

GLOSSARY

1,25 dihydroxycholecalciferol—the most potent form of vitamin D, which is a result of both hepatic and renal activation of a precursor. It enhances intestinal absorption of calcium, increases parathyroid hormone-induced bone resorption, and enhances calcium reabsorption in the proximal renal tubules. Overall, vitamin D is important for maintaining serum calcium levels in the normal range. Also known as *calcitriol*.

5 α -reductase—an intracellular enzyme that converts testosterone to the active metabolite dihydrotestosterone. Two types of 5 α -reductase exist. Type I is found mostly in the skin, liver, and sebaceous glands. Type II is found mostly in urogenital tissue, including the prostate, and hair follicles.

6-acetylmorphine—an active metabolite of heroin. When present at a concentration that meets or exceeds the federal cutoff in a urine drug test, it confirms that the patient was recently using heroin.

Accuracy—refers to how close the test result or mean measurement is to the true value of the analyte in a specimen or to the number or percentage of true results relative to the total number of samples tested. Also referred to as *bias*.

Achiral—a drug that exists in only one form such that the molecules are superimposable on their mirror images.

Achlorhydria—a disorder resulting in insufficient or absence of hydrochloric acid from gastric secretion. Among the conditions associated with achlorhydria is pernicious anemia.

Acrodermatitis enteropathica—a rare inherited disorder of infants and young children characterized by skin eruptions around the mouth and other body orifices, alopecia, and diarrhea. The disorder is caused by zinc deficiency.

Acromegaly—excessive pituitary gland production of growth hormone, which can lead to gigantism if it occurs in adolescents or to thickening of the skin and enlargement of hands and feet if it occurs after puberty.

Action potential—changes in electrical potential across muscle or nerve cell when triggered by an appropriate stimulus leading to muscle cell contraction or transmission of an electrical signal by a nerve cell.

Acute-phase reactants—a class of plasma proteins whose concentration increases in response to inflammatory stimuli, such as tissue injury or infection. Also known as *acute-phase proteins*.

Addison disease—a disorder caused by chronic insufficiency of adrenal cortisol and, sometimes, aldosterone. Symptoms include extreme weakness, dizziness on standing, nausea, vomiting, chronic diarrhea, weight loss, salt craving, slow sluggish movement, and development of dark patches on the skin. The disease is treated with exogenous administration of corticosteroid (e.g., prednisone, hydrocortisone) and aldosterone (e.g., fludrocortisone).

Adipsia—absence of thirst.

ADME—refers to absorption, distribution, metabolism, and excretion of drugs, which are all related to pharmacokinetic handling of drugs by the human body.

Agglutination—the clumping or aggregation of cells (e.g., erythrocytes) in a solution.

Airway resistance—this reflects the degree of ease with which air can pass through the airways. It is expressed as the change in pressure divided by the change in flow.

Allele—an alternate form of the gene that is located at a particular chromosomal location. One allele is inherited from the mother and one from the father.

α -fetoprotein (AFP)—a glycoprotein produced by the liver, gastrointestinal tract, and fetal yolk sac. Elevated serum levels may occur in patients with hepatocellular carcinoma, nonseminomatous germ cell tumors, and cancers of the pancreas, stomach, lung, and colon. For this reason, AFP is used as a tumor marker.

α 1-acid glycoprotein—an acute-phase reactant that is a protein produced by the liver. It circulates in the plasma, constitutes 1–3% of circulating plasma proteins, and serves as a carrier for basic drugs.

Amenorrhea—absence of menstrual bleeding, which may be primary or secondary.

Amylin—a peptide hormone, cosecreted with insulin, that slows gastric emptying after eating, decreases gastrointestinal glucose absorption, and promotes satiety. Amylin helps reduce postprandial increases in serum glucose levels.

Analyte—the substance measured by the laboratory assay.

Androstenedione—an androgen produced by the adrenal glands, testes, and ovary that is converted to estrone in both females and males. High androstenedione levels in men can result in feminization.

Angiotensin II—an octapeptide that has two physiologic effects: it is a potent arteriolar vasoconstrictor, and it also stimulates the release of aldosterone, which causes renal sodium retention. Angiotensin II also increases the release of antidiuretic hormone and adrenocorticotrophic hormone.

Anion gap—a calculated value that is used to identify potential causes of metabolic acidosis. The anion gap is estimated by subtracting the sum of serum chloride and venous bicarbonate concentrations from the serum sodium concentration.

Anisocytosis—variability in the size of erythrocytes (red blood cells).

Antibiogram—a cumulative report describing the in vitro antimicrobial susceptibility results of the most common bacterial strains isolated at a particular institution/healthcare setting during the time period of the report (usually annually).

Anticitrullinated protein antibodies—antibodies that bind to the nonstandard amino acid citrulline and are highly specific for rheumatoid arthritis when present in serum. Also known as *anti-citrulline antibody* or *citrulline antibody*.

Antidiuretic hormone—a hormone that regulates renal handling of free water and enhances reabsorption of water at the collecting duct portion of the renal tubule. It is secreted by the hypothalamus in response to hypovolemia, thirst, increased serum osmolality, and angiotensin II. Also known as *arginine vasopressin*.

Antineutrophil cytoplasmic antibodies (ANCA)s—antibodies that are directed against neutrophil cytoplasmic antigens. Testing for ANCA is important for diagnosis and classification of various forms of vasculitis.

Antinuclear antibodies (ANAs)—autoantibodies that are directed against components of the cell nucleus, such as DNA, RNA, and histones.

Antiphospholipid antibodies—antibodies that react with proteins in the blood bound to phospholipid. Antiphospholipid antibodies interfere with the normal function of blood vessels by causing narrowing and irregularity of the vessel, thrombocytopenia, and thrombosis. Examples of these antiphospholipid antibodies include lupus anticoagulant and anticardiolipin antibodies.

Apophysis—an offshoot.

Apoptosis—noninflammatory cell death via autolysis.

Aquaporin—a water channel in the collecting duct that facilitates water reabsorption from the tubular lumen back into the bloodstream. Formation is stimulated by antidiuretic hormone.

Areflexia—absence of reflexes, which usually indicates a neurologic problem.

Arthrocentesis—a procedure in which a sterile needle and syringe are used to aspirate fluid from a joint.

Asherman syndrome—the development of intrauterine scar tissue after intrauterine surgery, which can lead to amenorrhea.

Atrial natriuretic factor—a vasodilatory hormone synthesized and primarily released by the right atrium. It is secreted in response to plasma volume expansion as a result of increased atrial stretch and results in a global down regulation of renin, aldosterone, and antidiuretic hormone. A net increase in sodium excretion is achieved. Also known as *atrial natriuretic peptide*.

B-RAF—a protein that stimulates cell growth. Mutations of B-RAF proteins are associated with cancer and birth defects. Mutated B-RAF proteins have elevated kinase activity. Vemurafenib is a serine-threonine protein kinase B-RAF inhibitor indicated for patients with advanced melanoma harboring the B-RAF gene. B-RAF is made by a human gene known as BRAF. Also known as *serine-threonine protein kinase*.

Bartter syndrome—a syndrome that presents with hypokalemia, alkalosis, increased renin and aldosterone, and normal-to-low blood pressure. It is a cause of secondary hyperaldosteronism.

Benzoylcegonine—a major metabolite of cocaine.

β -lactamases—enzymes produced by some bacteria that are capable of breaking of the chemical ring structure of, deactivating antibacterial properties, and mediating resistance to selected β -lactam antibiotics.

Bias—refers to how close the test result is to the true value of the analyte in a specimen or to the number or percentage of true results relative to the total number of samples tested. Also referred to as *accuracy*.

Biomarker—an objectively measured indicator of normal biological or pathogenic processes or pharmacologic responses used to diagnose and stage disease, assess disease progress, or assess response to therapeutic interventions.

Biosensor system—a bioreceptor molecule, which recognizes a target analyte and either generates a specific molecular species or results in a physiochemical change that can be measured by electrochemical methods.

Blastoconidia—a bud produced by asexual reproduction of fungus.

Brain natriuretic peptide (BNP)—a peptide that is principally produced and secreted by the ventricles of the brain. An increase in blood volume or pressure enhances BNP secretion, which increases natriuresis (renal sodium excretion) and to a lesser extent, diuresis. Also known as *B-type natriuretic peptide*.

Bronchial alveolar lavage—a procedure in which a bronchoscope is inserted into the lumen of the airways and sterile normal saline solution is flushed into the airways and then removed by aspiration. The solution is then sent for cellular and chemical analysis.

Bulimia—an illness characterized by periods of overeating or bingeing followed by purging and vomiting.

C-peptide—proinsulin, a precursor of insulin, is comprised of C-peptide and insulin. C-peptide must be cleaved from insulin for insulin to function. Elevated C-peptide levels in the blood stream are consistent with increased insulin levels.

Cachectic—a term used to describe a patient who has a wasting syndrome characterized by severe weight loss, muscle atrophy, and fatigue. The patient is unable to or does not want to eat. This is commonly used to describe patients with cancer, AIDS, or other chronic medical disorders.

Calcidiol—25-hydroxycholecalciferol, which is also known as *calcifediol*. This is a form of vitamin D with intermediate activity that has been activated by the liver but still needs to be activated by the kidneys to be most active.

Calcitonin—a hormone secreted by the C-cells of the thyroid gland. It inhibits osteoclastic activity, thereby inhibiting bone resorption. It also decreases calcium reabsorption in the renal proximal tubules.

Calcitriol—1,25 dihydroxycholecalciferol, which is the most active form of vitamin D. It has completed two activation steps: one by the liver and the other by the kidneys.

Calcium-phosphorus product—the multiplication product of serum calcium and phosphorus concentrations, expressed as mg/dL. Insoluble calcium-phosphorus precipitates are likely to be formed in soft tissues or as stones in the genitourinary tract when the product is high.