-tēr-sēk'tēr-īl) [" + *sector*] Cooperation among different social groups that enables them to solve common problems, e.g., a public health crisis.

**intersegmental** (in"tēr-sēg-mēn'tāl) [" + *segmentum*, a portion] Between segments.

**intersex** (in'tēr-sēks) Hermaphroditism. **female i.** A genetic female with external sexual characteristics of both sexes.

**male i.** A genetic male with external sexual characteristics of both sexes.

**true i.** An individual whose genetic sex may be either male or female and whose sexual characteristics are of both sexes.

**intersexuality** (in"tēr-sēks'ū-āl'ī-tē) The varying expression of male and female physical and sexual characteristics in the same individual. SEE: *intersex*.

**interspace** (in'tēr-spās) The space between two similar parts, as between two ribs.

**interspinal** (in-tēr-spī'nāl) [ʹ + *spinalis*, pert. to the spine] Between two spinous processes of the vertebral column.

**interspinous** (in'tēr-spī'nūs) [ʹ + ʹ] Between the spines.

**interstice** (in-tēr'stis) [L. *interstitium*] The space or gap in a tissue or structure of an organ. SYN: *interstitium*.

**interstitial** (in'tēr-stish'āl) **1.** Placed or lying between. **2.** Pert. to interstices or spaces within an organ or tissue.

**i. lung disorders** ABBR: ILD. A large group of diseases with different causes but with the same or similar clinical and pathological changes. These are due to chronic, nonmalignant, noninfectious diseases of the lower respiratory tract characterized by inflammation and disruption of the walls of the alveoli. This manifests clinically as a limitation in the ability of the lungs to transfer oxygen from the alveoli to the pulmonary capillary bed. Patients with these disorders are dyspneic first in connection with exercise and, later, as the disease progresses, even at rest.

Approximately 180 different types of ILD exist, many of which are poorly understood. Known causes include inhalation of irritating or toxic environmental agents such as organic dusts, fumes, vapors, aerosols, and inorganic dusts; drugs; radiation; aspiration pneumonia; and the consequences of acute respiratory distress syndrome. SEE: *idiopathic pulmonary fibrosis*.

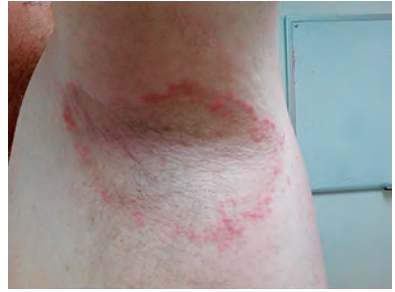
**interstitial needle brachytherapy** ABBR: INB. A form of brachytherapy in which small pellets, needles, or catheters containing radioactive material are inserted into the tissues surrounding a cancer surgery in an attempt to destroy any malignant cells left behind postoperatively. The radioactive agent typically used in breast cancer treatment is iridium-192. Cesium-131 is used to treat prostate cancers. Radium or cesium implants may be used to treat cervical cancers.

**interstitium** (in'tēr-stish'ē-ūm) [L.] Interstice.

**intertrigo** (in'tēr-trī'gō) [ʹ + *terere*, to rub] Skin chafing that occurs in or under folds of skin. The irritation and trapped moisture often result in secondary bacterial or fungal infection. SEE: *illu*.; *erythema intertrigo*. **intertriginous**, *adj.*

**intertrochanteric** (in'tēr-trō'kān-tēr'ik) [ʹ + Gr. *trochanter*, trochanter] Situated between the greater and lesser trochanters of the femur.

**interval** (in'tēr-vāl) [ʹ + *vallum*, a breastwork] **1.** A space or time between two objects or periods. **2.** A break in the course of disease or between paroxysms.



INTERTRIGO

**atriocarotid i.** In a venous pulse tracing, the interval between the onset of the presystolic wave (a) and that of the systolic wave (c). It indicates the time required for impulses to travel from the sinoatrial node to the ventricle, normally about 0.2 sec.

**atrioventricular (AV) i.** An interval between the beginning of atrial systole and ventricular systole, measured by an electrocardiogram, as the P-R interval.

**birth i.** The time elapsed between a full-term pregnancy and the termination or completion of the next pregnancy. SYN: *interpregnancy interval*.

**cardioarterial i.** The time between the apex beat and radial pulsation.

**confidence i.** ABBR: CI. The range of values within which it is expected (with a given probability) that the true value of a parameter will lie. SEE: *confidence level*.

**contraction i.** The period between uterine contractions. Relaxation of the uterine muscle replenishes the blood flow to the muscle and to the intervillous spaces of the placenta.

**focal i.** The distance between the anterior and posterior focal points of the eyes.

**interpregnancy i.** Birth interval.

**isometric i.** Presphygmic interval.

**lockout i.** In patient-controlled analgesia (PCA), the number of minutes a patient must wait between demanded doses of pain relievers. During the lockout interval no medications are delivered to the patient no matter how many times a dose is requested. Typical lockout intervals in PCA are between 5 and 15 min.

**lucid i.** A brief remission of symptoms (e.g. in psychosis, stroke, or traumatic brain injury).

**postmortem i.** The estimated number of hours, days, weeks, or months between the discovery of a cadaver and the time of death. Forensic scientists use a variety of techniques to make this determination, e.g., evidence of changes in body temperature, muscular rigidity, blood pooling, and body decomposition.

When examining bodies that have been dead for a long time, infestation by insects with known larval or pupal developmental stages provides valuable information.

**postsphygmie i.** The interval between closure of the semilunar valves and opening of atrioventricular valves.

**P-R i.** In the electrocardiogram, the period between the onset of the P wave and the beginning of the QRS complex.

**presphygmie i.** The brief period between the beginning of ventricular systole and opening of the semilunar valves. SYN: *isometric interval*.

**Q-R i.** In the electrocardiogram, the period between the onset of the QRS complex and the peak of the R wave.

**QRS i.** In the electrocardiogram, the interval that denotes depolarization of the ventricles, between the beginning of the Q wave and the end of the S wave. The normal interval is less than 0.12 sec.

**QRST i.** The ventricular complex of the electrocardiogram. SEE: *electrocardiogram* for illus.

**Q-Ti.** The representation on the electrocardiogram of ventricular depolarization and repolarization, beginning with the QRS complex and ending with the T wave.

**TP i.** The line drawn on an electrocardiogram that represents a period of electrical inactivity occurring after the end of the T wave and before the beginning of the P wave.

**intervention** (in'tēr-vēn'shūn) One or more actions taken in order to modify an effect.

**early i.** In rehabilitative medicine, a system of coordinated, community-based services for infants and toddlers from birth to 3 years of age who are at risk for developmental delay. Services are designed to identify, prevent, or remediate existing problems and enhance development through individual and family intervention strategies. SEE: *developmental delay*.

**life-sustaining i.** Any method, medicine, or device used to prolong life. Whether, when, and how to use life-sustaining treatments are difficult topics that require careful consideration by patients, their surrogates, and health care professionals. SEE: *advance directive*; *living will*.

**nursing i.** SEE: *nursing intervention*.

**interventional radiology** (in'tēr-vēn'shūn-āl) A radiological subspecialty that makes use of imaging technologies to assist and guide invasive procedures, (e.g., the collection of tissue specimens from internal organs, or the placement of catheters, drugs, radioactive materials, or stents within body structures).

**interventional ultrasound** (in'tēr-vēn'shūn-āl) The use of ultrasonography as a guide for local injections or for the placement of catheters, needles, or probes into body cavities or tumors. Interventional ultrasound is used, for example, to treat hepatocellular carcinoma, prostate cancer, and other solid tumors.

**intervertebral** (in'tēr-vért'è-brēl, -vért'è-brēl) [' + *vertebra*, joint] Between two adjacent vertebrae.

**interviewer bias** (in'tēr-vū'ēr) Distortion in a research investigation, introduced by the intentional or unrecognized behavior of the data collector, e.g., personal beliefs, cultural background, style of dress, use of language, or body language. The distortions may influence the person providing or interpreting the data.

**intestinal** (in-tēs'tīn-āl) [L. *intestinum*, intestine] Pert. to the intestines. SEE: *digestion*; *intestine*.

**i. obstruction** SEE: *under obstruction*.

**i. perforation** Perforation of stomach or intestine.

**intestinal spirochetosis, human intestinal spirochetosis** ABBR: IS. Colonization or invasion of the bowel epithelium by spirochetes, most often by species of *Brachyspira*. Colonization without invasion of the epithelium is not thought to cause symptoms such as abdominal cramping or diarrhea.

**intestinal tube** A flexible tube, usually made of plastic or rubber, placed in the intestinal tract to aspirate gas, fluid, or solids from the stomach or intestines or to administer fluids, electrolytes, or nutrients to the patient. The tube may be passed through the nose, mouth, or anus, or through an abdominal opening (e.g., jejunostomy).

**PATIENT CARE:** When a long, weighted intestinal tube is inserted, the caregiver must assist its advancement into the intestinal tract. The patient is usually placed on the right side for 30 min, then the left side for 30 min, and then on the back as the tube is slowly advanced. These position changes, as well as ambulation, will facilitate movement of the tube into the intestinal tract. These maneuvers may be performed under radiographic control.

Frequent oral hygiene and oral misting is needed to prevent oral ulceration because the patient usually will not be taking fluids by mouth. While the tube is in, the patient should be taught not to mouth breathe or swallow air. Air swallowing enhances entry of air into the gastrointestinal tract opposing intestinal drainage. SYN: *Cantor tube*.

**intestine** (in-tēs'tīn) [L. *intestinum*] The portion of the alimentary canal that

extends from the pylorus of the stomach to the anus. It includes the duodenum, jejunum, ileum (small intestine), and colon (large intestine) and is responsible for the completion of digestion and the absorption of nutrients and water. SYN: *bowel*; *gut* (1). SEE: *abdomen*.

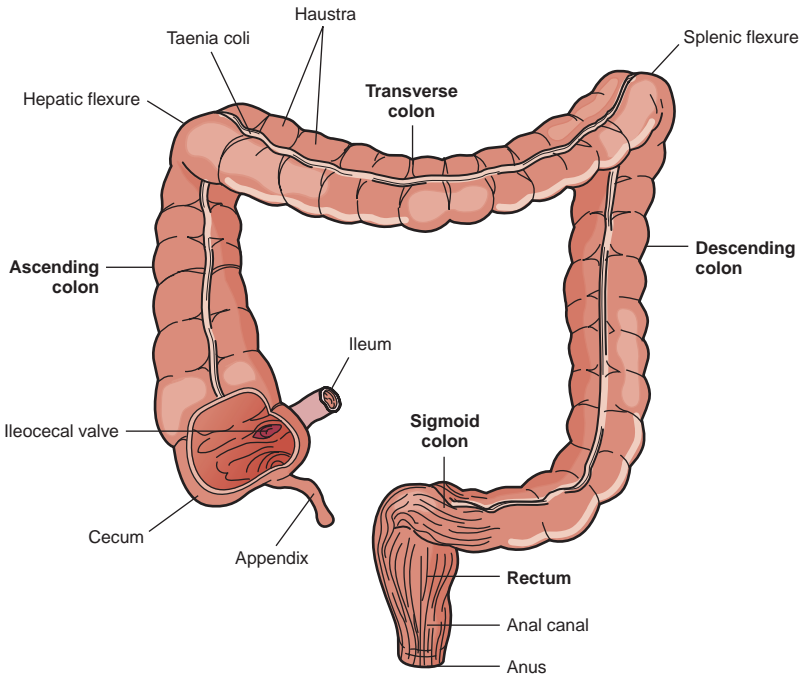
**large i.** The large intestine extends from the ileum to the anus and is about 1.5 m (5 ft) in length. It absorbs water, minerals, and vitamins from the intestinal contents and eliminates undigested material during defecation. The mucosa has no villi but contains glands that secrete mucus. Hyperactivity of the colon may cause diarrhea. SEE: *illus.*

The first part of the large intestine is the cecum, a pouch on the right side into which the ileum empties. Attached to the cecum is the vermiform appendix, about 7.5 to 10.4 cm (3 to 4 in) long. The ascending colon extends from the cecum upward to the undersurface of the liver, where it turns left (hepatic flexure) and becomes the transverse colon, which continues toward the spleen and turns downward (splenic flexure) to become the descending colon. At the level of the pelvic brim, the descending colon turns inward in the shape of the letter S and is then called the sigmoid colon. The rectum, about 10.2 to 12.7 cm (4 to 5 in) long, is the straight part that continues

downward; the last 2.5 cm (1 in) is called the anal canal, which surrounds the anus.

**small i.** The first part of the small intestine is the duodenum, approx. 8 to 11 in (20 to 28 cm) long, which receives chyme from the stomach through the pyloric orifice and, by way of the common bile duct, bile from the liver and gallbladder, and pancreatic juice from the pancreas. The second part is the jejunum, about 9 ft (2.8 m) long. The third part is the ileum, about 13 ft (4 m) long. The ileum opens into the cecum of the large intestine, and the ileocecal valve prevents backup of intestinal contents.

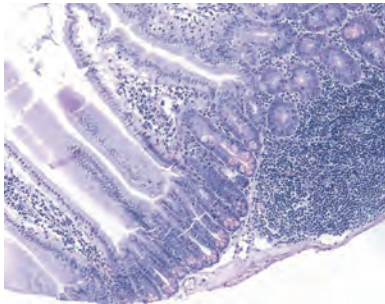
The wall of the small intestine has circular folds (plicae circulares), which are folds of the mucosa and submucosa that look like accordion pleats. The mucosa is further folded into villi, which look like small (0.5 to 1.5 mm long) projections. The free surfaces of the epithelial cells have microscopic folds called microvilli that are collectively called the brush border. All of the folds increase the surface area for absorption of the end products of digestion. Intestinal glands (of Lieberkühn) between the bases of the villi secrete enzymes. The duodenum has submucosal Brunner's glands that secrete mucus. Enzymes secreted by the small intestine are pepti-



LARGE INTESTINE

dases, which complete protein digestion, and sucrase, maltase, and lactase, which digest disaccharides to monosaccharides. Some of these enzymes function in the brush border rather than in the lumen of the intestine. Hormones secreted by the duodenum are gastric inhibitory peptide, secretin, and cholecystokinin; these influence secretions or motility of other parts of the digestive tract.

The end products of digestion (amino acids, monosaccharides, fatty acids, glycerol, vitamins, minerals, and water) are absorbed into the capillaries or lacteals within the villi. Blood from the small intestine passes through the liver by way of the portal vein before returning to the heart. **SEE: illus.; digestive system** for illus.; *duodenum*; *liver*; *pancreas*.



**SMALL INTESTINE**

Small bowel, with intestinal villi and Peyer's patch

**intima** (in'tī-mă) [L.] The innermost layer of the wall of an artery or vein. It consists of a continuous layer of endothelial cells. Normally these cells are a semipermeable barrier that regulates the entry of substances from the lumen into the wall of the vessel. Materials may cross this barrier by means of transport systems. The endothelial cells are very smooth, which prevents abnormal clotting; they secrete chemicals that are important for normal blood coagulation and for controlling relaxation and contraction of the smooth muscle tissue in the middle layer of the vessel. As the normal artery ages, the intima thickens due to an increase in lipid material.

**intimacy** 1. A close familial, personal, or emotional relationship with another person. 2. Sexual relations.

**intimal** (in'tī-māl) Pert. to the inner layer of a blood vessel, the intima.

**intima-media thickness** ABBR: IMT. The depth in millimeters of the two inner layers of an arterial wall. IMT is a marker of generalized atherosclerosis.

It increases with age, cholesterol intake, smoking, body mass index, and other established risk factors for cardiovascular disease. IMT is measured ultrasonographically, typically in the carotid arteries.

**intimitis** (in'tī-mī'tīs) [L. *intima*, innermost, + Gr. *itis*, inflammation] Inflammation of an intima.

**into-bed time** In sleep medicine, the hour when a person lies down for his or her major sleep time of the day as opposed to sleep for other purposes.

**intolerance** [L. *in-*, not, + *tolerare*, to bear] An inability to endure, or an incapacity for bearing, pain or the effects of a drug or other substance.

**intorsion** (in-tor'shūn) [L. *in*, toward, + *torsio*, twisting] Rotation of the eye inward toward the nose on the antero-posterior axis of the eye. In this condition, twelve o'clock on the corneal margin would be closer to the nose than normal.

**intoxicant** (in-tōks'i-kānt) An agent that produces intoxication.

**intoxication** (in-tōk'sī-kā'shūn) [L. *in*, in, + Gr. *toxikon*, poison] 1. Poisoning by a drug or toxic substance. 2. Impaired cognitively by alcoholic beverages. Colloquially: drunk.

The determination of alcohol content of the blood (i.e., ethyl alcohol or the alcohol present in commercial beverages such as beer, wine, and whiskey) is sometimes of value in the diagnosis of alcohol intoxication, esp. in differentiating it from other disorders. Normally the alcohol content of body tissues and fluids is negligible. Upon ingestion, alcohols are absorbed slowly or quickly, depending upon the amount swallowed, presence of food in the stomach, the drinker's gender (women become inebriated more easily with the same amount of alcohol consumption as men), and rate of gastric emptying. The amount of alcohol found in each milliliter of blood also depends on body size.

The amount of alcohol present in the blood does not provide valid information about the degree of intoxication because of the ability of the central nervous system, liver, and other organs to adapt to alcohol. **SEE: alcoholism.** **SYN: inebriation.**

**ammonia i.** Ammonia toxicity.

**caffeine i.** The reaction that follows the ingestion of excessive caffeine, usually more than 250 mg. At least five of the following side effects are experienced: restlessness, nervousness, excitement, insomnia, flushed face, gastrointestinal disturbance, muscle twitching, diuresis, rambling flow of thought and speech, tachycardia or arrhythmia, and psychomotor agitation. Other physical or mental disorders such

as anxiety disorder must be ruled out. SYN: *caffeinism*.

**water i.** Excess intake or undue retention of water, with symptomatic hyponatremia or hypo-osmolality or both. SEE: *brain edema*; *hyponatremia*.

**SYMPTOMS:** Abdominal cramps, nausea, vomiting, dizziness, lethargy, or edema may be present. Severe water intoxication may produce convulsions or coma.

**ETIOLOGY:** Causes include compulsive water drinking (e.g., in psychogenic polydipsia), massive administration of hypotonic solutions, excesses of antidiuretic hormone, or replacement of fluids and solutes lost by perspiration or vomiting with pure water.

**intra-** [L.] Prefix meaning *within*.

**intra-abdominal** (in'tră-ăb-dôm'i-năl) [L. *intra*, within, + *abdomen*, belly] Within the abdomen.

**intra-abdominal hypertension** ABBR: IAH. An increase in measured abdominal pressures, from a normal of 0 mm Hg to levels between 15 and 20 mm Hg. It may occur in patients with multiple traumatic injuries to the abdomen or with intraperitoneal diseases, e.g., severe pancreatitis. It is associated with the development of abdominal compartment syndrome, shock, and multiple organ failure.

**intra-aortic balloon pump** Intra-aortic balloon counterpulsation.

**intra-arterial** (in'tră-ăr-tē-rē-ăl) [L. + Gr. *arteria*, artery] Within the artery(ies).

**intra-articular** (in'tră-ăr-tik'ū-lăr) [L. + *articulus*, little joint] Within a joint.

**intra-atrial** (in'tră-ă-trē-ăl) [L. + Gr. *atrium*, hall] Within one or both atria of the heart.

**intra-bronchial** (in'tră-brông'kē-ăl) [L. + Gr. *bronchos*, windpipe] Within a bronchus.

**intracapsular** (in'tră-kăp'sū-lăr) [L. + *capsula*, little box] Within a capsule.

**i. extraction** The basic surgical technique for cataract removal, in which the nucleus, cortex, and capsule are removed as one unit. SEE: *cataract*.

**intracardiac** (in'tră-kăr'dē-ăk) Within the heart.

**intra-carpal** (in'tră-kăr'păl) [L. + Gr. *karpalis*, pert. to the carpus] Within the wrist.

**intra-cartilaginous** (in'tră-kăr'ti-lăj'in-ūs) [L. + *cartilago*, gristle] Within a cartilage or cartilaginous tissue.

**intracellular** (in'tră-sěl'ū-lăr) [L. + *cellula*, cell] Within the cell.

**intracerebellar** (in'tră-sēr'ē-běl'ăr) [L. + *cerebellum*, little brain] Within the cerebellum of the brain.

**intracerebral** (in'tră-sēr'ē-brăl) [L. + *cerebrum*, brain] Within the main portion of the brain, the cerebrum.

**intracervical** (in'tră-sēr'vī-kăl) [L. + *cervicalis*, pert. to the neck] Within the neck of the uterus.

**intracoronary** (in-tră-kōr'ō-nă-rē) Within the coronary arteries.

**intracorporeal** (in'tră-kōr-pōr'ē-ăl) Within the body.

**intracranial** (in'tră-kră'nē-ăl) [L. + Gr. *kranion*, skull] Within the cranium or skull.

**intracranial adaptive capacity, decreased** A clinical state in which intracranial fluid dynamic mechanisms that normally compensate for increases in intracranial volumes are compromised, resulting in repeated disproportionate increases in intracranial pressure in response to a variety of noxious and non-noxious stimuli. SEE: *Nursing Diagnoses Appendix*.

**intracranial compliance monitoring** Assessment of the ability of the brain to respond to injuries, swelling, or bleeding. Intracranial compliance monitoring is used in the management of critically ill patients, esp. those who have suffered severe brain injury or intracranial bleeding. Unlike intracranial pressure monitoring, it is performed noninvasively (usually with an ultrasound probe) without creating a hole in the skull or inserting a sensor directly into the cerebrospinal fluid.

**intracranial pressure monitoring** Assessment of the pressure of the cerebrospinal fluid in the head with a sensor inserted through the skull. Intracranial pressure monitoring is used in the management of critically ill patients, esp. those who have suffered severe brain injury or intracranial bleeding. In healthy people intracranial pressures range between 0 and 10 mm Hg. Pressures higher than 20 mm Hg increase the risk of compression or herniation of the brain or brainstem.

**intractable** (in-trăk'tă-b'l) Incurable or resistant to therapy.

**intracutaneous** (in'tră-kū-tă-nē-ūs) [L. + *cutis*, skin] Within the skin. SEE: *intra-dermal*.

**intracutaneous reaction** A reaction following the injection of a substance into the skin. SYN: *intra-dermal reaction*. SEE: *skin test*.

**intracutaneous test** A test done by injecting an antigen into the skin and observing the response. SEE: *skin test*.

**intracystic** (in'tră-sīs'tik) [L. + Gr. *kystis*, bladder] Within a bladder or cyst.

**intra-dermal** (in'tră-dēr'măl) [L. + Gr. *derma*, skin] ABBR: ID. Intracutaneous or, more specifically, within the dermis.

**intra-dermal reaction** Intracutaneous reaction.

**intradiscal electrothermal therapy, in-**

- tradiskal electrothermal therapy** (in"tră-disk'ăl) ABBR: IDET. A treatment for low back pain without sciatica that involves inserting a needle into the posterior annulus of a painful intravertebral disc and heating it to 90°C.
- intradural** (in-tră-dū'răl) [" + *durus*, hard] Within or enclosed by the dura mater.
- intraepidermal** (in"tră-ēp'i-dēr'mäl) [L. *intra*, within, + Gr. *epi*, upon, + *derma*, skin] Within the epidermis.
- intraepithelial** (in"tră-ēp'i-thē'lē-äl) [" + " + *thele*, nipple] Within the epithelium or located between its cells.
- intrafebrile** (in"tră-fē'bril) [" + *febris*, fever] During the febrile stage. SYN: *intrapretic*.
- intrafilar** (in-tră-fi'lär) [" + *filum*, thread] Within a network or reticulum.
- intragyrar** (in"tră-jī'räl) [" + Gr. *gyros*, circle] Within a gyrus of the brain.
- intrahepatic** (in"tră-hē-pät'ik) [" + Gr. *hepatikos*, pert. to the liver] Within the liver.
- intrahepatic cholestasis of pregnancy** (in"tră-hē-pät'ik) ABBR: ICP. A complication of roughly 1% of pregnancies in which elevated levels of pregnancy hormones cause obstruction to bile flow within the liver. Levels of bilirubin rise in the maternal circulation during the second and third trimesters of pregnancy, causing itching, bile staining of urine, and a lighter stool color than normal. ICP increases the risk of preterm delivery of the fetus and of bleeding disorders and loss of life of the fetus.
- intralesional** (in"tră-lē'zhūn-äl) [" + *laesio*, a wound] Within a lesion.
- intraligamentary** (in"tră-lig'ä-mēn't-ä-rē) [" + *ligamentum*, a binding] Within the folds of a ligament; usually used in referring to fibroid tumors or cysts of the ovary that have grown within the broad ligament.
- intraocular** (in"tră-lök'ū-lär) [" + *oculus*, a cavity] Within the cavity of any structure.
- intraluminal** (in"tră-lū'mī-näl) [" + *lumen*, light] Intratubal.
- intramastoiditis** (in"tră-mäs'töyd-i'tis) [" + Gr. *mastos*, breast, + *eidōs*, form, shape, + *itis*, inflammation] An inflammation of the antrum and mastoid process. SYN: *endomastoiditis*.
- intramedullary** (in"tră-mēd'ū-lär'ē) [" + *medullaris*, marrow] **1.** Within the medulla oblongata of the brain. **2.** Within the spinal cord. **3.** Within the marrow cavity of a bone.
- intramural** (in"tră-mūr'äl) [" + *murus*, a wall] Within the walls of a hollow organ or cavity. SYN: *intraparietal* (2).
- intramuscular** (in"tră-mūs'kū-lär) [" + *musculus*, a muscle] ABBR: IM. Within a muscle.
- intranasal** (in"tră-nā'zl) [" + *nasus*, nose] Within the nasal cavity.
- intranatal** (in"tră-nā'täl) [" + *natalis*, birth] Occurring during birth.
- intranet** (in"tră-nēt") A network of computers exclusive to an enterprise that uses the World Wide Web and other Internet technologies to share company information and computing resources among employees.
- intraocular** (in"tră-ök'ū-lēr) [" + *oculus*, eye] Within the eyeball.
- intraoperative** (in"tră-öp'er-ä'tiv) [L. *intra*, within, + *operativus*, working] ABBR: IO. Occurring during surgery.
- intraoperative quick assay of intact parathyroid hormone** ABBR: IOQPTH. A laboratory test to check for decrease in parathyroid hormone levels of more than 50% within 10 min of resection of a parathyroid adenoma. The test is used to confirm that a presumptive parathyroid tumor removed surgically is the cause of a patient's hyperparathyroidism.
- intraoral** (in"tră-or'äl) [" + *oralis*, pert. to the mouth] Within the mouth.
- intraorbital** (in"tră-or'bit-äl) [" + *orbita*, mark of a wheel] Within the orbit.
- intraosseous** (in"tră-ös'ē-üs) [" + *os*, bone] Within the bone matrix.
- intraosseous infusion** SEE: under *infusion*.
- intraosseous injector** A device that inserts a needle into the bone marrow. It is used in emergency resuscitation to gain access to the central circulation of a patient with severely low blood pressure caused by cardiogenic arrest, cardiogenic shock, diarrhea, hemorrhage, sepsis, or vomiting.
- intraovarian** (in"tră-ō-vā-rē-än) [" + *ovarium*, ovary] Within the ovary.
- intraparietal** (in"tră-pä-rī'ē-täl) [" + *paries*, wall] **1.** Within the parietal lobe of the cerebrum. **2.** Intramural.
- intrapartal** (in"tră-pär'täl) The period from the onset of labor to its termination, marked by delivery of the placenta.
- intrapartum** (in"tră-pär'tüm) [" + *partus*, birth] Happening during childbirth.
- intrapelvic** (in"tră-pēl'vik) [" + *pelvis*, basin] Within the pelvis.
- intrapertitoneal** (in"tră-pēr'i-tō-nē'äl) [" + Gr. *peritonaion*, peritoneum] Within the peritoneal cavity.
- intraplacentar** (in"tră-plä-sēn'täl) [" + *placenta*, a flat cake] Within the placenta.
- intrapleural** (in"tră-ploo'räl) [" + Gr. *pleura*, rib] Within the pleural cavity.
- intrapsychic, intrapsychical** (in"tră-sī'kik, -kī-käl) [" + Gr. *psyche*, mind] Having a mental origin or basis, such as conflicts and complexes.
- intrarenal** (in"tră-rē'näl) [" + *renalis*, pert. to the kidney] Within the kidney.
- intraretinal microvascular abnormalities**

ABBR: IRMA. Retinal vascular changes, including dilated tortuous retinal capillaries, dot and blot hemorrhages, microaneurysms, and capillary loss seen in diabetic retinopathy.

**intraspinal** (in'tră-spi'näl) [L. *intra*, within, + *spina*, thorn] **1.** Ensheathed; within a sheath. **2.** Within the spinal canal.

**intrathecal** (in'tră-thē'käl) [ʹ + Gr. *theke*, sheath] **1.** Within the spinal canal. **2.** Within a sheath.

**intrathoracic** (in'tră-thō-rās'ik) [ʹ + Gr. *thorax*, chest] Within the thorax.

**intratracheal** (in'tră-trāk'ē-äl) [ʹ + Gr. *tracheia*, trachea] Introduced into, or inside, the trachea.

**intratubal** (in'tră-tū'bäl) [ʹ + *tubus*, hollow tube] Within a tube, esp. the fallopian tube. SYN: *intraluminal*.

**intratumoral** (in'tră-tū'mēr-il) Within or into a tumor.

**intratympanic** (in'tră-tim-pän'ik) [ʹ + Gr. *tympanon*, drum] Within the tympanic cavity.

**intrauterine** (in'tră-ū'tēr-in) [ʹ + *uterus*, womb] Within the uterus.

**i. growth retardation** ABBR: IUGR.

A decreased rate of fetal growth; most commonly related to inadequate placental perfusion resulting from pre-existing or coexisting maternal or placental factors. The infant's birth weight is below the 10th percentile on the intrauterine growth curve for the calculated gestation period. Although about 50% of cases of IUGR cannot be linked to any particular cause, certain characteristics are associated with increased fetal jeopardy:

1. *Demographic factors:* Maternal age under 16 or over 40; primiparity or grand multiparity; low socioeconomic status; low weight gain; poor nutrition; and inadequate prenatal care

2. *Maternal medical disorders:* Common pre-existing and coexisting health problems, including cyanotic heart disease, chronic or pregnancy-related hypertensive disease, advanced diabetes mellitus, hemoglobinopathies, substance abuse, and asymptomatic pyelonephritis

3. *Placental factors:* Placenta previa; small placenta; abnormal site of cord insertion; large or multiple infarcts; or thrombosis

4. *Fetal factors:* Congenital infections such as rubella, cytomegalovirus, or toxoplasmosis, particularly when occurring during an early stage of fetal development; chromosomal abnormalities and fetal anomalies; and multiple gestation (i.e., two or more fetuses).

**SYMPTOMS:** The first prenatal sign of abnormal fetal growth usually is noted during the second trimester, when the increase in fundal height is

found to be less than expected for the number of weeks' gestation. Ultrasonography enables comparisons of measurements of the fetal head circumference, biparietal diameter, abdominal circumference, and femur length and the expected norms for the estimated gestational week. IUGR newborns evidence birth weights at or below the 10th percentile on the intrauterine growth curve for an equal number of weeks' gestation. SEE: *gestational age assessment*.

**TYPES:** *Asymmetric.* There may be a disproportional reduction in size of structures. For example, the biparietal diameter may be within normal limits for gestational age, while the abdominal circumference is less than expected. *Asymmetry* usually reflects episodic interference with uteroplacental circulation accompanying such events as placental infarction and pre-eclampsia. During the neonatal period, these infants are at high risk for asphyxia, aspiration syndrome, hypocalcemia, polycythemia, and pulmonary hemorrhage. *Symmetric.* A generalized proportional reduction in the size of all structures and organs, other than the brain and heart, reflects diminished cell numbers related to persistent, chronic nutritional deprivation, resulting from substance abuse, congenital anomalies, and early intrauterine infection. SEE: *cocaine baby; parabiosis*.

**PROGNOSIS:** Asymmetric IUGR infants usually exhibit normal weights within 3 to 6 months of birth. Symmetric IUGR infants exhibit an individual potential for growth; however, their growth usually does not equal that of their peers. Later, these children may exhibit learning disabilities associated with a lessened ability to concentrate and focus on tasks because of their hyperactivity and short attention spans, and they may become frustrated because of their poor fine motor coordination. SEE: *dysmaturity*.

**intravasation** (in'trăv'ă-ză'shün) [ʹ + *vas*, vessel] Passage into the blood vessels of matter formed outside of them through traumatic or pathological lesions.

**intravascular** (in'tră-väs'kü-lär) Within blood vessels.

**intravenous** (in'tră-vē'nūs) [ʹ + *vena*, vein] ABBR: IV. Within or into a vein.

**i. feeding** SEE: *feeding, intravenous*.

**i. infusion** SEE: *infusion, intravenous*.

**i. infusion pump** Infusion pump.

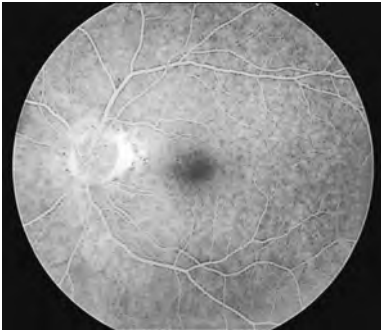
**i. injection** SEE: *injection, intravenous*.

**i. treatment** Intravenous injection or infusion.

**intravenous fluorescein angiography** ABBR: IVFA. The optimal diagnostic test to evaluate the vascular status of



the retina and choroid. Fluorescein dye is injected into an arm vein and sequential photographs are taken of the fundus as the dye circulates at different time intervals. **SEE:** *illus.*



**INTRAVENOUS FLUORESCIN ANGIOGRAM**

(Courtesy of Christine Chung, M.D.)

**intraventricular** (in'tră-vên-trîk'ū-lăr) [L. *intra*, within, + *ventriculus*, ventricle] Within a ventricle.

**intraventricular conduction delay** (in'tră-vên-trîk'ū-lăr) **ABBR:** IVCD. Abnormally slow conduction of electricity through the ventricular walls of the heart, resulting in a QRS complex on the electrocardiogram that lasts longer than 0.12 sec but less than 0.16 sec. IVCD is sometimes referred to as an incomplete bundle branch block.

**intravital** (in'tră-vî'tl) [ + *vita*, life] During life. **SYN:** *intra vitam*.

**intra vitam** (in'tră vî'tăm) [L.] Intravital.

**intrinsic** (in-trî'n'zîk) [L. *intrinsicus*, on the inside] **1.** Belonging to the essential nature of a thing. It is both essential and natural, not merely apparent or accidental. **SYN:** *inherent; innate*. **2.** In anatomy, structures belonging solely to a certain body part, as intrinsic nerves or muscles. **3.** Due to causes or elements within the body, an organ, or a part.

**intro-** [L.] Prefix meaning *in* or *into*.

**introducer** (in'trô-dūs'ēr) [L. *intro*, into, + *ducere*, to lead] Intubator.

**introflexion** (in'trô-flêk'shün) [ + *flexus*, bent] A bending inward.

**introitus** (in-trô'î-tūs) [L.] An opening or entrance into a space or cavity.

**i. vaginae** The exterior orifice of the vagina.

**introjection** (in'trô-jêk'shün) [ + *jacere*, to throw] In psychoanalysis, identification of the self with another person or with some object, internalizing the perspective of the other, unconsciously or uncritically.

**intromission** (in'trô-mîsh'ün) [ + *mittere*, to send] An insertion or placing of

one part into another, esp. insertion of the penis into the vagina.

**intromittent** (in-trô-mît'ént) Conveying or injecting into a cavity or body.

**intron** (in'trôn) The discrete space between the discrete coding regions (exons) of the DNA of the gene.

**introspection** (in'trô-spêk'shün) [ + *spicere*, to look] Looking within, esp. examination of one's own feelings and thoughts.

**introsusception** (in'trô-sū-sêp'shün) [ + *suscipere*, to receive] Intussusception.

**introversion** (in'trô-vêr'shün) [ + *versio*, a turning] **1.** Turning inside out of a part or organ. **2.** Preoccupation with oneself.

**introvert** (in'trô-vêrt) **1.** A personality-reaction type characterized by withdrawal from reality, fantasy formation, and stress on the subjective side of life adjustments, seen pathologically in extreme form in schizophrénia. **2.** To turn one's psychic energy inward upon oneself.

**intubate** (in'tū-bāt) [L. *in*, into, + *tuba*, a tube] To insert a tube in a part, such as the larynx.

**intubation** (in'tū-bā'shün) The insertion of a tube into any hollow organ. Intubation of the trachea provides an open airway and thus is an essential step in advanced life support. It also permits the instillation of certain critical care drugs, such as lidocaine, epinephrine, and atropine, which the lungs can absorb directly when other forms of internal access are unavailable. In the patient with no evidence of head or cervical spine trauma, using a head-tilt, chin-lift maneuver to place the patient in a "sniffing" position facilitates intubation of the trachea.

Intubation of other structures, such as the organs of the upper gastrointestinal tract, may permit enteral nutrition, the dilation of strictures, or the visualization of internal anatomy.

**endotracheal i.** The insertion of an endotracheal tube through the nose or mouth into the trachea to maintain the airway, to administer an anesthetic gas or oxygen, or to aspirate secretions.

**nasogastric i.** The insertion of a Levine or other gastrointestinal tube through the nose into the stomach. **SEE:** *gastric lavage; nasogastric tube*.

**nasotracheal i.** The insertion of an endotracheal tube through the nose and into the trachea. Unlike orotracheal intubation, the tube is passed "blindly" without using a laryngoscope to visualize the glottic opening. Because this technique may be used without hyperextension of the neck, it is used in patients suspected of having cervical spinal trauma or known to have oral lesions. **SEE:** *endotracheal i.*

**rapid sequence i.** ABBR: RSI. An airway control technique that uses powerful sedatives and paralytic drugs to quickly gain control of the airway, e.g., in life-threatening emergencies.

**intubation tube** Endotracheal tube.

**intubator** (in'tū-bāt'or) A device for controlling, directing, and placing an intubation tube within the trachea, blood vessel, or heart (as in Swan-Ganz catheter placement). SYN: *introducer*.

**intuition** (in'too-ish'in, tū-) **1.** Assumed knowledge; guesswork; a hunch. **2.** Non-rational cognition.

**intumescence** (in-tū-mēs') [L. *intumescere*] To enlarge or swell.

**intumescence** (in'tū-mēs'ēns) **1.** A swelling. **2.** The process of enlarging. SYN: *tumefaction*.

**intumescent** (in-tū-mēs'ēnt) Swelling or becoming enlarged.

**intussusception** (in'tū-sū-sēp'shūn) [L. *intus*, within, + *suscipere*, to receive] The slipping of one part of an intestine into another part just below it; becoming ensheathed. Although it is an infrequent cause of bowel obstruction in adults, it is the most common cause in infants and usually occurs in the ileocecal region of the bowel. In some instances, the process may be reduced by low pressure contrast enema; ultimately, surgery may be necessary if the process recurs. Prognosis is good if surgery is performed immediately, but mortality is high if this condition is left untreated more than 24 hr.

**PATIENT CARE:** An early version of a rotavirus vaccine was linked to an increased frequency of intussusception in infants. This vaccine is no longer available in the US. SYN: *indigitation*; *introsusception*; *invagination*. SEE: *ileus*.

**intussusceptum** (in'tū-sū-sēp'tūm) [L.] The inner segment of intestine that has been pushed into another segment.

**intussusciptens** (in'tū-sū-sēp'ē-ēns) [L.] The portion of intestine that receives the intussusceptum.

**Inuit** (in'ū-īt) [Eskimo people] People native to Arctic America.

**inulase** (in'ū-lās) An enzyme that converts inulin to levulose.

**inulin** (in'ū-līn) A polysaccharide found in plants that yields fructose when hydrolyzed. It is used to study renal function.

**unction** (in-ūngk'shūn) [L. *in*, into, + *ungere*, to anoint] An ointment or medicated substance rubbed into the skin to secure a local or a more general systemic effect.

**in utero** (in ū'tēr-ō) [L.] Within the uterus.

**in vacuo** (in vāk'ū-ō) [L.] Within a cavity or a space from which air has been exhausted.

**invaginate** (in-vāj'in-āt) [L. *invaginatio*] **1.** To ensheath. **2.** To insert one part of

a structure within a part of the same structure. **3.** In embryology, to grow in or from an ingrowth or inpocketing, esp. the ingrowth of the wall of the blastula, which results in the formation of the gastrula.

**invaginated** (in-vāj'i-nāt'ēd) Enclosed in a sheath; ensheathed.

**invagination** (in-vāj'i-nā'shūn) Intussusception.

**invalid** (in'vā-līd) [L. *in-*, not, + *validus*, strong] **1.** A former term for a person who is not well; weak. Use of the term is archaic. **2.** Based on false premises, reasonings, or justifications.

**invasion** [L. *in*, into, + *vadere*, to go] The penetration of body tissues by infectious organisms or malignant cells.

**invasive** (in-vā'siv) Tending to spread, esp. the tendency of a malignant process or growth to spread into healthy tissue.

**i. procedure** A procedure in which the body is penetrated or entered (e.g., by use of a tube, needle, device, or ionizing radiation).

**inventory** (in'vin-tōr'ē) Any list of items, esp. items to describe an individual's personality.

**invermiration** (in-vēr'mīn-ā'shūn) [" + *vermis*, worm] Infestation by intestinal worms.

**inversion** (in-vēr'zhūn) [L. *inversio*, to turn inward] **1.** The reversal of a normal relationship. **2.** A turning inside out of an organ (e.g., the uterus). **3.** In chemistry, the process of converting sucrose (which rotates the plane of polarized light to the right) into a mixture of dextrose and levulose (which rotates the plane to the left). The resulting mixture is called invert sugar, and the enzyme that catalyzes this conversion is called invertase. SEE: *enzyme*. **4.** Turning inward (e.g., medial distortion or injury of the ankle joint).

**T-wave i.** In electrocardiography, the changing of the normal upright (convex) appearance of the ventricular repolarization to a concave tracing in which the concavity is depressed below the isoelectric line. T-wave inversion is often associated with ventricular hypertrophy, ventricular ectopic beats, and coronary ischemia, among other conditions.

**uterine i.** A condition that may occur during the third stage of labor in which a relaxed uterus is turned inside out, causing the internal surface to protrude into the vagina. Uterine inversion most commonly is caused by traction on an umbilical cord attached to a yet-adherent placenta or to application of forceful fundal pressure to empty the uterus. It is accompanied by profound maternal blood loss if normal anatomical position is not restored immediately. Inversion also can occur during the fourth stage of labor if forceful fundal massage is ap-

plied to an uncontracted uterus without support of the lower uterine segment.

**invert** (in-vĕrt') **1.** To turn inside out or upside down. **2.** To bend the foot in at the ankle so that the sole is facing toward the inside of the leg.

**invertase** (in-vĕr'tās) Sucrase.

**invertibrate** (in-vĕr'tĕ-brāt) [L. *in-*, not, + *vertebratus*, vertebrate] **1.** Without a notochord. **2.** Species of animals that do not have a notochord, i.e., animals not of the phylum Chordata.

**invertin** (in-vĕr'tin) Sucrase.

**inverter** (in-vĕr'tor) A muscle that rotates a part inward.

**investigational** Undergoing active study in a clinical trial or another form of systematic research. The term is used to describe drugs, devices, vaccines, or other treatments that are currently being studied, but not yet approved for general clinical use.

**investing** [L. *in*, into, + *vestire*, to clothe] **1.** Ensheathing, encircling with a sheath or coating, as tissue; surrounding. **2.** In dentistry, the complete or partial covering of an object (e.g., a tooth, denture, wax form, or crown) with a suitable material before processing, soldering, or casting.

**investment** A covering or sheath.

**dental casting i.** A material combining principally a form of silica and a bonding agent. The bonding substance may be gypsum or silica phosphate according to the casting temperature.

**invertebrate** (in-vĕt'ĕ-rāt) [" + *vetus*, old] Chronic; firmly seated, as a disease or a habit.

**inviscation** (in'vis-kā'shūn) [L. *in*, among, + *viscum*, slime] The mixing of saliva with food during chewing.

**in vitro** (in vē'trō) [L., in glass] In glass, as in a test tube. An in vitro test is one done in the laboratory, usually involving isolated tissue, organ, or cell preparations. SEE: *in vivo*.

**in vivo** (in vē'vō) [L., in the living body] In the living body or organism. An in vivo test is one performed on a living organism. SEE: *in vitro*.

**involute**, **involutum** (in'vō-lū'kĕr, in'vō-lū'krūm) [" + *volvere*, to wrap] **1.** A sheath or covering. **2.** The covering of newly formed bone enveloping the sequestrum in infection of the bone.

**involuntary** (in-vōl'ūn-tĕr'ĕ) [L. *in-*, not, + *voluntas*, will] **1.** Independent of or contrary to volition. **2.** Occurring as a result of a reflex.

**involution** (in'vō-lū'shūn) [" + *volvere*, to roll] **1.** A turning or rolling inward. **2.** The reduction in size of the uterus after childbirth. **3.** The retrogressive change in vital processes after their functions have been fulfilled, such as the change that follows the menopause. **4.** A backward change. **5.** The diminishing of an organ in vital power or in size.

**6.** In bacteriology, digression from the usual morphological type such as occurs in certain bacteria, esp. when grown under unfavorable conditions; degeneration.

**i. of uterus** The return of the uterus to normal size after childbirth.

**senile i.** The atrophy of an organ as a result of the aging process.

**involutional** (in-vō-lū'shūn-āl) Concerning involution or a turning inward.

**IO** *Intraoperative.*

**iocetamic acid** A radiopaque agent formerly used in cholecystography.

**Iodamoeba** (ī'ō-dā-mĕ'bā) A genus of amoebae that colonizes the colons of humans and animals such as monkeys and pigs. They are not considered pathogenic.

**I. bütschlii** The species that may be found in humans. Their cysts may be mistaken for those of pathogenic amoebae but have only one nucleus.

**iodide** (ī'ō-dīd) A compound of iodine containing another radical or element, as potassium iodide.

**cesium i.** A phosphor used in radiographical image intensifiers that emits light when struck by radiation.

**iodinate** (ī'ū-dī-nāt") To combine with iodine.

**iodinated I 131 albumin injection** (ī'ā-dī-nāt'ĕd) A standardized preparation of albumin iodinated with the use of radioactive iodine, <sup>131</sup>I.

**iodine** (ī'ā-dīn", ī'ā-dĕn") [Gr. *ioeides*, violet colored] SYMB: I. A nonmetallic element belonging to the halogen group; atomic weight 126.904; atomic number 53; specific gravity (solid, 20°C) 4.93. It is a black crystalline substance with a melting point of 113.5°C; it boils at 184.4°C, giving off a characteristic violet vapor. Sources of iodine include vegetables, esp. those growing near the seacoast; iodized salt; and seafoods, esp. liver of halibut and cod, or fish liver oils.

**FUNCTION:** Iodine is part of the hormones triiodothyronine (T<sub>3</sub>) and thyroxine (T<sub>4</sub>), and prevents goiter by enabling the thyroid gland to function normally. The amount of iodine in the entire body averages 50 mg, of which 10 to 15 mg is found in the thyroid. The adult daily requirement for iodine is from 100 to 150 μg. Growing children, adolescents, pregnant women, and those under emotional strain need more than this amount of iodine.

**DEFICIENCY SYMPTOMS:** Iodine deficiency in the diet may lead to simple goiter characterized by thyroid enlargement and hypothyroidism. In young children, this deficiency may result in retardation of physical, sexual, and mental development, a condition called cretinism.

**protein-bound i.** Iodine that is attached to serum protein.

**radioactive i.** SYMB: <sup>131</sup>I. An isotope of iodine with an atomic weight of 131; used in diagnosis and treatment of thyroid disorders and in the treatment of toxic goiter and thyroid carcinoma.

**tincture of i.** SEE: under *tincture*.

**iodine poisoning** SEE: under *poisoning*.

**iodophilous** (ī'ō-dīn-ōf'ī-lūs) [Gr. *ioeides*, violet colored, + *philos*, love] Easily stained with iodine.

**iodipamide meglumine injection** A radiographic contrast medium combination of iodipamide and meglumine used to aid in x-ray examination of the gallbladder.

**iodipamide sodium I 131** Radioactive chemical used in examining body organs and cavities.

**iodize** (ī'ō-dīz) To administer or impregnate with iodine, most commonly as a fortification of salt.

**iododerma** (ī-ō'dō-dēr'mā) [I' + *derma*, skin] Dermatitis due to iodine.

**iodoform** (ī-ō'dō-form) [Gr. *ioeides*, violet colored, + *L. forma*, form] CHI<sub>3</sub>; a yellow crystalline substance with a disagreeable odor, produced by the action of iodine on acetone in the presence of an alkali. Used topically, it has mild antibacterial action.

**iodoglobulin** (ī'ō-dō-glōb'ū-līn) [I' + *L. globus*, globe] A globulin that contains iodine.

**iodohippurate sodium I 131 injection** (ī-ō'dō-hip'ū-rāt) A radioactive contrast medium used in testing renal function.

**iodophilia** (ī-ōd'ā-fīl'ē-ā) [I' + *philein*, to love] A condition in which certain cells, esp. polymorphonuclear leukocytes, when stained, show a pronounced affinity for iodine. These cells turn a brownish-red color. It is seen in pathologic conditions such as acute infections and anemia.

**extracellular i.** Iodophilia in which substances in the plasma outside the cells are colored.

**intracellular i.** Iodophilia in which color changes occur within the cells.

**iodophor** (ī-ō'dō-for) A combination of iodine and a solubilizing agent or carrier that liberates free iodine in solution. Some forms are used as general antiseptics; they are less irritating than elemental forms of iodine. SEE: *povidone-iodine*.

**iodopsin** (ī'ō-dōp'sīn) In cones of the retina, the photopsin molecule and retinal, the functional photopigment.

**iodotherapy** (ī'ō-dō-thēr'ā-pē) [Gr. *ioeides*, violet colored, + *therapeia*, treatment] The use of iodine medication, as in treating goiter due to iodine deficiency.

**IOML** *infraorbitomeatal line*.

**ion** (ī'ōn) [Gr. *ion*, going] An atom or group of atoms that has lost one or more

electrons and has a positive charge, or has gained one or more electrons and has a negative charge. In aqueous solutions, ions are called electrolytes because they permit the solution to conduct electricity. Positive ions such as sodium, potassium, magnesium, and calcium are called cations; negative ions such as chloride, bicarbonate, and sulfate are called anions. In body fluids, ions are available for reactions (e.g., calcium ions from food may be combined with carbonate ions to form calcium carbonate, part of bone matrix). SEE: *electrolyte* for table.

Ions occur in gases, esp. at low pressures, under the influence of strong electrical discharges, x-rays, and radium; and in solutions of acids, bases, and salts.

**dipolar i.** An ion that contains both positive and negative charges.

**hydrogen i.** A hydrogen atom that has lost an electron. It has a positive charge, and its symbol is H<sup>+</sup>.

**ion channel disease** A group of diseases marked clinically by muscular weakness, absent muscle tone, or episodic muscular paralysis. The diseases are caused by congenital defects in the cell membrane proteins that move ions into and out of the cell. These defects alter the cells' resting potential, action potential, or both, and make them "fire" ineffectively.

**ion-exchange resins** Synthetic organic substances of high molecular weight. They replace certain negative or positive ions that they encounter in solutions.

**ionic** (ī-ōn'īk) [Gr. *ion*, going] Pert. to ions.

**ionium** (ī-ō'nē-ūm) A natural radioactive isotope of thorium. It has a mass number of 230.

**ionization** (ī-ō-nī-zā'shūn) The process of adding or subtracting an electron from an atom. In radiology, ionization is the most common cause of radiobiological damage.

**ionize** (ī'ō-nīz") To separate into ions.

**ionogen** (ī-ōn'ō-jēn) [Gr. *ion*, going, + *gennan*, to produce] Anything that can be ionized.

**ionophore** (ī-ōn'ā-fawr") A compound that binds and carries metallic ions across cellular membranes.

**ionotherapy** (ī'ōn-ō-thēr'ā-pē) [I' + *therapeia*, treatment] Iontophoresis.

**ionotropic** (ī'ōn-ō-trō'pīk) [I' + ""] Having an influence on glutamate-gated cell surface receptors, i.e., on cell membrane channels that open or close in the presence of ions.

**iontophoresis** (ī-ōn'tō-fō-rē'sīs) [I' + *phorein*, to carry] 1. The introduction of an electric current into a salt solution, causing migration of the metal (positive) ion to the negative pole and the

radical (negative) ion to the positive pole. **2.** The introduction of various ions into tissues through the skin by means of electricity. SYN: *ionic medication; ionotherapy; iontotherapy*. SEE: *electrical patch*.

**iontotherapy** (ī-ōn'tō-thēr'ā-pē) [" + *therapeia*, treatment] Iontohoresis.

**IOP** *intraocular pressure*.

**ipanoic acid** A radiopaque contrast medium used in radiographic studies of the gallbladder.

**iophendylate** (ī'ō-fēn'dī-lāt) A radiopaque contrast medium used in myelography.

**IOQPTH** *intraoperative quick assay of intact parathyroid hormone*.

**iota** (ī-ō'tā-sizm) [Gr. *iota*, letter i] An abnormal speech pattern marked by the constant substitution of an ē sound (Greek *iota*) for other vowels.

**iothalamate meglumine injection** (ī-ō-thāl'ā-māt) A radiopaque contrast medium used in investigating arteries of the brain as well as in the rest of the body, and in studying kidney function.

**I.P.** *intraperitoneal; isoelectric point*.

**IPA** *independent practice association*.

**ipecac** (īp'ē-kāk) A drug that induces vomiting. For many years, it was used to help empty the upper gastrointestinal tract after toxic ingestions and accidental overdoses. It no longer is used for this purpose in hospitals, where activated charcoal and whole bowel irrigation have proved to be more effective and better tolerated. The drug is derived from the dried root of *ipeca-cuanha*, a plant that is native to Brazil. It typically is given as a syrup. SEE: *Poisons and Poisoning Appendix*.

**I.P.L.** *interpupillary line*; the line between the center of both pupils.

**ipodate calcium** (ī'pō-dāt) A radiopaque contrast medium used in radiographical studies of the gallbladder.

**ipodate sodium** A radiopaque contrast medium used in radiographical studies of the gallbladder.

**IPPB** *intermittent positive-pressure breathing*.

**IPPV** *intermittent positive-pressure ventilation*.

**ipratropium bromide** An anticholinergic bronchodilator used for bronchoconstriction associated with chronic bronchitis, chronic obstructive pulmonary disease, asthma, and emphysema. It is dispensed via a metered-dose inhaler or as a solution for nebulized use, and usually is combined with another bronchodilator such as albuterol. SEE: *asthma*.

**ipriflavone** (ī'prī-flā'vōn) A dietary supplement, 7-isopropoxyisoflavone, synthesized from the soy protein isoflavone daidzein. It is promoted as a treatment for osteoporosis.

**ipsi-** [L. *ipse*, same] Prefix meaning *same* or *self*.

**IPSID** *immunoproliferative small intestinal disease*.

**ipsilateral** (īp'sī-lāt'ēr-āl) [" + *latus*, side] On the same side; affecting the same side of the body; the opposite of contralateral. For example, when the right patellar tendon is tapped, an ipsilateral knee-jerk is observed on the same side. In paralysis, this term is used to describe findings appearing on same side of the body as the brain or spinal cord lesion producing them. SYN: *homolateral*.

**IPSP** *inhibitory postsynaptic potential*.

**IQ** *intelligence quotient*.

**IR** *infrared; internal resistance; internal rotation*.

**Ir** Symbol for the element iridium.

**irascible** (ī-rās'ī-b'l) [LL. *irascibilis*] Marked by outbursts of temper or irritability; easily angered.

**IRB** *institutional review board*.

**irid-, irido-** [Gr. *iridos*, colored circle] Combining forms indicating relationship to the iris of the eye.

**iridal** (īr'īd-āl) Iridic.

**iridalgia** (īr'īd-āl'jā) [" + *algos*, pain] Pain felt in the iris.

**iridectome** (īr'ī-dēk'tōm) [" + *tome*, incision] An instrument for cutting the iris in iridectomy.

**iridectomesodialysis** (īr'ī-dēk'tō-mēs'ō-dī-āl'ī-sīs) [" + *ektome*, excision, + *mesos*, middle, + *dialysis*, loosening] The formation of an artificial pupil, by separating adhesions on the inner margin of the iris.

**iridectomize** (īr'īd-ēk'tō-mīz) [" + *ektome*, excision] To excise a portion of the iris.

**iridectomy** (īr'ī-dēk'tō-mē) The surgical removal of a portion of the iris.

**peripheral i.** Removal of peripheral tissue from the iris.

**sector i.** The removal of a wedge-shaped section of the iris (e.g., as a treatment for a local melanoma or a vascular tumor).

**iridotropium** (īr-ī-dēk-trō'pē-ūm) [" + *ektrope*, a turning aside] Partial eversion of the iris.

**iridemia** (īr-ī-dē'mē-ā) [" + *haima*, blood] Bleeding from the iris.

**iridencleisis** (īr'ī-dēn-klī'sīs) [" + *enklein*, to lock in] An operation for relieving increased intraocular pressure, as in glaucoma, in which the iris and a portion of the limbus are excised to allow increased volume of the aqueous humor under the conjunctiva.

**iridentropium** (īr'ī-dēn-trō'pē-ūm) [" + *en*, in, + *tropein*, to turn] Partial inversion of the iris.

**irideremia** (īr'īd-ēr-ē'mē-ā) [" + *eremia*, lack] Aniridia.

**irides** (īr'ī-dēz) [Gr.] Plural of iris.

**iridescence** (īr'ī-dēs'ēns) [L. *iridescere*, to gleam like a rainbow] Having the ca-

- pability to disperse light into the colors of the spectrum.
- iridesis** (ī-rīd'ē-sīs) [" + *desis*, a binding] Repositioning the pupil by bringing a portion of the iris through an incision in the cornea.
- iridic** (ī-rīd'īk) [Gr. *iris*, colored circle] Relating to the iris. SYN: *iridal*; *iritic*.
- iridium** (ī-rīd'ē-īm) [Gr. *iris*, colored circle] SYMB: Ir. A white, hard metallic element; atomic weight, 192.2; atomic number 77.
- iridoavulsion** (īr'ī-dō-āv-ūl'shūn) [" + L. *avulsio*, a pulling away from] A tearing away of the iris.
- iridocapsulitis** (īr'īd-ō-kāp-sū-lī'tīs) [" + L. *capsula*, little box, + Gr. *itis*, inflammation] Inflammation of the iris and lens capsule.
- iridocele** (ī-rīd'ō-sēl) [" + *kele*, tumor, swelling] Protrusion of a portion of the iris through a defect in the cornea.
- iridocoloboma** (īr'īd-ō-kōl'ō-bō'mā) [" + *koloboma*, mutilation] Congenital defect or fissure of the iris.
- iridoconstrictor** (īr'ī-dō-kōn-strīk'tor) A muscle or drug that acts to constrict the pupil of the eye.
- iridocyclectomy** (īr'ī-dō-sī-klēk'tō-mē) [" + *kyklos*, circle, + *ektome*, excision] Surgical removal of the iris and ciliary body.
- iridocyclitis** (īr'īd-ō-sī-klī'tīs) [" + " + *itis*, inflammation] An inflammation of the iris and ciliary body.
- heterochromic i.**, **Fuch's heterochromic iridocyclitis** A low grade, unilateral inflammation of the ciliary body and iris (which is lighter in color than the unaffected eye). A secondary cataract and/or glaucoma may develop
- iridocyclochoroiditis** (īr'ī-dō-sī'klō-kō'roy-dī'tīs) [" + " + *chorioeides*, skinlike, + *itis*, inflammation] An inflammation of the iris, ciliary body, and choroid of the eye.
- iridocystectomy** (īr'ī-dō-sīs-tēk'tō-mē) [" + *kystis*, bladder, + *ektome*, excision] Surgical removal of a cyst from the iris.
- iridodenesia** Wobbling of the iris during eye movement.
- iridodesis** (īr-ī-dōd'ē-sīs) [" + *desis*, a binding] Wobbling movements of the iris. SEE: *iridesis*.
- iridodiagnosis** (īr'ī-dō-dī'āg-nō'sīs) [" + *dia*, through, + *gnosis*, knowledge] Diagnosis of disease by examination of the iris.
- iridodialysis** (īr'īd-ō-dī-āl'ī-sīs) [" + *dialysis*, loosening] Separation of the outer margin of the iris from its ciliary attachment.
- iridodilator** (īr'ī-dō-dī-lā'tor) [" + L. *dilatare*, to dilate] A substance causing dilatation of the pupil.
- iridodonesis** (īr'īd-ō-dō-nēs'īs) [" + *donesis*, tremor] Hippus.
- iridokeratitis** (īr'ī-dō-kēr'ā-tī'tīs) [" + *keras*, horn, + *itis*, inflammation] An inflammation of the iris and cornea.
- iridokinesis** (īr'īd-ō-kīn-ē'sīs) [Gr. *iridos*, colored circle, + *kinesis*, movement] The contracting and expanding movements of the iris.
- iridoleptynsis** (īr'ī-dō-lēp-tīn'sīs) [" + *leptynsis*, attenuation] Thinning or atrophy of the iris.
- iridology** (īr'ī-dōl'ō-jē) [" + *logos*, word, reason] A diagnostic method developed by Dr. Ignatz von Peczely, a 19th-century physician, and used today by some alternative medicine practitioners, in which disease is indicated by the variations in the color, morphology, or other characteristics of the iris. It has not been shown to have reliable reproducibility or proven scientific validity.
- iridomalacia** (īr'īd-ō-mā-lā'shē-ā) [" + *malakia*, softness] A softening of the iris.
- iridomedialysis** (īr'īd-ō-mē-dē-āl'ī-sīs) [" + L. *medius*, in middle, + Gr. *dialysis*, loosening] A separation of the inner marginal adhesions of the iris. SYN: *iridomesodialysis*.
- iridomesodialysis** (īr'īd-ō-mē-sō-dī-āl'ī-sīs) [" + *mesos*, middle, + *dialysis*, loosening] Iridomedialysis.
- iridomotor** (īr'ī-dō-mō'tor) [" + L. *motor*, that which moves] Relating to movements of the iris.
- iridoncus** (īr-ī-dong'kūs) [" + *onkos*, bulk] Swelling of the iris.
- iridoparalysis** (īr'ī-dō-pā-rāl'ī-sīs) [" + *paralyein*, to disable] Iridoplegia.
- iridoparelysis** (īr'ī-dō-pār-ēl'ī-sīs) [" + *parelysis*, protraction] Surgically induced prolapse of the iris in order to displace the pupil artificially.
- iridopathy** (īr'ī-dōp'ā-thē) [" + *pathos*, disease, suffering] Disease of the iris.
- iridoperiphacitis, iridoperiphacititis** (īr'ī-dō-pēr'ī-fā-sī'tīs, -pēr'ī-fā-kī'tīs) [" + *peri*, around, + *phakos*, lens, + *itis*, inflammation] An inflammation of the iris and anterior portion of the capsule of the lens.
- iridoplegia** (īr'īd-ō-plē'jē-ā) [" + *plege*, stroke] Paralysis of the sphincter of the iris. SYN: *iridoparalysis*.
- accommodative i.** Noncontraction of the pupils during accommodation.
- complete i.** Iridoplegia in which the iris fails to respond to any stimulation; seen in Adie's pupil.
- reflex i.** The absence of light reflex, with retention of the accommodation reflex (Argyll Robertson pupil).
- iridoptosis** (īr'ī-dōp-tō'sīs) [" + *ptosis*, a falling] Prolapse of the iris.
- iridopupillary** (īr'ī-dō-pū'pī-lēr'ē) [" + L. *pupilla*, pupil] Concerning the iris and the pupil of the eye.
- iridorrhaxis** (īr'īd-ō-rēk'sīs) [" + *rhaxis*, rupture] Rupture of the iris, or a tearing of the iris away from its attachment.
- iridoschisis** (īr'ī-dōs'kī-sīs) [" + *schisis*,

a splitting] Separation of the stroma of the iris into two layers with disintegration of the anterior layer.

**iridosclerotomy** (īr'īd-ō-sklā-rōt'ā-mē) [*ī* + *skleros*, hard, + *tome*, incision] Piercing of the sclera and the border of the iris.

**iridosteresis** (īr'ī-dō-stē-rē'sīs) [*ī* + *steresis*, loss] Removal of the iris or a portion of it.

**iridotaxis** (īr'ī-dōt'ā-sīs) [*ī* + *taxis*, a stretching] A stretching of the iris in the treatment of glaucoma.

**iridotomy** (īr'ī-dōt'ō-mē) [*ī* + *tome*, incision] A puncture made through the iris without removing any iris tissue, done for the purpose of making a new aperture in the iris when the pupil is closed. This allows free drainage of aqueous from the anterior to posterior chamber in narrow angles, chronic angle closure glaucoma, pupillary block, and aqueous misdirection syndrome SYN: *iritomy*; *irotony*.

**iris** (ī'rīs) [Gr.] The opaque, pigmented continuation of the choroid layer of the eye that partly covers the lens, surrounding the pupil and regulating the amount of light that strikes the retina. The iris lies in the aqueous compartment of the eye. It divides the posterior chamber of the aqueous compartment (into which aqueous fluid is secreted) and the anterior chamber (from which aqueous fluid is absorbed). Muscles in the iris can expand or contract the pupil. SEE: *aniridia*; *choroidoiritis*; *heterochromia iridis*; *irid-*; *iris*, *chromatic asymmetry of*; *rubeosis iridis*.

**ANATOMY:** Its front surface is irregular, covered in grooves and ridges. The posterior surface contains radially oriented myofilaments, which together form the dilator pupillae muscle; this muscle widens the pupil in response to sympathetic stimulation. A separate set of concentric myofilaments forming circles around the pupil compose the sphincter pupillae muscle, which narrows the pupil in response to parasympathetic stimulation. The color of the iris is determined by the concentration of melanin-containing pigment cells: if the cells are few, the color will be blue, while increasing concentrations of pigment cells lead to darkening color on a spectrum from greenish-blue, to gray, to brown.

***i. bombé*** A condition seen in annular posterior synechia. The iris balloons forward from the posterior pressure, blocking the aqueous outflow through the anterior chamber angle.

It can be caused by adhesions at the pupillary border and the anterior lens capsule, resulting in aqueous misdirection and significantly elevated intraocular pressure. Treatment is peripheral iridectomy.

**chromatic asymmetry of *i.*** A difference in color between the two irides (heterochromia). For example, one may be blue or gray and the other brown. The asymmetry may occur in early iritis or cyclitis, or may be present without an associated pathological process.

**piebald *i.*** A dark discoloration in an irregularly shaped area. It may be in one or both eyes.

**Irish moss** (ī'rīsh mōs) Carrageen.

**iris prolapse** Protrusion of part of the iris through a wound in the cornea.

**iritic** (ī-rīt'ik) [Gr. *iris*, colored circle] Iridic.

**iritis** (ī-rīt'is) [*ī* + *itis*, inflammation] An inflammation of the iris.

**SYMPTOMS:** In iritis, there is pain, photophobia, lacrimation, and diminution of vision. The iris appears swollen, dull, and muddy; the pupil contracted, irregular, and sluggish in reaction.

Iritis may be secondary to systemic disease such as ulcerative colitis, Crohn's disease, collagen vascular disease, sarcoid, infectious agents, or HLAB27.

**TREATMENT:** Steroids are used topically and occasionally systemically. Mydriatic or cycloplegic drugs are used for symptomatic relief. Cortisone or hydrocortisone is used systemically as well as topically. If the primary disease causing the iritis is known, it should be treated; however, the etiological factor is usually not known.



Ophthalmic corticosteroids should be prescribed only by an ophthalmologist or other physician skilled in their use and side effects.

**plastic *i.*** Iritis in which the fibrinous exudate forms new tissue.

**purulent *i.*** Iritis with a purulent exudate.

**secondary *i.*** Iritis in which the inflammation has spread from neighboring parts, as in diseases of the cornea and sclera.

**serous *i.*** Iritis in which serum forms the exudate.

**iritoectomy** (ī'rī-tō-ēk'tō-mē) [*ī* + *ektome*, excision] Removal of a portion of the iris.

**iritomy** (ī-rīt'ō-mē) [*ī* + *tome*, incision] Iridotomy.

**iron** (ī'ērñ) [AS. *iren*; L. *ferrum*] SYMB: Fe. A metallic element widely distributed in nature; atomic weight 55.847, atomic number 26. Compounds (oxides, hydroxides, salts) exist in two forms: ferrous, in which iron has a valence of two (Fe<sup>++</sup>), and ferric, in which it has a valence of three (Fe<sup>+++</sup>). It is widely used in the treatment of certain forms of anemia. Iron is essential for the formation of chlorophyll in plants, al-

though it is not a constituent of chlorophyll. It is part of the hemoglobin and myoglobin molecules. SEE: *ferritin*.

**FUNCTION:** Iron, as part of hemoglobin, is essential for the transport of oxygen in the blood; it is also part of some of the enzymes needed for cell respiration. Men's bodies have approx. 3.45 g of iron and women approx. 2.45 g, distributed as follows: 60% to 70% in hemoglobin; 10% to 12% in myoglobin and enzymes; and, as ferritin, 29% in men and 10% in women, stored in the liver, spleen, and bone marrow. Iron is stored in the tissues principally as ferritin. It is absorbed from the food in the small intestine and passes, in the blood, to the bone marrow. There, it is used in making hemoglobin, which is incorporated into red blood cells. A red cell, after circulating in the blood for approx. 120 days, is destroyed, and its iron is used over again.

Men require from 0.5 to 1.0 mg of iron a day. A woman of menstrual age requires about twice this amount. During pregnancy and lactation from 2 to 4 mg of iron per day is required. Before puberty and after menopause, women require no more iron than men. Because only a fraction of the iron present in food is absorbed, it is necessary to provide from 15 to 30 mg of iron in the diet to be certain that 1 to 4 mg will be absorbed.

In the first few months of life, infants will use up most of their iron stores, and the typical diet or formula may not have sufficient iron to replenish those stores. It is therefore important to add iron-containing foods to an infant's diet by age 6 months.

Manganese, copper, and cobalt are necessary for the proper use of iron. Copper is stored in the body and reused repeatedly.

There are two broad types of dietary iron. About 90% of iron from food is in the form of iron salts and is called nonheme iron, which is poorly absorbed. The other 10% of dietary iron is in the form of heme iron, which is derived primarily from the hemoglobin and myoglobin of meat and is well absorbed. Iron absorption is influenced by other dietary factors. About 50% of iron from breast milk is absorbed but only about 10% of iron in whole cow's milk is absorbed. The reasons for the higher bioavailability of iron in breast milk are unknown. Ascorbic acid, meat, fish, and poultry enhance absorption of nonheme iron. Bran, oxalates, vegetable fiber, tannins in tea, and phosphates inhibit absorption of iron. Orange juice doubles the absorption of iron from the meal and tea decreases it by 75%.

**DEFICIENCY SYMPTOMS:** Iron deficiency is characterized by anemia, low-

ered vitality, exertional breathlessness, pale complexion, conjunctival pallor, retarded development, and a decreased amount of hemoglobin in each red cell.

**NOTE:** Sometimes a disturbance in iron metabolism occurs, in which an iron-containing pigment, hemosiderin, and hemofuscin are deposited in the tissues, leading to hemochromatosis. Excessive deposition of hemosiderin in the tissues, such as may occur as a result of excessive breakdown of red cells, is called hemosiderosis. SEE: *hemochromatosis*.

**SOURCES:** The following foods provide iron in the diet: almonds, asparagus, bran, beans, Boston brown bread, cauliflower, celery, chard, dandelions, egg yolk, graham bread, kidney, lettuce, liver, oatmeal, oysters, soybeans, and whole wheat. Other good sources are apricots, beets, beef, cabbage, cornmeal, cucumbers, currants, dates, duck, goose, greens, lamb, molasses, mushrooms, oranges, parsnips, peanuts, peas, peppers, potatoes, prunes, radishes, raisins, rhubarb, pineapple, tomatoes, and turnips.

**iron dextran injection** A preparation of iron suitable for parenteral use.



Because of the risk of anaphylaxis, a test dose should be given before starting an infusion of iron.

**iron lung** Drinker respirator.

**iron overload** Organ failure that results from excessive accumulation of iron in the body, usually as a result of frequent transfusions or hemochromatosis.

**iron poisoning** SEE: under *poisoning*.

**iron storage disease** Hemochromatosis.

**irotomy** (i-rōt'ō-mē) [Gr. *iris*, colored circle, + *tome*, incision] Iridotomy.

**irradiate** (i-rā'dē-āt) [L. *in*, into, + *radiare*, to emit rays] **1.** To expose to radiation. **2.** To treat with high-energy x-rays or other forms of radiation. SEE: *irradiation*.

**irradiating** (i-rā'dē-āt'ing) Diverging or spreading out from a common center.

**irradiation** (i-rā'dē-ā'shūn) **1.** The diagnostic or therapeutic application of x-ray photons, nuclear particles, high-speed electrons, ultraviolet rays, or other forms of radiation to a patient. **2.** The application of a form of radiation to an object or substance to give it therapeutic value or increase that which it already has. **3.** A phenomenon in which a bright object on a dark background appears larger than a dark object of the same size on a bright background. **4.** The spreading in all directions from a common center (e.g., nerve impulses, the sensation of pain).

**food i.** The preservation of foods with ionizing radiation. Radiation extends



the shelf life of foods by decreasing the number of germs and insects present in them. The process is expensive, and it has met with considerable resistance from consumers.

**interstitial i.** Therapeutic irradiation by insertion into the tissues of capillary tubes or beads containing radon (a radioactive isotope). It may be temporary or permanent.

**lymphoid i.** Exposure of an organ recipient's lymphocytes to ionizing radiation before organ transplantation, in an effort to decrease the likelihood of rejection of the donor graft.

**i. of reflexes** SEE: under *reflex*.

**irrational** (ir-rāsh'un-äl) Contrary to what is reasonable or logical; used to describe ideas that are unprovable, unsound, or unwise.

**irreducible** (ir'rē-dū'si-bl) [L. *in-*, not, + *re*, back, + *ducere*, to lead] Not capable of being reduced or made smaller, as a fracture or dislocation.

**irreversible** (ir'ē-vēr'si-bl) Impossible to reverse.

**irrigate** (ir'i-gāt) [L. *in*, into, + *rigare*, to carry water] To wash out with a fluid.

**irrigation** (ir'i-gā'shūn) The cleansing of a canal or cavity by flushing with water or other fluids; the washing of a wound. The solutions used for cleansing should be sterile and, for comfort, have an approximate temperature slightly warmer than body temperature (100° to 115°F or 37.8° to 46.1°C). When irrigation is performed for bleeding, cold or iced irrigant may be used. SYN: *lavage*. SEE: *illus.*; *gastric lavage*.



#### IRRIGATION OF THE EAR CANAL

**bladder i.** Washing out the bladder to treat inflammation or infection or to keep a urinary catheter flowing. The irrigation may be intermittent or continuous. Normal saline is commonly used.

**PATIENT CARE:** The necessary sterile equipment and the prescribed irrigant are assembled. The patient is covered with draping to preserve privacy and maintain antisepsis, and provided with information about how the procedure is done and what sensations will be experienced. A triple-lumen indwelling

catheter is inserted into the urinary bladder via the urethra; placement is confirmed by the flow of urine, and the anchoring balloon inflated via its lumen. The prescribed volume of irrigant is instilled via the irrigation lumen; the catheter is clamped to allow the solution to remain in the bladder for the prescribed period of time; then the catheter is unclamped to allow the irrigant to flow out of the bladder via the drainage lumen by gravity into a collecting basin or closed drainage system. The irrigation is repeated the prescribed number of times. The character of the irrigation solution returned and the presence of any mucus, blood, or other material visible in the drainage is noted. The catheter is removed as per practitioner order. The time of the procedure, the type and volume of irrigant instilled, the type and volume of return, and the patient's response to the procedure are documented. If intermittent or continuous bladder irrigation is required, the catheter remains in place. Two large bags of irrigating fluid on a Y tubing are hung for continuous irrigation, with flow-rate controlled to maintain clear drainage. Urine output is determined by subtracting the amount of irrigant instilled from the total drainage obtained.



Patients who receive high volumes of dilute fluids may absorb these irrigants and develop fluid overload or hyponatremia. To ensure patient safety, careful measurement of inputs and outputs and regular assessments of electrolytes, BUN, Cr, and oxygenation should be performed.

**colonic i.** Flushing of the colon with water, that is, an enema.

**continuous bladder i.** ABBR: CBI. A constant flow of normal saline (or another bladder irrigant) through a three-way urinary catheter to keep the catheter patent. It is typically used postoperatively following a transurethral resection of the prostate gland.

**nasal i.** Flushing the nasal cavities and accessible sinuses with fluid; used to treat nasal congestion and allergies.

**oral i.** Flushing of the mouth, teeth, and gums with fluids. This is done to remove plaque and to treat or prevent periodontal disease.

**whole bowel i.** The administration of large volumes of a nonabsorbable fluid to remove potentially hazardous contents from the gastrointestinal tract. It is used to prepare some patients for bowel surgery and to decontaminate the gut after overdose.

**irrigator** (ir'i-gāt-or) A device used to

flush or wash a part or cavity with fluids.

**irritability** (īr'īt-ă-bīl'ī-tē) [L. *irritabilitas*] **1.** Excitability. **2.** An ability to respond in a specific way to a change in environment, a property of all living tissue. **3.** A condition in which a person, organ, or a part responds excessively to a stimulus. **4.** A quick response to annoyance; impatience.

**muscular i.** The normal response of muscle to a stimulus.

**nervous i.** The response of a nerve to a stimulus.

**paradoxical i.** An increase in the fussiness of a sick child when comforted by a parent. It is considered to be a physical sign of meningitis or of recent child abuse.

**irritable** **1.** Capable of reacting to a stimulus. **2.** Sensitive to stimuli.

**irritable bowel syndrome** ABBR: IBS. A condition marked by abdominal pain (often relieved by the passage of stool or gas); disturbances of evacuation (constipation, diarrhea, or alternating episodes of both); bloating and abdominal distention; and the passage of mucus in stools. These symptoms must be present despite the absence of anatomical, biochemical, or clinical evidence of active intestinal disease. The condition is common and found in as many as 15 to 25% of women in Western societies. Its prognosis is benign. It is not associated with weight loss, fevers, or intestinal bleeding. Patients are symptomatic during the day, but they do not have pain, bloating, distention, diarrhea, or other abdominal symptoms while sleeping. Women are typically affected more often than men; in some studies the ratio of women to men is 3:1.

**ETIOLOGY:** The symptoms of irritable bowel occur more often in patients who have had a history of physical or sexual abuse in childhood than in patients without such a history. Many studies have found a relationship between irritable bowel syndrome and a history of anxiety, psychological stress, or personality disorders. Physiologically, patients with IBS may have an increased or decreased rate of bowel motility.

**TREATMENT:** Management of IBS should begin by establishing a therapeutic relationship between clinician and client. Educating the patient about the benign nature of the illness and the excellent long-term prognosis may be helpful. Avoiding poorly tolerated ("trigger") foods may lessen symptoms. Foods that the patient has found to cause difficulties are eliminated (dairy products, beans, and some vegetables may cause symptoms). Specific symptoms can be alleviated by taking bulk-forming agents (e.g., psyllium) by mouth, by in-

creasing one's intake of fluids, and by engaging in increased levels of physical exercise. Low doses of antidepressant medications are sometimes helpful. Alternative therapy, including psychotherapy, hypnotherapy, imagery, and biofeedback, alone or in combination, may be effective in some patients.

**DIAGNOSIS:** Young patients suspected of having IBS should undergo testing to exclude other illnesses; tests should include a careful physical examination, complete blood count, metabolic panel, assessment of thyroid and liver functions; estimated sedimentation rate; and stool testing for occult blood. Patients over age 45 should also have sigmoidoscopy to rule out structural or anatomical lesions of the colon.

**irritant** An agent that stimulates or inflames cells or tissues.

**irritation** [L. *irritatio*] **1.** A reaction to a noxious or unpleasant stimulus. It is important to distinguish between irritation and sensitization. A substance in contact with the skin may cause no irritation when initially applied but can cause allergic sensitization that will not become obvious until the material is applied again. SEE: *allergen*; *sensitization*. **2.** An extreme reaction to pain or disease. **3.** A normal response to stimulus of a nerve or muscle.

**irritative** (īr'ī-tāt'iv) Pert. to that which causes irritation.

**Isaac's syndrome** (ī'zāks) A rare neuromuscular disorder in which continuous signaling of muscle groups by peripheral nerves results in fasciculations, stiffness, and dysarthria. It can be treated with antiepileptic drugs. SYN: *neuromyotonia*.

**ischemia** (īs-kē'mē-ă) [Gr. *ischein*, to hold back, + *haima*, blood] A temporary deficiency of blood flow to an organ or tissue. The deficiency may be caused by diminished blood flow either through a regional artery or throughout the circulation.

**intestinal i.** SEE: *angina*, *abdominal*.

**lower limb i.** Inadequate blood flow to one or both legs due either to chronic arterial obstruction caused by atherosclerosis or to acute obstruction caused by embolism.

**TREATMENT:** Treatment depends on the obstruction's cause, location, and size. Mild chronic disease may be managed using supportive measures such as smoking cessation, hypertension control, and increased exercise. Medications that improve blood flow such as aspirin, pentoxifylline and cilostazol may improve symptoms in patients with intermittent claudication. Surgeries for arterial insufficiency in the limbs include arterectomy, balloon angioplasty, bypass grafting, and combinations of

the above. Embolectomy, laser angioplasty, lumbar sympathectomy, patch grafting, stents, thromboendarterectomy, and thrombolytic therapy also may be required. Amputation becomes necessary with failure of reconstructive surgery or development of gangrene, persistent infection, or intractable pain.

**PATIENT CARE:** Patients with lower limb ischemia related to acute obstruction suffer severe to excruciating pain in the limb, leg pallor and coolness, and absence of palpable pulses below the arterial obstruction. Emergency intervention is required, using thrombolytic therapy, thromboendarterectomy, embolectomy, or other surgical intervention to restore circulation to the affected area. More gradual arterial occlusive disorders may be evidenced by intermittent claudication of the calves on exertion, reduced pulses in the ankles and feet, gradually increasing pallor, hair loss, coolness, prethoracic pain (heralding necrosis and ulceration), and, in the worst circumstances, gangrene of the extremity. Diagnosis is based largely on the patient's history and physical examination, followed by supportive diagnostic studies such as Doppler ultrasonography and plethysmography, and arteriography.

Patient teaching should include explanations of diagnostic tests and procedures and prescribed exercise and medication regimens, proper foot care, and smoking cessation programs. For patients undergoing surgery, fluid and electrolyte balance is assessed and the patient prepared emotionally and physically. Postoperatively, vital signs and circulation are monitored, comparing the operative to the unoperated limb for color, temperature, and pulses, and the patient is closely observed for hemorrhage (hypotension and tachycardia), chest pain, or other vascular complications. Early ambulation is encouraged. When ischemic limbs or digits need amputation, the stump is checked for drainage and the amount and color recorded. The stump is elevated based on the surgeon's or agency's protocol, and pain is carefully assessed and relieved, with phantom limb pain explained to the patient. Discharge teaching should include plans for rehabilitation (in a rehabilitation center or as an outpatient), signs to report that could indicate graft occlusion or occlusion at another site, desired and adverse effects related to any medications prescribed, and the importance of scheduled follow-up visits.

**myocardial i.** An inadequate supply of blood and oxygen to meet the metabolic demands of the heart muscle. SEE: *angina pectoris*; *atherosclerosis*; *coronary artery disease*.

**vertebrobasilar i.** Inadequate blood

flow through the arteries that supply nutrients and oxygen to the structures at the base of the brain (esp. the brain stem and cerebellum). This can cause difficulties with balance, swallowing, or vision and may be a source of vertigo in some individuals, esp. older adults or those with atherosclerosis.

**warm i.** The absence of blood flow to a body part or organ intended for transplantation before its removal from a cadaveric donor.

**ischia** (is'kē-ā) [L.] Pl. of ischium.

**ischial** (is'kē-āl) [Gr. *ischion*, hip] Pert. to the ischium.

**ischialgia** (is'kē-āl'jē-ā) [ʼ + *algos*, pain] Sciatica.

**ischiatric** (is'kē-āt'ik) [Gr. *ischion*, hip] Sciatic.

**ischiatitis** (is'kē-ā-ti'tis) [ʼ + *itis*, inflammation] Sciatic nerve inflammation.

**ischidrosis** (is'ki-drō'sis) [Gr. *ischein*, to hold back, + *hidrosis*, sweat] The suppression of perspiration.

**ischio-** [Gr. *ischion*, hip] Combining form meaning *ischium*.

**ischioanal** (is'kē-ō-ā'nāl) [ʼ + *L. anus*, anus] Concerning the ischium and anus.

**ischiocapsular** (is'kē-ō-kāp'sū-lār) [ʼ + *L. capsula*, capsule] Pert. to that part of the capsule of the hip joint that is connected with the ischium.

**ischiocavernosus** (is'kē-ō-kā'vēr-nō'sūs) [ʼ + *L. cavernosus*, cavernous] A muscle extending from the ischium to the penis or clitoris and assisting in their erection.

**ischiocele** (is'kē-ō-sēl) [ʼ + *kele*, tumor, swelling] A hernia through the sciatic notch.

**ischiococcygeus** (is'kē-ō-kōk-sij'ē-ūs) [ʼ + *kokkyx*, coccyx] **1.** The coccygeus muscle. **2.** The posterior portion of the levator ani.

**ischiodynia** (is'kē-ō-din'ē-ā) [ʼ + *odyne*, pain] Pain in the ischium.

**ischiofemoral** (is'kē-ō-fēm'or-āl) [ʼ + *L. femur*, thigh] Rel. to the ischium and femur.

**ischiofibular** (is'kē-ō-fib'ū-lār) [ʼ + *L. fibula*, pin] Rel. to the ischium and fibula.

**ischiohebotomy** (is'kē-ō-hē-bōt'ō-mē) [ʼ + *hebe*, pubes, + *tome*, incision] Surgical division of the ascending ramus of the pubes and the ischiopubic ramus. SYN: *ischiopubiotomy*.

**ischioneuralgia** (is'kē-ō-nū-rāl'jē-ā) [ʼ + *neuron*, nerve, + *algos*, pain] Sciatica.

**ischionitis** (is'kē-ō-nī'tis) [ʼ + *itis*, inflammation] Inflammation of the tuberosity of the ischium.

**ischiopubic** (is'kē-ō-pū'bik) [ʼ + *L. pubes*, the pubes] Rel. to the ischium and pubes.

**ischiopubiotomy** (is'kē-ō-pū'bē-ōt'ō-mē) Ischiohebotomy.

**ischioirectal** (is'kē-ō-rēk'tāl) [ + L. *rectus*, straight] Pert. to the ischium and rectum.

**ischiosacral** (is'kē-ō-sā'krāl) [ + L. *sacralis*, pert. to the sacrum] Concerning the ischium and sacrum.

**ischiovaginal** (is'kē-ō-vāj'ī-nāl) [ + L. *vagina*, sheath] Concerning the ischium and vagina.

**ischium** (is'kē-ūm) *pl.* **ischia** [Gr. *ischion*, hip] The lower, posterior portion of the innominate or hip bone. It is a separate bone at birth; it begins to fuse with the pubis by age 8; and it is fully fused with the pubis and ilium by 16 to 18 years of age.

**ISCLT** *International Society of Clinical Laboratory Technologists.*

**iseikonia** (i'sī-kō'nē-ā) [Gr. *isos*, equal, + *eikon*, image] Isoconia.

**island** [AS. *igland*, island] A structure detached from surrounding tissues or characterized by difference in structure; an islet.

**blood i.** The early collections of cells in the embryo that give rise to blood and blood-forming organs later in life.

**i. of Reil** *Insula* (1).

**islet** (i'lēt) A tiny isolated mass of one kind of tissue within another type.

**i. of Langerhans** Clusters of cells in the pancreas. They are of three types: alpha, beta, and delta cells. The alpha cells secrete glucagon, which raises the blood glucose level; the beta cells secrete insulin, which lowers it; and the delta cells secrete somatostatin, an inhibitor of growth hormone secretion. Destruction or impairment of function of the islets of Langerhans may result in diabetes or hypoglycemia. SYN: *islands of Langerhans*; *pancreatic islands.*

**islet amyloid polypeptide** ABBR: AIPP. Amylin

**islet autoantibodies, islet cell antibodies** ABBR: ICA. Antibodies formed against insulin, glutamic acid decarboxylase, or protein tyrosine phosphatase-like molecules. They are serum markers for type 1 diabetes mellitus (DM). Children whose parents have type 1 DM and who have these markers present in their serum have a high risk of developing type 1 DM.

**-ism** [Gr. *-ismos*] Suffix meaning *condition* or *theory of*; *principle* or *method.*

**ISO** *International Organization for Standardization.*

**iso-** [Gr. *isos*, equal] Prefix meaning *equal.*

**isoagglutination** (i'sō-ā-gloo'tī-nā'shūn) [ + L. *agglutinare*, to glue to] Agglutination of red blood cells by agglutinins from the blood of another member of the same species. SYN: *isohemagglutination.*

**isoagglutinin** (i'sō-ā-glū'tīn-īn) [ + L.

*agglutinare*, to glue to] An antibody in a serum that agglutinates the blood cells of those of the same species from which it is derived. SEE: *agglutinin*; *blood group*; *isohemagglutination.*

**isoagglutinogen** (i'sō-ā-glū-tīn'ō-jēn) Agglutinin.

**isoantibody** (i'sō-ān'tī-bōd'ē) An antibody produced in response to an isoantigen.

**isoantigen** (i'sō-ān'tī-jēn) [ + L. *anti*, against, + *gennan*, to produce] A substance present in certain individuals that stimulates antibody production in other members of the same species but not in the donor (e.g., blood group isoantigens that are harmless to the donor but may produce severe antibody response in a recipient of a different blood group or type). SYN: *alloantigen.*

**isobar** (i'sō-bār) [ + *baros*, weight]

**1.** A locus of equal pressure. When pressures are unequal, fluids and gases will flow from a high- to a low-pressure region. **2.** In chemistry, one of two or more chemical bodies having the same atomic weight but different atomic numbers.

**isobaric** (i'sō-bār'īk) **1.** Pressure equal to that with which it is being compared.

**2.** Specific gravity equal to that with which it is being compared. For example, an anesthetic solution used in spinal anesthesia, if isobaric, would have the same specific gravity as the spinal fluid.

**isocaloric** (i'sō-kā-lō'rīk) [ + L. *calor*, heat] Containing the same number of calories as the food or diet with which it is being compared.

**isocellular** (i'sō-sēl'ū-lār) [ + L. *cellula*, cell] Composed of equal and similar cells.

**isochromatic** (i'sō-krō-māt'īk) [ + *chroma*, color] **1.** Having the same color. **2.** Of uniform color.

**isochromatophil(e)** (i'sō-krō-māt'ō-fil, -fil) [ + " + *philein*, to love] Having the same affinity for a dye.

**isochromosome** (i'sō-krō-mō-sōm) [ + " + *soma*, body] A chromosome with arms that are morphologically identical and contain the same genetic loci. This is the result of the transverse rather than the longitudinal splitting of a chromosome.

**isochronal** (i-sōk'rō-nāl) [ + *chronos*, time] Acting in uniform time, or taking place at regular intervals.

**isochronia** (i'sō-krō'nē-ā) [Gr. *isos*, equal, + *chronos*, time] **1.** The correspondence of events with respect to time. **2.** Occurring at the same time, rate, or frequency.

**isocitrate dehydrogenase** (i'sō-cīt'rāt dē'hī-drōj'ēn-ās) An enzyme that catalyzes the conversion of isocitric acid to  $\alpha$ -ketoglutaric acid.

**isocolloid** (i-sō-kōl'oyd) [ + *kollodes*,

glutinous] A colloid having the same composition in every transformation.

**isocoria** (i'sō-kō'rē-ā) [" + *kore*, pupil] Equality of pupillary size. SEE: *anisocoria*.

**isocortex** (i'sō-kor'tēks) [" + L. *cortex*, bark] Neocortex.

**isocytosis** (i'sō-sī-tō'sīs) [" + *kytos*, cell, + *osis*, condition] Cells of equal size.

**isocytotoxin** (i'sō-sī'tō-tōk'sīn) [" + " + *toxikon*, poison] Cytotoxin destructive to homologous cells of the same species.

**isodactylism** (i-sō-dāk'til-izm) [" + *daktylos*, finger] A condition of having fingers or toes of equal length.

**isodiametric** (i'sō-dī-ā-mēt'rik) [" + *dia*, across, + *metron*, measure] Having equal diameters.

**isodisomy** A rare chromosomal defect in which a chromosome pair has two identical segments from one parent and no corresponding segment from the other parent.

**isodontic** (i'sō-dōn'tik) [" + *odous*, tooth] Having teeth of equal size.

**isodose** (i'sō-dōs) In radiology, equal doses of radiation received by different areas of the body.

**i. curve** In radiation therapy, a graph on which the points plot area or levels of equal radiation dose.

**isodynamic** (i'sō-dī-nām'ik) [" + *dynamis*, power] Having equal power.

**isoechoic** (i'sō-ē-kō'ik) Producing ultrasound echoes equal to those of neighboring or of normal tissues.

**isoelectric** (i'sō-ē-lēk'trik) [" + *elektron*, amber] Having equal electric potentials.

**isoelectric focusing** A method for separating proteins according to their surface charge by placing them in a gel with a pH gradient and subjecting them to an electrical current. The proteins stop migrating through the gel when they encounter ampholytes with similar charges.

**isoenergetic** (i'sō-ēn'ēr-jēt'ik) [Gr. *isos*, equal, + *energeia*, energy] Showing equal force or activity.

**isoenzyme** (i'sō-ēn'zīm) [" + *en*, in, + *zyme*, leaven] One of several forms in which an enzyme may exist. Although isoenzymes have similar catalytic qualities, they may be readily separated from each other. SYN: *isozyme*. SEE: *lactic dehydrogenase*.

**isoflavone** (i'sō-flā'vō'n) A relatively weak estrogen-like compound. SEE: *phytoestrogen*.

**isoforn** One of two or more proteins coded independently by different genes, which have identical or nearly identical structures and functions.

**isogamete** (i'sō-gām'ēt) [" + *gamete*, wife, *gametes*, husband] **1.** A cell that reproduces through conjugation or fu-

sion with a similar cell. **2.** A gamete of the same size as the one with which it fuses or unites.

**isogamy** (i-sōg'ā-mē) [" + *gamos*, marriage] Reproduction resulting from the conjugation of isogametes or identical cells.

**isogenic** (i'sō-jēn-ē'ik) Syngeneic.

**isogenicic** (i'sō-jē-nēr'ik) [" + L. *genus*, kind] Of the same kind; concerning or obtained from members of the same genus.

**isogenesis** (i'sō-jēn-ē-sīs) [" + *genesis*, generation, birth] A similarity in morphological development.

**isogenic** (i'sō-jēn'ik) Isologous.

**isogenous group** (i-sōj'ē-nūs) A cluster of cells that have come from one cell, such as the clusters of chondrocytes in cartilage.

**isograft** (i'sō-grāft) [" + L. *graphium*, grafting shoot] A graft taken from another individual or animal of the same genotype as the recipient. SEE: *autograft*.

**isohemagglutination** (i'sō-hēm'ā-gloo't'i-nā'shūn) [" + *haima*, blood, + L. *agglutinare*, to glue to] Isoagglutination.

**isohemagglutinin** (i'sō-hēm'ā-gloo't'in-īn) [" + *haima*, blood, + L. *agglutinare*, to glue to] The naturally occurring anti-A and anti-B antibodies against the antigens present on red blood cells. If incompatible blood is transfused, these antibodies destroy the recipient's red blood cells through agglutination and hemolysis. Patients with type A blood cannot receive blood from a donor with type B or AB blood, because they have anti-B antibodies. Patients with type B blood cannot receive type A or AB blood, because they have anti-A antibodies. Patients with type O blood cannot receive type A, B, or AB blood, because they have anti-A and anti-B antibodies. Type O patients have no A or B antigens and are called universal donors because they can donate blood to any of the other groups. Type AB patients are universal recipients because they lack both anti-A and anti-B antibodies, and thus can receive blood from donors with any blood type. SEE: *agglutinin*; *agglutinosin*.

**isohemolysis** (i'sō-hē-mōl'i-sīs) The destruction of red blood cells produced by an isolsysin; the action of an isohemolysin. SEE: *hemolysis*.

**isoiconia** (i'sō-i-kō'nē-ā) [Gr. *isos*, equal, + *eikon*, image] Equality of both retinal images. SYN: *iseikonia*.

**isoiconic** (i'sō-i-kōn'ik) Having equal retinal images.

**isoimmunization** (i'sō-īm'ū-nī-zā'shūn) [" + L. *immunis*, safe] Active immunization of an individual against blood from an individual of the same species, esp. the production of anti-Rh antibodies by Rh-negative mothers against red

fetal blood cell antigens. During maternal trauma, loss of pregnancy (abortion), or delivery, some of the infant's blood is transferred to the mother, stimulating antibody production. If a second child is Rh-positive, the mother's anti-Rh antibodies will cross the placenta and cause hemolytic disease of the newborn. SEE: *erythroblastosis fetalis*.

**isolate** (ī'sō-lāt) [It. *isolato*, isolated]

**1.** To separate or quarantine from contact with other persons, as during an infectious disease. **2.** In chemistry, to obtain a substance in pure form from the mixture or solution that contains it. **3.** An organism identified in pure form in a microbial culture.

**isolated limb perfusion** Limb perfusion.

**isolation** (ī'sō-lā'shūn) **1.** Solitude, or the psychological discomfort that accompanies it. SEE: *loneliness*. **2.** The physical separation of individuals with certain infections (e.g. anthrax, tuberculosis, and many others) from other people to prevent or limit the transmission of disease. In contrast, quarantine applies to restriction on healthy contacts of an infectious agent. SEE: *incubation* for table; *infectious i.*; *protective i.*; *quarantine*; *Standard Precautions Appendix*.

**PATIENT CARE:** Standard precautions are used to care for all patients to prevent nosocomial infections and apply to contact with blood, body fluids, secretions and excretions (except sweat), nonintact skin, and mucous membranes. Transmission-based precautions (second-tier precautions) are used for patients who are known to be or suspected of being infected with a highly transmissible infection. The rules to be followed for achieving isolation are based on the mode of transmission of the particular organism: airborne, droplet, and contact. Thus, if the organism is spread by droplet (e.g., tuberculosis), then all items that come in contact with the patient's upper respiratory tract are isolated and destroyed or disinfected. Those in contact with the patient also are protected from droplet transmission by wearing protective barriers such as special masks (and if necessary gowns, caps, boots, and gloves), by careful and thorough hand hygiene, and by keeping the hands away from the nose and mouth, to prevent transmission of infections. Most agencies use disposable equipment as much as possible in the care of an isolated patient. Contaminated disposables are double-bagged for safe disposal, usually by incineration. Contaminated linens and other nondisposable equipment are also double-bagged and marked "isolation," so that they will be properly decontaminated or disinfected on receipt by the laundry or supply service. Laboratory specimens

also are double-bagged and marked with the particular type of isolation, so that personnel handle them appropriately. Centers for Disease Control and Prevention recommendations and institutional procedure are followed for the specific type of isolation that is in effect. The purpose of the isolation precautions is explained to the patient and family to decrease their fears and to increase their cooperation, and the family and other visitors are taught how to use and discard the required barriers and especially how to thoroughly cleanse their hands. When an at-risk patient (e.g., an immune suppressed patient) requires protection from others (reverse isolation), equipment brought to the patient's room is disposable or sterilized, and human contacts wear barriers that may be clean or sterile depending on the circumstances and protocol. After use, these items are handled in the agency's usual manner, with no special care necessary beyond those specified for the care of every patient.

**airborne i.** Techniques used in addition to standard precautions to decrease transmission of microorganisms less than 5  $\mu$  in size or those attached to dust particles. Patients are placed in a private room, preferably one with negative air pressure and between 6 and 12 changes of air each hour. Hospital workers should wear respirator masks when in the room. If transport is necessary, the patient should wear a surgical mask. Patients with diseases such as active tuberculosis, SARS, varicella, and measles are placed on airborne precautions. SYN: *airborne precaution*.

**body substance i.** ABBR: BSI. A method of infection control that assumes all body fluids are potentially infectious and that an effective task-specific barrier must always be placed between the medical provider and the patient.

**body substance i. precautions** The standard precautions that are taken by all health care personnel, such as wearing gloves, goggles, and masks, to avoid contact with potentially infectious body substances such as urine, feces, saliva, vomit, and blood.

**contact i.** Techniques used in addition to standard precautions that decrease the likelihood of infection by microorganisms transmitted through direct or indirect contact with the patient or patient care items (e.g., methicillin-resistant *Staphylococcus aureus* and *Clostridium difficile*). Patients placed on contact isolation should preferably have a private room, but patients may be placed with others infected with the same organism (patient cohort). Hospital workers must wear gloves when entering the room for any reason

and gowns if close patient contact is required (e.g., when bathing or turning the patient or caring for wounds). Masks and eye shields are required only if there is a potential for splash or splatter of body fluids onto the face. Stethoscopes and other noncritical patient care equipment should be dedicated to single-patient or patient-cohort use. SYN: *contact precaution*.

**PATIENT CARE:** Patients with diarrhea caused by *Clostridium difficile*, hepatitis A, rotavirus, or multidrug-resistant organisms, with wounds infected with vancomycin-resistant enterococcus, or children infected with respiratory syncytial or parainfluenza virus should be placed on contact precautions. Infection with some viruses, such as varicella or adenovirus, require droplet or airborne precautions in addition to contact precautions. Caregivers should remove gloves and gown before leaving the patient's room, avoid contact with potentially contaminated items or environmental surfaces, and wash hands immediately with an antimicrobial agent or waterless antiseptic agent after touching patients placed on contact isolation status.

**droplet i.** Techniques that decrease transmission of organisms larger than 5 microns that are generated when an infected patient coughs, sneezes, or spits. SYN: *droplet precaution*.

**infectious i.** An isolation technique that protects both health care personnel and patients from anyone who has or is suspected of having an infectious disease.

**protective i.** Isolation in which a vulnerable patient is protected from potentially harmful microorganisms in the environment. This is particularly important in caring for immunodeficient patients, e.g., those who have received chemotherapy or organ transplants. SYN: *reverse isolation*.

**reverse i.** Protective isolation.

**isolation unit** A hospital unit in which patients suffering from communicable diseases may be separated from other patients.

**isoleucine** (ī'sō-lū'sēn) ABBR: ile.  $C_6H_{13}NO_2$ , an amino acid formed during hydrolysis of fibrin and other proteins. It is essential in the diet.

**isologous** (ī-sōl'ō-gūs) Genetically identical. In transplantations, being isologous (or isogenic) indicates the absence of any tissue incompatibility between the recipient of tissue and the tissue or organ itself. SYN: *isogenic*; *syngeneic*.

**isomer** (ī'sō-mēr) [Gr. *isos*, equal, + *meros*, part] One of two or more chemical substances that have the same molecular formula but different chemical and physical properties owing to a different arrangement of the atoms in the

molecule. Dextrose is an isomer of levulose. SEE: *polymer*.

**isomerase** (ī-sōm'ēr-ās) Any enzyme that catalyzes the isomerization of its substrate. For example, phosphoglucose isomerase interconverts glucose and fructose-6-phosphate. SEE: *isomerism*.

**isomeric** (ī'sō-mēr'ik) Pert. to isomerism.

**isomerism** (ī-sōm'ēr-izm) The state of being composed of compounds of the same number of atoms but having different atomic arrangements in the molecule. SEE: *metamerism*; *polymerism*.

**isomerization** (ī-sōm'ēr-i-zā'shūn) The conversion of one chemical substance to an isomer. SEE: *isomer*; *isomerism*.

**isometric** (ī'sō-mē'trik) [" + *metron*, measure] 1. Having equal dimensions. SEE: *isotonic* (2). 2. Muscle contraction without associated joint movement.

**i. contraction phase** The first phase in contraction of the ventricle of the heart in which ventricular pressure increases but there is no decrease in volume of contents because semilunar valves are closed.

**isometropia** (ī'sō-mē-trō'pē-ā) [" + " + *ops*, eye] Same refraction of the two eyes.

**isomorphism** (ī-sō-mor'fizm) [" + *morphe*, form, + *-ismos*, state of] A condition marked by possession of the same form.

**isomorphous** (ī'sō-mor'fūs) Possessing the same shape.

**isoniazid** (ī'sō-nī'ā-zīd) ABBR: INH.  $C_6H_7N_3O$ . An odorless compound occurring as colorless or white crystals or as a white crystalline powder. It is an antibacterial, used principally in treating tuberculosis. Side effects of its use include hepatitis and peripheral neuropathy. The antidote for isoniazid overdose is pyridoxine.

**isopathy** (ī-sōp'ā-thē) [Gr. *isos*, equal, + *pathos*, disease, suffering] Isotherapy.

**isophoria** (ī'sō-fō'rē-ā) [" + *phorein*, to carry] Equal tension of vertical muscles of each eye with visual lines in the same horizontal plane; absence of hyperphoria and hypophoria.

**isopia** (ī-sō'pē-ā) [" + *ops*, vision] Equal vision in the eyes.

**isoplastic** (ī'sō-plās'tik) [" + *plastos*, formed] Removed from one individual and transplanted to another of the same species, as a graft. SEE: *isograft*.

**isoprene** (ī'sō-prēn) 2-methyl-1,3 butadiene. A volatile hydrocarbon produced naturally by plants and animals and used in industry to make synthetic rubber and many copolymers. In humans it is involved in mevalonate and therefore cholesterol synthesis. Industrial exposures to high levels of isoprenes are toxic and potentially carcinogenic.

**isopropanol** (i'sō-prō'pā-nōl) Isopropyl alcohol.

**isoprostane** (i-sō-prōs'tān") Any compound similar to prostaglandin that can be used as a marker for tissue damage caused by oxygen-derived free radicals. It is measured in human blood through the use of immunoassay technique and may enhance the study of diseases caused by oxidative stress.

**isopters** (i-sōp'tērz) [" + *opter*, observer] Lines on a chart of the field of vision that connect points of equal visual acuity.

**isoptin** SEE: *verapamil*.

**isopyknosis** (i'sō-pik-nō'sis) [" + *pyknosis*, condensation] Having uniform density, esp. being in a state of equal condensation, as in comparing different chromosomes.

**isosexual** (i'sō-sēks'ū-āl) Concerning or characteristic of the same sex.

**isosmotic** (i'sōs-mōt'ik) [" + *osmos*, impulsion] Having the same total concentration of osmotically active molecules or ions in solution as the solution or body fluid to which it is being compared. SEE: *isotonic* (1).

**isospora** (i-sōs'pō-rā) [" + *sporos*, spore] A genus of Sporozoa belonging to the order Coccidia; found worldwide in warm climates as intestinal parasites of mammals, birds, and amphibians.

*I. hominis* SEE: under *Sarcocystis*.

**isospore** (i'sō-spor) [Gr. *isos*, equal, + *sporos*, spore] A nonsexual spore from plants with only one kind of spore. It grows to maturity without conjugating.

**isostenuria** (i-sōs'thā-nūr'ē-ā) [" + *sthenos*, strength, + *ouron*, urine] Having a uniform urinary specific gravity and osmolarity despite marked variations in plasma osmolarity; a sign of impaired renal tubular function.

**isostimulation** (i'sō-stim'ū-lā'shŭn) [" + *L. stimulare*, to goad] Stimulation of an animal by the use of antigenic material derived from another animal of the same species.

**isotherapy** (i'sō-thēr'ā-pē) [" + *therapeia*, treatment] 1. The treatment of an organ disease by consuming the healthy organ of an animal 2. The treatment of viral and bacterial illnesses by administering dilute dosages of those microorganisms to infected patients. Isotherapy has been considered by some experts as a heretical branch of homeopathy. SYN: *isopathy*.

**isothermal** (i'sō-thēr'māl) [" + *therme*, heat] Having equal temperature.

**isothermic saturation boundary** (i'sō-thēr'mik) [" + Gr. *therme*, heat] ABBR: ISB. The location in the airways where inhaled gases become as warm as body temperature and maximally humidified for that temperature. In a healthy person the ISB typically occurs about 5 to 6 cm below the carina.

**isothermognosis** (i'sō-thērm'ōg-nō'sis) [" + " + *gnosis*, knowledge] Abnormal perception in which pain, heat, and cold are all felt as heat.

**isothiocyanate** (i'sō-thi'ō-sī'ā-nāt") [" + " ] ABBR: ITC. A member of a family of compounds found in some cruciferous vegetables, as well as horseradish and mustards. ITCs have cancer-preventing effects in animals.

**isotone** (i'sō-tōnz) One of several nuclides with the same number of neutrons but a different number of protons.

**isotonia** (i'sō-tō'nē-ā) [" + *tonos*, tone] The state of equal osmotic pressure of two or more solutions or substances.

**isotonic** (i'sō-tōn'ik) 1. Relating to the maintenance of a constant amount of resistive force during muscular contraction. 2. Having equal pressure. SEE: *isometric*. 3. Pert. to a solution with the same osmotic pressure as a reference solution.

**isotonicity** (i'sō-tō-nīs'i-tē) The state or condition of being isotonic.

**isotope** (i'sō-tōp) [" + *topos*, place] One of a series of chemical elements that have nearly identical chemical properties but different atomic weights and electric charges. Many isotopes are radioactive.

**i. cisternography** The use of a radioactive tracer to investigate the circulation of cerebrospinal fluid. A tracer such as <sup>131</sup>I serum albumin is injected in the lumbar subarachnoid space. Flow of the tracer toward the head and into areas of the brain can be recorded by means of serial scintillation scanning. This technique is useful in studying hydrocephalus.

**radioactive i.** An isotope in which the nucleus is unstable and emits ionizing radiation such as gamma rays.

**stable i.** An isotope that does not undergo radioactive decay into another element.

**isotropic** (i'sō-trōp'ik) [" + *tropos*, a turning] 1. Possessing similar qualities in every direction. 2. Having equal refraction.

**isotropy** (i'sōt'rō-pē) The state of being isotropic.

**isotype** (i'sō-tīp) In immunology, one of the determinants on the immunoglobulin molecule that distinguish among the main classes of antibodies of a given species. They are the same for all normal individuals of that species. SEE: *idiotype*.

**immunoglobulin i.** Immunoglobulin fragment.

**isotypical** (i-sō-tīp'i-kāl) [" + *typos*, mark] Belonging to the same variety or classification.

**isovaleric acidemia** (i'sō-vā-lēr'ik) A rare autosomal recessive metabolic disease affecting leucine metabolism. Isovaleric acid accumulates in the blood



during periods of increased amino acid metabolism (i.e., during infections or following ingestion of proteins). Coma and death may occur.

**isozyme** (ī'sō-zīm) Isoenzyme.

**issue** (ish'ū) [ME.] 1. Offspring. 2. A suppurating sore maintained by a foreign body in the tissue to act as a counterirritant. 3. A discharge of pus or blood. 4. A matter of conflict or dispute.

**isthmectomy** (is-mēk'tō-mē) [Gr. *isthmos*, isthmus, + *ektomē*, excision] Excision of an enlarged isthmus, esp. of the thyroid gland.

**isthmitis** (is-mī'tis) [" + *itis*, inflammation] An inflammation of the throat or fauces.

**isthmoparalysis** (is'mō-pā-rāl'ī-sis) [" + *para*, beyond, + *lyein*, to loosen] Paralysis of the muscles of the fauces. SYN: *isthmoplegia*.

**isthmoplegia** (is'mō-plē'jē-ā) [" + *plege*, a stroke] Isthmoparalysis.

**isthmus** (is'mūs) *pl.* **isthmuses, isthmi** [Gr. *isthmos*, isthmus] 1. A narrow passage connecting two cavities. 2. A narrow structure connecting two larger parts. 3. A constriction between two larger parts of an organ or structure.

**i. of eustachian tube** The narrowest section of the auditory tube, where the bony canal meets the cartilaginous tube.

**isthmus of the fauces** A constriction connecting the posterior mouth cavity proper with the pharynx. The walls of the isthmus are the palatoglossal arches.

**pharyngeal i.** The passageway between the nasopharynx and oropharynx.

**i. of thyroid gland** A narrow band of thyroid tissue connecting the right and left lobes of the thyroid gland.

**i. of uterine tube** The thick-walled segment of the uterine (fallopian) tube just before it enters the wall of the uterus.

**i. of uterus** A narrowing of the body of the uterus just above the cervix.

**itch, itching** [ME. *icchen*] Pruritus; a generally unpleasant sensation in the skin that creates the urge to rub or scratch it. Itch is a frequent manifestation of many inflammatory, infectious, and allergic skin disorders (e.g., most forms of dermatitis); of dry or cracked skin (xerosis); and of systemic illnesses (such as jaundice, hyperbilirubinemia, and some leukemias and lymphomas).

**baker's i.** A rash that occurs on the hands and forearms of bakers. It may be due to mechanical or chemical factors.

**barber's i.** Folliculitis of the hair follicles of the beard; usually caused by staphylococcal or fungal infection. SYN: *folliculitis barbae*; *sycois barbae*.

**dhobie i.** Tinea cruris.

**grain i.** Dermatitis caused by mites in stored grain.

**grocer's i.** Dermatitis caused either by mites in grain or cheese or by sugar.

**ground i.** A local irritation produced by penetration of the skin of the foot by hookworm larvae, esp. *Necator americanus*. SYN: *ancylostomiasis*.

**jack i.** Tinea cruris.

**seven-year i.** Scabies.

**swimmer's i.** The appearance of papules resembling insect bites on the skin of persons who swim in water containing the cercariae of certain schistosomes. It is usually present only on exposed surfaces of the skin. The papules appear from 4 to 13 days after exposure. The disease is self-limited; thus treatment is symptomatic. SYN: *cercarial dermatitis*; *schistosome dermatitis*; *water itch*.

**water i.** Swimmer's i.

**winter i.** SEE: under *winter itch*.

**-ite** [Gr.] 1. Suffix meaning *of the nature of or resembling*. 2. In chemistry, a salt of an acid having the termination *-ous*.

**iter** (ī'tēr) [L.] A passageway between two parts. **iteral** (-āl), *adj.*

**iteroparity** (it'ēr-ō-pār'ī-tē) [L. *iterare*, to repeat, + *parere*, to bear] The state of reproducing more than once in a lifetime. SEE: *multiparity*.

**-itic** Suffix meaning *pertaining to or relating to*. SEE: *-ic*.

**-itis** (ī'tis) [Gr.] Suffix meaning *inflammation of*.

**Ito's nevus** (ē'tōz) Mongolian spot-like cutaneous lesion over the shoulders, supraclavicular areas, sides of the neck, scapula areas, and upper arms. It is present at birth and tends to disappear with time, usually by age 4 or 5. Although cosmetically undesirable to some, the lesion is benign.

**ITP** 1. *idiopathic thrombocytopenic purpura*. 2. *immune thrombocytopenic purpura*.

**IU** *immunizing unit; international unit*.

**IUCD** *intrauterine contraceptive device*.

**IUD** *intrauterine device*.

**IUFD** *intrauterine fetal death*.

**IUGR** *intrauterine growth retardation*.

**IUPAC** *International Union of Pure and Applied Chemistry*.

**IV** *intravenous(ly)*.

**IVC** *intravenous cholangiography*.

**IVCD** *intraventricular conduction defect*.

**IVF** *in vitro fertilization*.

**IVIG** *intravenous immune globulin*.

**IVP** *intravenous pyelogram*.

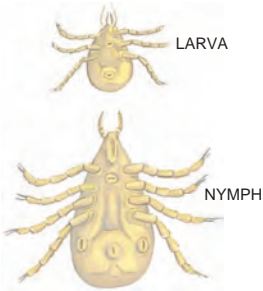
**IV push** The administration of medicine intravenously by injection. The rate of injection is determined by the type of medication being administered and by the patient's response.

**IVT** *intravenous transfusion*.

**IVU** *intravenous urography*.

**Ivy method** (ī'vē mēth'īd) SEE: *bleeding time*.

**ixodes** (iks-ō'dēz) [Gr. *ixodes*, like birdlime] A genus of ticks of the family Ixodidae, many of which are parasitic on humans and animals. **SEE: illus.**



**IXODES TICK**

(orig. mag. ×12)

**ixodiasis** (iks'ō-dī'ă-sīs) **1.** Lesions of the skin caused by tick bites. **2.** Any disease

caused by ticks, such as Rocky Mountain spotted fever.

**ixodic** (iks-ōd'ik) Pert. to or caused by ticks.

**ixodidae** (iks-ōd'i-dē) A family of ticks belonging to the order Acarina, class Arachnida, comprising the hard-bodied ticks including the genera *Amblyomma*, *Boophilus*, *Dermacentor*, *Haemaphysalis*, *Hyalomma*, *Ixodes*, and *Rhipicephalus*. All are parasitic and of significance as pests or as transmitters of disease in domestic animals and humans. Among the diseases transmitted by ticks are Rocky Mountain spotted fever, relapsing fever, tularemia, and Lyme disease.

**ixodides** (iks-ōd'i-dēz) Ticks.

**ixodoidea** (iks'ō-doy'dē-ă) A superfamily of Acarina, the ticks, in which the adults have a thick cuticle.

**ixomyelitis** (iks'ō-mī-ē-lī'tīs) [Gr. *ixodes*, like birdlime, + *myelos*, marrow, + *itis*, inflammation] An inflammation of the spinal cord in the lumbar region.