# Appendix A

## Standard Precautions

Standard precautions are the minimum infection prevention practices that apply to all patient care, regardless of the suspected or confirmed infection status of the patient, in any setting where healthcare is delivered. These practices are designed to both protect healthcare personnel (HCP) and prevent HCP from spreading infections among patients.

Standard precautions apply to (1) blood; (2) all body fluids, secretions, and excretions, except sweat, regardless of whether or not it contains visible blood; (3) nonintact skin; and (4) mucous membranes. OSHA defines other potentially infectious materials (OPIM) as the following:

- Human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids
- Any unfixed tissue or organ (other than intact skin) from a human (living or dead)
- HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV

Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in healthcare facilities. Standard precautions are used for the care of all patients, regardless of their diagnosis or presumed infection status.

Standard precautions include (1) hand hygiene, (2) use of personal protective equipment (e.g., gloves, gowns, masks), (3) safe injection practices, (4) safe handling of potentially contaminated equipment or surfaces in the patient environment, and (5) respiratory hygiene/cough etiquette.

### Hand Hygiene

Key situations where hand hygiene should be performed include

- before touching a patient, even if gloves will be worn
- before exiting the patient's care area after touching the patient or the patient's immediate environment
- after contact with blood, body fluids or excretions, or wound dressings
- prior to performing an aseptic task (e.g., placing an IV, preparing an injection)
- if hands will be moving from a contaminated-body site to a clean-body site during patient care
- after glove removal

Use soap and water when hands are visibly soiled (e.g., blood, body fluids) or after caring for patients with known or suspected infectious diarrhea (e.g., *Clostridium difficile,* norovirus). Otherwise, the preferred method of hand decontamination is with an alcohol-based hand rub.

### Personal Protective Equipment (PPE)

Personal protective equipment (PPE) refers to a variety of barriers and respirators used alone or in combination to protect mucous membranes, airways, skin, and clothing from contact with infectious agents. Gloves, gowns, and face protection are the most common forms of PPE. The selection of PPE is based on the nature of the patient interaction and/or the likely mode(s) of transmission.

#### Gloves

Wear gloves (clean, nonsterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items. Put on clean gloves just before touching mucous membranes and nonintact skin. Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Do not wear the same pair of gloves for the care of more than one patient. Do not wash gloves for the purpose of reuse. Remove gloves promptly after use, before touching noncontaminated items and environmental surfaces, and before going to another patient. Wash hands immediately to avoid transfer of microorganisms to other patients or environments.

### Gowns

Wear a gown (a clean, nonsterile gown is adequate) to protect skin and to prevent soiling of clothing during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. Select a gown that is appropriate for the activity and the amount of fluid likely to be encountered. Remove a soiled gown as promptly as possible and wash hands to avoid transfer of microorganisms to other patients or environments. Do not wear the same gown for the care of more than one patient.

### Face Protection

Wear a mask and eye protection or a face shield to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

Depending on the patient's health status, it may be necessary for healthcare providers to wear respirators. Filtering facepiece respirators (FFR), such as N95 and KN95 masks, elastomeric facepiece respirator (EFR), or powered air-purifying respirator (PAPR) may be required by your facility.

Remove and discard all PPE before leaving the patient's room or area.

## Safe Injection Practices

Injection safety includes practices intended to prevent transmission of infectious diseases between one patient and another, or between a patient and a healthcare provider during preparation and administration of parenteral medications. Although phlebotomists do not administer medications, they do use sharps. Two key recommendations of this standard are appropriate to a phlebotomist:

- Dispose of used syringes and needles at the point of use in a sharps container that is closable, puncture-resistant, and leakproof.
- Adhere to federal and state requirements for protection of HCP from exposure to bloodborne pathogens.

OSHA defines work practice controls related to the use of sharps and the prevention of transmission of bloodborne pathogens that are federal requirements. These controls require HCP to take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. The guidelines state the following:

- Never recap used needles, or otherwise manipulate them using both hands, or use any other technique that involves directing the point of a needle toward any part of the body.
- Use either a one-handed "scoop" technique or a mechanical device designed for holding the needle sheath.
- Do not remove used needles from disposable syringes by hand and do not bend, break, or otherwise manipulate used needles by hand.
- Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which are located as close as practical to the area in which the items were used.
- Place reusable syringes and needles in a puncture-resistant container for transport to the reprocessing area.

## Patient Environment

Handle used patient care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately. See that single-use items are discarded properly.

Verify that the healthcare facility has adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces and ensure that these procedures are being followed.

Use mouthpieces, resuscitation bags, or other ventilation devices as an alternative to mouth-to-mouth resuscitation methods in areas where the need for resuscitation is predictable.

Place a patient who contaminates the environment or who does not (or cannot be expected to) assist in maintaining appropriate hygiene or environmental control in a private room. If a private room is not available, consult with infection control professionals regarding patient placement or other alternatives.

## Respiratory Hygiene/Cough Etiquette

Implement measures to contain respiratory secretions in patients and accompanying individuals who have signs and symptoms of a respiratory infection, beginning at point of entry to the facility and continuing throughout the duration of the visit.

- Post signs at entrances with instructions to patients with symptoms of respiratory infection to
  - cover their mouths/noses when coughing or sneezing
  - use and dispose of tissues
  - perform hand hygiene after hands have been in contact with respiratory secretion
- Provide tissues and no-touch receptacles for disposal of tissues.
- Provide resources for performing hand hygiene in or near waiting areas.
- Offer masks to coughing patients and other symptomatic persons upon entry to the facility.
- Provide space and encourage persons with symptoms of respiratory infections to sit as far away from others as possible. If available, facilities may wish to place these patients in a separate area while waiting for care.

Educate all healthcare personnel on the importance of infection prevention measures to contain respiratory secretions to prevent the spread of respiratory pathogens when examining and caring for patients with signs and symptoms of a respiratory infection.

# Appendix B

## Transmission-Based Precautions

Transmission-based precautions (airborne precautions, droplet precautions, and contact precautions) are recommended to provide additional precautions beyond standard precautions to interrupt the transmission of pathogens in hospitals.

Transmission-based precautions can be used for patients who are known or suspected to be infected or colonized with epidemiologically important pathogens that can be transmitted by airborne or droplet transmission or by contact with dry skin or contaminated surfaces. These precautions should be used in addition to standard precautions:

- Airborne precautions are used for infections spread in small particles in the air such as chickenpox.
- Droplet precautions are used for infections spread in large droplets by coughing, talking, or sneezing such as influenza.
- Contact precautions are used for infections spread by skin-to-skin contact or contact with other surfaces such as herpes simplex virus.

Airborne precautions, droplet precautions, and contact precautions may be combined for diseases that have multiple routes of transmission. Whether used singularly or in combination, they are always implemented in addition to standard precautions.

### Contact Precautions

Contact precautions are intended to prevent transmission of infectious agents, including important microorganisms, that are spread by direct or indirect contact with the patient or the patient's environment. Contact precautions are required for patients infected or colonized with multidrug-resistant organisms. Contact precautions also apply where the presence of excessive wound drainage, fecal incontinence, or other discharges from the body suggest an increased potential for extensive environmental contamination and risk of transmission. A single-patient room is preferred for patients who require contact precautions. When a single-patient room is not available, consultation with infection control personnel is recommended to assess the various risks associated with other patient placement options (e.g., cohorting, keeping the patient with an existing roommate). In multipatient rooms, at least 3 feet of spatial separation between beds is advised to reduce the opportunities for inadvertent sharing of items between the infected/colonized patient and other patients. Healthcare personnel caring for patients on contact precautions wear a gown and gloves for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's environment. Healthcare personnel don PPE before entering the patient's room and discard it before exiting the room. This is done to contain pathogens, especially those that are transmitted through environmental contamination, such as vancomycin-resistant enterococci, *C. difficile,* noroviruses, and other intestinal tract pathogens.

### Droplet Precautions

Droplet precautions are intended to prevent transmission of pathogens spread through respiratory or mucous membrane contact with the respiratory secretions of an infected person. Because these pathogens do not remain infectious over long distances in a healthcare facility, special air handling and ventilation are not required to prevent droplet transmission. Infectious agents for which droplet precautions are indicated include *pertussis,* influenza virus, adenovirus, rhinovirus, *N. meningitides,* and group A *Streptococcus* (for the first 24 hours of antimicrobial therapy). A single-patient room is preferred for patients who require droplet precautions. When a single-patient room is not available, consultation with infection control personnel is recommended to assess the various risks associated with other patient placement options (e.g., cohorting, keeping the patient with an existing roommate). Spatial separation of at least 3 feet and drawing the curtain between patient beds are especially important for patients in multibed rooms with infections transmitted by the droplet route. Healthcare personnel wear a mask (a respirator is not necessary) for close contact with infectious patients; the mask is generally donned upon room entry. Patients on droplet precautions who must be transported

outside the room should wear a mask, if tolerated, and follow respiratory hygiene/cough etiquette.

## Airborne Precautions

Airborne precautions prevent transmission of infectious agents that remain infectious over long distances when suspended in the air (e.g., rubeola virus [measles], varicella virus [chickenpox], *M. tuberculosis,* and SARS-CoV including COVID-19 variants). The preferred placement for patients who require airborne precautions is in an airborne infection isolation room (AIIR). An AIIR is a single-patient room that is equipped with special air handling and ventilation capacity that meet the American Institute of Architects/Facility Guidelines Institute (AIA/FGI) standards for AIIRs. Some states require the availability of such rooms in hospitals, emergency departments, and nursing homes that care for patients with *M. tuberculosis.* A respiratory protection program that includes education about use of respirators (FFRs, EFRs, and PAPRs), fit-testing, and user seal checks is required in any facility with AIIRs. In settings where airborne precautions cannot be implemented due to limited engineering resources (e.g., physician offices), masking the patient, placing the patient in a private room (e.g., office examination room) with the door closed, and providing N95 or higher-level respirators (or masks if respirators are not available for healthcare personnel) will reduce the likelihood of airborne transmission until the patient is either transferred to a facility with an AIIR or returned to the home environment, as deemed medically appropriate. Healthcare personnel caring for patients on airborne precautions wear a mask or respirator mask that is donned prior to room entry. Whenever possible, nonimmune healthcare workers should not care for patients with vaccine-preventable airborne diseases (e.g., measles, chickenpox, and smallpox).

## Applications of Transmission-Based Precautions

Diagnosis of many infections requires laboratory confirmation. Because laboratory tests, especially those that depend on culture techniques, often require two or more days for completion, transmission-based precautions must be implemented while test results are pending based on the clinical presentation and likely pathogens. Use of appropriate transmission-based precautions at the time a patient develops symptoms or signs of transmissible infection, or arrives at a healthcare facility for care, reduces transmission opportunities.

## Discontinuation of Transmission-Based Precautions

Transmission-based precautions remain in effect for limited periods of time (i.e., while the risk for transmission of the infectious agent persists or for the duration of the illness). For some diseases (e.g., pharyngeal or cutaneous diphtheria, RSV), transmission-based precautions remain in effect until culture or antigen-detection test results document eradication of the pathogen and, for RSV, symptomatic disease is resolved. For other diseases (e.g., *M. tuberculosis*), state laws and regulations, and healthcare facility policies, may dictate the duration of precautions. In immunocompromised patients, viral shedding can persist for prolonged periods of time (many weeks to months) and transmission to others may occur during that time; therefore, the duration of contact and/or droplet precautions may be prolonged for many weeks.

## Application of Transmission-Based Precautions in Ambulatory and Home Care Settings

Transmission-based precautions apply in all healthcare settings; however, the environment dictates changes. For example, in home care, AIIRs are not available. Typically, family members already exposed to diseases such as varicella and tuberculosis would not use masks or respiratory protection, but visiting phlebotomists or other healthcare workers would need to use such protection. Similarly, management of patients colonized or infected with multidrug-resistant organisms may necessitate contact precautions in acute care hospitals and in some long-term care facilities when there is continued transmission, but the risk of transmission in ambulatory care and home care has not been well defined. Consistent use of standard precautions is essential. In ambulatory care centers, screening for potentially infectious symptomatic and asymptomatic individuals is necessary at the start of the initial patient encounter.

# Appendix C

## Prefixes, Suffixes, and Word Roots in Commonly Used Medical Terms

### Prefixes

**a-, an-** without, not
**ab-** from, away
**ad-** to, toward
**ambi-, amph-, amphi-** both, on both sides, around
**ante-** before
**antero-** in front of
**anti-** against, opposing
**auto-** self
**bi-** twice, double
**brachy-** short
**brady-** slow
**cata-** down, lower, under
**centi-** hundred
**cephal-** head
**chol-, chole-, cholo-** gall, bile
**chromo-** color
**circum-** around
**co-, com-, con-** together, with
**contra-** against
**cryo-** cold
**de-** down, from
**deca-** ten
**deci-** tenth
**demi-** half
**dextro-** to the right
**di-** double, twice
**dia-** through, apart, between
**dipla-, diplo-** double, twin
**dis-** apart, away from
**dys-** difficult, painful, bad, abnormal
**e-, ec-, ecto-** away, from, without, outside
**em-, en-** in, into, inside
**endo-** within, inside
**ento-** within, inner
**epi-** on, above
**erythro-** red
**eu-** good
**ex-, exo-** outside of, beyond, without
**extra-** outside of, beyond, in addition
**fore-** before, in front of
**gyn-, gyno-, gyne-, gyneco-** woman, female
**hemi-** half
**hetero-** other, unlike
**homeo-, homo-** same, like
**hyper-** above, over, increased, excessive
**hypo-** below, under, decreased
**idio-** personal, self-produced
**im-, in-, ir-** not
**in-** in, into
**infra-** beneath
**inter-** between, among
**intra-, intro-** into, within, during
**juxta-** near, nearby
**kata-, kath-** down, lower, under
**kineto-** motion
**leuco-, leuko-** white
**levo-** to the left
**macro-** large, long
**mal-** bad
**mega-, megalo-** large, great
**meio-** contraction
**melan-, melano-** black
**mes-, meso-** middle
**meta-** beyond
**micro-** small
**mio-** smaller, less
**mono-** single, one
**multi-** many
**neo-** new
**non-, not-** no
**nulli-** none
**ob-** against
**olig-, oligo-** few, less than normal
**ortho-** straight
**oxy-** sharp, acid
**pachy-** thick
**pan-** all, every
**par-, para-** alongside of, with; woman who has given birth
**per-** through, excessive
**peri-** around
**pes-** foot
**pluri-** more, several
**pneo-** breathing
**poly-** many, much
**post-** after, behind
**pre-, pro-** before, in front of
**presby-, presbyo-** old age
**primi-** first
**pseudo-** false
**quadri-** four
**re-** back, again
**retro-** backward, behind
**semi-** half
**steno-** contracted, narrow
**stereo-** firm, solid, three-dimensional
**sub-** under

**super-, supra-** above, upon, excess
**sym-, syn-** with, together
**tachy-** fast
**tele-** distant, far
**tetra-** four
**tomo-** incision, section
**trans-** across
**tri-** three
**tropho-** nutrition, growth
**ultra-** beyond, excess
**uni-** one
**veni-** vein
**xanth-, xantho-** yellow

## Suffixes

**-ad** to, toward
**-aesthesia, -esthesia** sensation
**-al** characterized by
**-algia** pain
**-ase** enzyme
**-asthenia** weakness
**-cele** swelling, tumor
**-centesis** puncture, tapping
**-cidal** killing
**-cide** causing death
**-cise** cut
**-coele** cavity
**-cyst** bladder, bag
**-cyte** cell, cellular
**-dynia** pain
**-ectomy** cutting out, surgical removal
**-emesis** vomiting
**-emia** blood
**-esthesia** sensation
**-form** shape
**-fuge** driving away
**-gene, -genic, -genetic, -genesis, -genous** arising from, origin, formation
**-gram** recorded information
**-graph** instrument for recording
**-graphy** the process of recording
**-ia** condition
**-iasis** condition of
**-ic, -ical** pertaining to
**-ism** condition, process, theory
**-itis** inflammation of
**-ium** membrane
**-ize** to cause to be, to become, to treat by special method
**-kinesis, -kinetic** motion
**-lepsis, -lepsy** seizure, convulsion
**-lith** stone
**-logy** science of, study of
**-lysis** setting free, disintegration, decomposition
**-malacia** abnormal softening
**-mania** insanity, abnormal desire
**-meter** measure
**-metry** process of measuring
**-odynia** pain
**-oid** resembling
**-ole** small, little
**-oma** tumor
**-opia** vision
**-opsy** to view
**-osis** disease, condition of
**-ostomy** to make a mouth, opening
**-otomy** incision, surgical cutting
**-ous** having
**-pathy** disease, suffering
**-penia** too few, lack, decreased
**-pexy** surgical fixation
**-phagia, -phage** eating, consuming, swallowing
**-phobia** fear, abnormal fear
**-phylaxis** protection
**-plasia** formation or development
**-plastic** molded
**-plasty** operation to reconstruct, surgical repair
**-plegia** paralysis
**-pnea** breathing
**-rrhage, -rrhagia** abnormal or excessive discharge, hemorrhage, flow
**-rrhaphy** suture of
**-rrhea** flow, discharge
**-sclerosis** hardening
**-scope** instrument used to examine
**-scopy** examining
**-sepsis** poisoning, infection
**-spasm** cramp or twitching
**-stasis** stoppage
**-stomy** opening
**-therapy** treatment
**-thermy** heat
**-tome** cutting instrument
**-tomy** incision, section
**-tripsy** surgical crushing
**-trophy** nutrition, growth
**-tropy** turning, tendency
**-uria** urine

## Word Roots

**adeno-** gland, glandular
**adipo-** fat
**aero-** air
**andr-, andro-** man, male
**angio-** blood vessel
**ano-** anus
**arterio-** artery
**arthro-** joint
**bili-** bile
**bio-** life
**blasto-, blast-** developing stage, bud
**bracheo-** arm
**broncho-** bronchial (windpipe)
**carcino-** cancer
**cardio-** heart
**cerebr-, cerebro-** brain

**cephalo-** head
**cervico-** neck
**chondro-** cartilage
**chromo-** color
**colo-** colon
**colp-, colpo-** vagina
**coro-** body
**cost-, costo-** rib
**crani-, cranio-** skull
**cysto-** bladder, bag
**cyto-** cell, cellular
**dacry-, dacryo-** tears, lacrimal apparatus
**dactyl-, dactylo-** finger, toe
**dent-, denti-, dento-** teeth
**derma-, dermat-, dermato-** skin
**dorsi-, dorso-** back
**encephalo-** brain
**entero-** intestine
**esthesio-** sensation
**fibro-** connective tissue
**galact-, galacto-** milk
**gastr-, gastro-** stomach
**gingiv-** gums
**glosso-** tongue
**gluco-, glyco-** sugar, sweet
**gravid-, gravida-** pregnant female
**haemo-, hemato-, hem-, hemo-** blood
**hepa-, hepar-, hepato-** liver
**herni-** rupture
**hidro-** sweat (perspiration)
**histo-** tissue
**hydra-, hydro-** water
**hyster-, hystero-** uterus
**ictero-** jaundice
**ileo-** ileum
**karyo-** nucleus, nut
**kera-, kerato-** horn, hardness, cornea
**lact-** milk
**laparo-** abdomen
**latero-** side
**linguo-** tongue
**lipo-** fat
**lith-** stone
**lobo-** lobe
**mast-, masto-** breast
**med-, medi-** middle
**mening-** meninges (covers the brain)
**metro-, metra-** uterus
**my-, myo-** muscle
**myel-, myelo-** marrow
**narco-** sleep
**nas-, naso-** nose
**necro-** dead
**nephr-, nephro-** kidney
**neu-, neuro-** nerve
**niter-, nitro-** nitrogen
**nucleo-** nucleus
**oculo-** eye
**odont-** tooth
**omphalo-** navel, umbilicus
**onco-** tumor
**oo-** ovum, egg
**oophor-** ovary
**ophthalmo-** eye
**orchid-** testicle
**os-** mouth, opening
**oste-, osteo-** bone
**oto-** ear
**palpebro-** eyelid
**path-, patho-** disease, suffering
**pedo-** child
**pepso-** digestion
**phag-, phago-** eating, consuming, swallowing
**pharyng-, pharyngo-** throat, pharynx
**phlebo-** vein
**pleuro-** side, rib
**pneumo-** air, lungs
**pod-** foot
**procto-** rectum
**psych-** the mind
**pulmon-, pulmono-** lung
**pyelo-** pelvis (renal)
**pyo-** pus
**pyro-** fever, heat
**reni-, reno-** kidney
**rhino-** nose
**sacchar-** sugar
**sacro-** sacrum
**salpingo-** tube, fallopian tube
**sarco-** flesh
**sclero-** hard, sclera
**septi-, septic-, septico-** poison, infection
**stomato-** mouth
**teno-, tenoto-** tendon
**thermo-** heat
**thio-** sulfa
**thoraco-** chest
**thrombo-** blood clot
**thyro-** thyroid gland
**tricho-** hair
**urino-, uro-** urine, urinary organs
**utero-** uterus, uterine
**uvulo-** uvula
**vagin-** vagina
**vaso-** vessel
**ventri-, ventro-** abdomen
**vesico-** blister

# Appendix D

## Abbreviations and Symbols Commonly Used in Medical Notations

### Abbreviations

**a** before

**āā, AA** of each

**ABGs-** arterial blood gases

**a.c.-** before meals

**ADD-** attention deficit disorder

**ad lib-** as desired

**ADLs-** activities of daily living

**ADT-** admission, discharge, transfer

**AED-** automated external defibrillator

**AIDS-** acquired immunodeficiency syndrome

**AKA-** above knee amputation

**a.m.a.-** against medical advice

**AMA-** American Medical Association

**amp.-** ampule

**amt-** amount

**aq., AQ-** water; aqueous

**ASHD-** atherosclerotic heart disease

**ausc.-** auscultation

**ax-** axis

**Bib, bib-** drink

**b.i.d., bid, BID-** twice a day

**BKA-** below knee amputation

**BM-** bowel movement

**BP, B/P-** blood pressure

**BPC-** blood pressure check

**BPH-** benign prostatic hypertrophy

**bpm-** beats per minute

**BSA-** body surface area

**c̄** with

**Ca-** calcium

**CA cancer**

**CABG-** coronary artery bypass graft

**cap, caps-** capsules

**CBC-** complete blood (cell) count

**C.C., CC-** chief complaint

**CDC-** Centers for Disease Control and Prevention

**CHF-** congestive heart failure

**chr-** chronic

**cm-** centimeter

**CNS-** central nervous system

**Comp, comp-** compound

**COPD-** chronic obstructive pulmonary disease

**COVID-** coronavirus disease

**CP-** chest pain

**CPE-** complete physical examination

**CPR-** cardiopulmonary resuscitation

**CSF-** cerebrospinal fluid

**CT-** computed tomography

**CV-** cardiovascular

**CVA-** cerebrovascular accident

**CXR-** chest X-ray

**d-** day

**D&C-** dilation and curettage

**DEA-** Drug Enforcement Administration

**Dil, dil-** dilute

**dL-** deciliter

**DM-** diabetes mellitus

**DNR-** do not resuscitate

**DOB-** date of birth

**Dr.-** doctor

**DTaP-** diphtheria-tetanus-acellular pertussis vaccine

**DTs-** delirium tremens

**DVT-** deep venous thrombosis

**D/W-** dextrose in water

**Dx, dx-** diagnosis

**ECG, EKG-** electrocardiogram

**ED-** emergency department

**EEG-** electroencephalogram

**EENT-** eyes, ears, nose, and throat

**EP-** established patient

**ER-** emergency room

**ESR-** erythrocyte sedimentation rate

**FBS-** fasting blood sugar

**FDA-** Food and Drug Administration

**FH-** family history

**Fl, fl , fld-** fluid

**fl oz-** fluid ounce

**F/u-** follow-up

**FUO-** fever of unknown origin

**Fx-** fracture

**g-** gram

**GBS-** gallbladder series

**GI-** gastrointestinal

**Gm, gm-** gram

**gr-** grain

**gt, gtt-** drop, drops

**GTT-** glucose tolerance test

**GU-** genitourinary

**GYN-** gynecology
**HA-** headache
**HB, Hgb-** hemoglobin
**hct-** hematocrit
**HEENT-** head, ears, eyes, nose, throat
**HIV-** human immunodeficiency virus
**HO-** history of
**HPI-** history of present illness
**HPV-** human papillomavirus
**Hx-** history
**ICU-** intensive care unit
**I&D-** incision and drainage
**ID-** identification
**IDDM-** insulin-dependent diabetes mellitus
**IM-** intramuscular
**inf.-** infusion; inferior
**inj-** injection
**I&O-** intake and output
**IT-** inhalation therapy
**IUD-** intrauterine device
**IV-** intravenous
**KUB-** kidneys, ureters, bladder
**L-** liter
**L1, L2, etc.-** lumbar vertebrae
**lab-** laboratory
**lb-** pound
**liq-** liquid
**LLE-** left lower extremity (left leg)
**LLL-** left lower lobe
**LLQ-** left lower quadrant
**LMP-** last menstrual period
**LUE-** left upper extremity (left arm)
**LUQ-** left upper quadrant
**m-** meter
**M-** mix (Latin *misce*)
**mcg-** microgram
**mg-** milligram
**MI-** myocardial infarction
**mL-** milliliter
**mm-** millimeter
**MM-** mucous membrane
**mmHg-** millimeters of mercury
**MRI-** magnetic resonance imaging
**MS-** multiple sclerosis
**NB-** newborn
**NCE-** nonconforming event
**NED-** no evidence of disease
**NIDDM-** noninsulin-dependent diabetes mellitus
**NKA-** no known allergies
**no, #-** number
**noc, noct-** night
**npo, NPO-** nothing by mouth
**NPT-** new patient
**NS-** normal saline
**NSAID-** nonsteroidal anti-inflammatory drug
**NTP-** normal temperature and pressure
**N&V, N/V-** nausea and vomiting
**NYD-** not yet diagnosed
**OB-** obstetrics
**OC-** oral contraceptive
**oint-** ointment
**OOB-** out of bed
**OPD-** outpatient department
**OPS-** outpatient services
**OR-** operating room
**OT-** occupational therapy
**OTC-** over-the-counter
**oz-** ounce
**$\overline{p}$** after
**PA-** posteroanterior
**Pap-** Pap smear
**Path-** pathology
**p.c., pc-** after meals
**PE-** physical examination
**per-** by, with
**PH-** past history
**PICC-** peripherally inserted central catheter
**PID-** pelvic inflammatory disease
**PMFSH-** past medical, family, social history
**PMS-** premenstrual syndrome
**po-** by mouth
**p/o-** postoperative
**POMR-** problem-oriented medical record
**P&P-** Pap smear (Papanicolaou smear) and pelvic examination
**p.r.n., prn, PRN-** whenever necessary
**pt-** pint
**Pt-** patient
**PT-** physical therapy
**PTA-** prior to admission
**pulv-** powder
**PVC-** premature ventricular contraction
**q.-** every
**q2, q2h-** every 2 hours
**q.a.m., qam-** every morning
**q.h., qh-** every hour
**qns, QNS-** quantity not sufficient
**qs, QS-** quantity sufficient
**qt-** quart
**RA-** rheumatoid arthritis; right atrium
**RBC-** red blood cells; red blood (cell) count
**RDA-** recommended dietary allowance, recommended daily allowance
**REM-** rapid eye movement
**RF-** rheumatoid factor
**RLE-** right lower extremity (right leg)
**RLL-** right lower lobe
**RLQ-** right lower quadrant
**R/O-** rule out
**ROM-** range of motion
**ROS/SR-** review of systems/ systems review
**RPM-** revolutions per minute
**RUE-** right upper extremity (right arm)

**RUQ-** right upper quadrant
**RV-** right ventricle
**Rx-** prescription, take
**s̄** without
**SAD-** seasonal affective disorder
**SARS-CoV-2-** severe acute respiratory syndrome coronavirus 2
**SIDS-** sudden infant death syndrome
**sig-** sigmoidoscopy
**Sig-** directions
**SL-** sublingual
**SOAP-** subjective, objective, assessment, plan
**SOB-** shortness of breath
**sol-** solution
**S/R-** suture removal
**Staph-** staphylococcus
**stat, STAT-** immediately
**STI-** sexually transmitted infection
**Strep-** streptococcus
**subcu, subcut-** subcutaneous
**subling-** sublingual
**surg-** surgery
**S/W-** saline in water
**SX-** symptoms
**T1, T2, etc.-** thoracic vertebrae
**T&A-** tonsillectomy and adenoidectomy
**tab-** tablet
**TB-** tuberculosis
**tbs., tbsp-** tablespoon
**TIA-** transient ischemic attack
**t.i.d., tid, TID-** three times a day
**tinc, tinct, tr-** tincture
**TMJ-** temporomandibular joint
**top-** topically
**TPR-** temperature, pulse, and respiration
**TSH-** thyroid stimulating hormone
**tsp-** teaspoon
**Tx-** treatment
**U-** unit
**UA-** urinalysis
**UCHD-** usual childhood diseases
**UGI-** upper gastrointestinal
**ung, ungt-** ointment
**URI-** upper respiratory infection
**US-** ultrasound
**UTI-** urinary tract infection
**VAD-** vascular access device
**VA-** visual acuity
**VD-** venereal disease
**VF-** visual field
**VS-** vital signs
**WBC-** white blood cells; white blood (cell) count
**WNL-** within normal limits
**wt-** weight
**y/o-** year old

# Symbols

### Weights and Measures

#- pounds
° degrees
′- foot; minute
″ inch; second
**mEq-** milliequivalent
**mL-** milliliter
**dL-** deciliter
**mg%-** milligrams percent; milligrams per 100 mL

### Mathematical Functions and Terms

#- number
+- plus; positive; acid reaction
− minus; negative; alkaline reaction
± plus or minus; either positive or negative; indefinite
× multiply; magnification; crossed with, hybrid
÷, / divided by
=- equal to
≈ approximately equal to
> greater than; from which is derived
< less than; derived from
≮ not less than
≯ not greater than
≤ equal to or less than
≥ equal to or greater than
≠ not equal to
√ square root
∛ cube root
∞ infinity
: ratio; "is to"
∴ therefore
% percent
π pi (3.14159)—the ratio of circumference of a circle to its diameter

### Chemical Notations

Δ change; heat
⇌ reversible reaction
↑ increase
↓ decrease

### Warnings

Ⓒ Schedule I controlled substance
Ⓒ Schedule II controlled substance
Ⓒ Schedule III controlled substance
Ⓒ Schedule IV controlled substance
Ⓒ Schedule V controlled substance
☠ poison
☢ radiation
☣ biohazard

### Others

℞ prescription; take
□,♂ male
○,♀ female
† one
†† two
††† three

# Appendix E

## Medical Laboratory Tests

**TABLE E-1** Alphabetical Listing of Blood Tests (partial list)

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| ABO group & Rh type | ABO&Rh | EDTA; special patient identification and banding | | Blood Bank |
| Acetone | | SST, keep on ice | | Chemistry |
| Acid-fast bacillus (in blood culture) | AFB | Blood culture bottles, or yellow-SPS tubes | | Microbiology |
| Acid phosphatase (prostatic form) | ACP | SST or nonadditive; centrifuge, separate, and freeze | | Chemistry |
| Adrenocorticotropic hormone | ACTH | EDTA; centrifuge, separate, and freeze | | Chemistry |
| Alanine transferase | ALT | SST or PST; centrifuge, separate, and refrigerate | | Chemistry |
| Albumin | Alb | SST or PST; centrifuge, separate, and refrigerate | | Chemistry |
| Alcohol | ETOH | Oxalate, heparin, SST, EDTA, or nonadditive; no alcohol prep, keep on ice | | Chemistry or Toxicology |
| Aldolase | | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Aldosterone | Aldo | Nonadditive; centrifuge, separate, and refrigerate; patient must be "up-right" for at least ½ hour prior to collection | | Chemistry |
| Alkaline phosphatase | ALP | PST or SST; centrifuge, separate; fasting specimen | | Chemistry |
| Alpha-fetoprotein | AFP | SST; centrifuge, separate | | Chemistry |
| Aluminum | Al | Trace-element-free (nonadditive or EDTA) | | Chemistry |
| Ammonia | $NH_3$ | PST; transport on ice; separate and refrigerate | | Chemistry |
| Amylase | Amy | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Antidiuretic hormone | ADH | EDTA; centrifuge, separate, and freeze | | Chemistry |

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Antinuclear antibodies | ANA | SST; centrifuge, separate, and refrigerate | | Immunology |
| Antistreptolysin | ASO | PST or SST; centrifuge, separate, and refrigerate | | Immunology |
| Antithrombin | AT-III | Citrate; centrifuge, separate, and freeze | | Coagulation |
| Apolipoprotein | | PST or SST; centrifuge, separate, and freeze; fasting specimen | | Chemistry |
| Arterial blood gases | ABGs | Heparin or heparinized syringe; transport on ice | | Chemistry |
| Aspartate aminotransferase | AST | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Basic metabolic profile | BMP | PST or SST; centrifuge, separate; fasting specimen | | Chemistry |
| Beta human chorionic gonadotropin | Beta hCG | PST or SST; centrifuge, separate | | Chemistry |
| Beta-type natriuretic protein | BNP | EDTA; separate and freeze | | Chemistry |
| Bilirubin<br>– direct Bili<br>– total Bili | Bili | PST or SST; centrifuge, separate, and refrigerate; protect from light | | Chemistry |
| Blood culture<br>– aerobic<br>– anaerobic | BC | Blood culture bottles, or yellow-SPS tubes | | Microbiology |
| Blood urea nitrogen | BUN | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Cadmium | Cd | Trace-element-free EDTA | | Chemistry |
| Calcitonin | | Nonadditive; centrifuge, separate, freeze; fasting specimen | | Chemistry |
| Calcium | Ca | PST or SST; centrifuge, refrigerate | | Chemistry |
| Carbon monoxide | CO | EDTA; refrigerate; tube must be full | | Chemistry |
| Carcinoembryonic antigens | CEA | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Carcinogenic antigen | Ca 125 | PST or SST; centrifuge, separate, and refrigerate; freeze if testing is delayed | | Chemistry |
| Carotene, beta | | SST; centrifuge, separate, and freeze; protect from light | | Chemistry |
| Ceruloplasmin | | PST or SST; centrifuge, separate, and freeze; fasting specimen | | Chemistry |

*(continued)*

## TABLE E-1 Alphabetical Listing of Blood Tests (partial list) *(Continued)*

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Chlamydia antibodies | | SST; centrifuge, separate, and refrigerate | | Immunology |
| Cholesterol, total<br>– HDL<br>– LDL<br>– VLDL | Chol | PST or SST; centrifuge, separate, and refrigerate; fasting specimen | | Chemistry |
| Chromium | Cr | Trace-element-free (nonadditive); centrifuge, separate, and refrigerate | | Chemistry |
| Cluster of differentiation (Flow cytometry) | CD markers (Flow) | Heparin or EDTA; transport immediately | | Special Hematology |
| Cold agglutinins | | EDTA; keep warm and place in laboratory water bath 37°C | | Immunology or Blood Bank |
| Complement | C1–C8 | PST; centrifuge, separate, and refrigerate | | Immunology |
| Complete blood count<br>– WBC<br>– RBC<br>– Hgb<br>– Hct<br>– MCV<br>– MCH<br>– MCHC<br>– Platelets | CBC | EDTA; Hgb and Hct may be ordered separately; platelet count may be ordered separately; CBC may include differential | | Hematology |
| Copper | Cu | Trace-element-free (nonadditive or EDTA); centrifuge, separate into copper-free transfer tube, and refrigerate | | Chemistry or Toxicology |
| Cortisol | | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| C-reactive protein | CRP | PST or SST; centrifuge, separate, and refrigerate | | Immunology |
| Creatine kinase, total<br>– CK-BB<br>– CK-MB<br>– CK-MM | CK | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Creatinine | Creat | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Cryoglobulin | | Clot activator or SST; centrifuge, separate; keep warm | | Chemistry |
| Cystic fibrosis gene mutation | | EDTA; refrigerate, *do not* separate | | Molecular |
| Cyclosporine | | EDTA; centrifuge, separate, and refrigerate | | Chemistry |

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Cytomegalovirus | CMV | EDTA; centrifuge, separate, and freeze |  | Microbiology |
| D-Dimer | D-Di | Citrate; centrifuge, separate, and freeze |  | Coagulation |
| Dehydroepiandrosterone | DHEA | SST; centrifuge, separate, refrigerate; 6:00–10:00 a.m. draw |  | Chemistry |
| Differential<br>– % WBC types<br>– RBC morphology<br>– Platelet estimate | Diff | EDTA or blood smears |  | Hematology |
| Direct antiglobulin test | DAT, Coombs | EDTA; special patient identification and banding |  | Blood Bank |
| Disseminated intravascular coagulation panel | DIC | Citrate; centrifuge, separate, and freeze |  | Coagulation |
| Drug monitoring<br>– Amikacin<br>– Barbiturates<br>– Carbamazepine<br>– Digoxin<br>– Gentamicin<br>– Lithium<br>– Phenytoin<br>– Salicylates<br>– Theophylline<br>– Tobramycin<br>– Vancomycin | TDM | SST; centrifuge, separate; indicate peak or trough level if appropriate |  | Chemistry |
| Electrolytes<br>– sodium<br>– potassium<br>– chloride<br>– carbon dioxide | Lytes<br>– Na<br>– K<br>– Cl<br>– $CO_2$ | PST or SST; centrifuge, separate, and refrigerate; each test may be ordered separately |  | Chemistry |
| Eosinophil count | Eos | EDTA; included in CBC with differential |  | Hematology |
| Epstein-Barr | EBV | SST; centrifuge, separate, and refrigerate |  | Immunology |
| Erythrocyte sedimentation rate | ESR | EDTA, citrate, or special black dependent on method |  | Hematology |
| Estradiol | | PST; centrifuge, separate, and refrigerate |  | Chemistry |
| Estrogen | | EDTA; centrifuge, separate, and refrigerate |  | Chemistry |
| Factor assays | | Citrate; centrifuge, separate, and freeze |  | Coagulation |
| Factor V Leiden | FVL | EDTA or citrate |  | Molecular or Coagulation |
| Febrile agglutinin | | SST; centrifuge, separate, and refrigerate |  | Immunology |

*(continued)*

## TABLE E-1 Alphabetical Listing of Blood Tests (partial list) *(Continued)*

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Ferritin | | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Fibrin degradation/split products | FDP/FSP | Special light blue or black dependent on kit; contains thrombin and trypsin | | Coagulation |
| Fibrinogen | Fibr | Citrate | | Coagulation |
| Fluorescent treponemal antibody | FTA-ABS | Clot activator or SST; centrifuge, separate, and refrigerate | | Immunology |
| Folate (RBC) | | EDTA; refrigerate | | Chemistry |
| Folate (serum) | | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Follicle stimulating hormone | FSH | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Gamma-glutamyl transferase | GGT | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Gastrin | | SST; centrifuge, separate, and freeze; fasting specimen | | Chemistry |
| Glucose (fasting) | Glu, FBS | Fluoride, PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Glucose-6-phosphate dehydrogenase | G-6-PD | EDTA, heparin or ACD; refrigerate | | Chemistry |
| Glucose tolerance test | GTT | Fluoride; centrifuge, separate, and refrigerate | | Chemistry |
| Glycosylated hemoglobin | Hgb A1c | EDTA; refrigerate | | Chemistry |
| Growth hormone | GH | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Haptoglobin | Hapt | Mint or gold; centrifuge, separate, and refrigerate | | Chemistry |
| Hemoglobin electrophoresis | HBEP | EDTA; refrigerate | | Hematology |
| Hepatitis A virus | HAV | PST or SST; centrifuge, separate, and refrigerate | | Immunology |
| Hepatitis B surface antibody | HBsAb | PST or SST; centrifuge, separate, and refrigerate | | Immunology |
| Herpes Antibody | | PST or SST | | Immunology |
| Histamine | Hist | Heparin or EDTA; centrifuge, separate, and freeze | | Chemistry |

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Homocystine | | EDTA; centrifuge, separate, and refrigerate | | Chemistry |
| Human chorionic gonadotropin | HCG | Heparin; centrifuge, separate, and refrigerate | | Chemistry |
| Human immunodeficiency virus | HIV | EDTA; centrifuge, separate, and refrigerate | | Immunology |
| Human leukocyte | HLA | ACD | | Blood Bank |
| *Helicobacter pylori* antibodies | Hpylor-ABS | SST, EDTA, or heparin; centrifuge, separate, and refrigerate | | Immunology |
| Immunoglobulins<br>– IgA<br>– IgD<br>– IgE<br>– IgG<br>– IgM | Ig | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Insulin | | SST or EDTA; centrifuge, separate, and refrigerate | | Chemistry |
| Iron and total iron binding capacity | Fe & TIBC | PST or SST; centrifuge, separate, and refrigerate; fasting specimen preferred | | Chemistry |
| Kleihauer-Betke | | EDTA; refrigerate | | Blood Bank or Hematology |
| Lactate dehydrogenase | LD | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Lactic acid | LA | Fluoride; transport on ice; no tourniquet draw | | Chemistry |
| Lead | Pb | Lead-free or trace-element-free (EDTA) | | Chemistry or Toxicology |
| Leukocyte alkaline phosphatase/neutrophil alkaline phosphatase | LAP or NAP | Heparin | | Hematology |
| Lipase | Lip | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Magnesium | Mg | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Malaria | | EDTA or thick and thin blood smears | | Microbiology |
| Methylenetetrahydrofolate reductase gene mutation | MTHFR | EDTA or citrate | | Molecular or Coagulation |
| Mononucleosis screen | Mono or Monospot | SST; centrifuge, separate, and refrigerate | | Immunology |
| Myoglobin | Myo | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |
| Partial thromboplastin time (activated) | PTT/APTT | Citrate; centrifuge, separate, and freeze | | Coagulation |

*(continued)*

## TABLE E-1 Alphabetical Listing of Blood Tests (partial list) *(Continued)*

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Phenylketonuria | PKU | Collect on special test paper | | Chemistry |
| Phosphorus, Phosphate | P, $PO_4$ | SST; centrifuge, separate, room temperature | | Chemistry |
| Plasminogen | | Citrate; centrifuge, separate, and freeze | | Coagulation |
| Platelet aggregation | Plat Agg | Citrate; *do not* centrifuge or freeze | | Coagulation |
| Platelet function assay | PFA | Citrate (must collect discard tube first) | | Coagulation |
| Platelet response (aspirin or Plavix) | | Citrate (must collect discard tube first) | | Coagulation |
| Prostatic specific antigen | PSA | SST; centrifuge, separate, and freeze | | Chemistry |
| Prothrombin gene mutation | PGM | EDTA or citrate | | Molecular or Coagulation |
| Prothrombin time | PT | Citrate; centrifuge, separate, and freeze | | Coagulation |
| Rapid plasmin reagin | RPR | SST; centrifuge, separate, and refrigerate | | Immunology |
| Renin | | EDTA; centrifuge, separate, and freeze; collect between 8 and 10 a.m. after 2 hours of upright position | | Chemistry |
| Reticulocyte count | Retic | EDTA | | Hematology |
| Rheumatoid factor | RF | SST; centrifuge, separate, and refrigerate | | Immunology |
| Rh immune globulin | Rhogam | EDTA; special patient identification and banding | | Blood Bank |
| Rubella | | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Rubeola | | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Salicylate | | Nonadditive; centrifuge, separate, and refrigerate | | Chemistry or Toxicology |
| SARS-CoV2 Antibody | | PST or SST | | Immunnology |
| Serotonin | | SST; centrifuge, separate, and freeze within 1 hour | | Chemistry |
| Serum protein electrophoresis | SPE | SST; centrifuge, separate, and refrigerate | | Chemistry |
| Sickle cell screen | Sickle | EDTA | | Hematology |
| Testosterone | Test | PST or SST; centrifuge, separate, and refrigerate | | Chemistry |

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Tube Cap Colors (BD product) | Laboratory Section |
|---|---|---|---|---|
| Thyroid profile<br>– Triiodothyronine<br>– Thyroxine<br>– Thyroid stimulating hormone | T3<br>T4<br>TSH | SST; centrifuge, separate, and refrigerate |  | Chemistry |
| Transferrin | | SST; centrifuge, separate, and refrigerate |  | Chemistry |
| Triglycerides | Trig | SST; centrifuge, separate, and refrigerate; fasting specimen |  | Chemistry |
| Troponin | Tn | PST; centrifuge, separate, and refrigerate |  | Chemistry |
| Uric acid | Uric | SST; centrifuge, separate, and refrigerate |  | Chemistry |
| Vitamins<br>– Vitamin A<br>– Vitamin $B_{12}$<br>– Vitamin D<br>– Vitamin K | Vit A<br>Vit $B_{12}$<br>Vit D<br>Vit K | SST; centrifuge, separate, and refrigerate |  | Chemistry |
| von Willebrand factor<br>– activity<br>– antigen<br>– multimers | | Citrate; centrifuge, separate, and freeze |  | Coagulation |
| West Nile virus | WNV | SST; centrifuge, separate, and refrigerate |  | Chemistry |
| White blood cell count | WBC | EDTA |  | Hematology |
| Zinc (RBC) | ZNRBC | Trace-element-free (EDTA); centrifuge, separate, and refrigerate |  | Chemistry |
| Zinc (serum) | Zn | Trace-element-free (nonadditive); centrifuge, separate, and refrigerate |  | Chemistry |

## TABLE E-2 Alphabetical Listing of Non-Blood Tests (partial list)

| Lab Test | Abbreviation (may vary by laboratory) | Specimen Requirement (specimen requirements vary by laboratory method) | Laboratory Section |
|---|---|---|---|
| Body fluid cell counts | BF Cell Cnt | Body fluid (CSF, serous, synovial, etc.) in appropriate container; transport STAT | Hematology |
| Body fluid chemistry | BF Chem | Body fluid (CSF, serous, synovial, etc.) in appropriate container; transport STAT | Chemistry |
| Body fluid cultures | BF Cult | Body fluid (CSF, serous, synovial, etc.) in sterile container; transport immediately | Microbiology |
| Culture and sensitivity | C&S | Culture swab appropriate for tissue being cultured; transport STAT | Microbiology |
| DNA test for chlamydia and gonorrhea | CT/GC | Culture swab appropriate for tissue being cultured; transport STAT | Molecular or Microbiology |
| Human papillomavirus | HPV | Cervix sample or other tissue | Molecular, Immunology, or Microbiology |
| Influenza | Flu | Nasopharyngeal swab | Immunology, or Microbiology |
| Occult blood | | Stool specimen | Hematology or Microbiology |
| Ova, cysts, and/or parasites | O&P or OCP | Stool specimen | Microbiology |
| Respiratory Syncytial Virus | RSV | Nasopharyngeal swab | Immunology or Microbiology |
| SARS-CoV2 | COVID-19 | Dual Nares swab, Nasopharyngeal swab | Immunology or Microbiology |
| Severe Acute Respiratory Syndrome | SARS, COVID (plus others) | Nasopharyngeal swab | Immunology or Microbiology |
| Sputum for tuberculosis | | Early morning sample | Microbiology |
| *Streptococcus* screen | Strep Screen | Throat culture swab; transport STAT | Immunology or Microbiology |
| Urinalysis | UA | Urine in appropriate container | Urinalysis |
| Vaginosis Panel | Vag Panel | Vaginal swab | Microbiology |

# Glossary

**24-hour collection** Specimen collection procedure that requires patients to collect urine for a 24-hour period of time.

## A

**A1c** Glycosylated hemoglobin test, which reflects the control of glucose levels over the previous few weeks. Also known as HbA1c.

**abdominopelvic cavity** Body cavity containing the abdominal organs: stomach, small and large intestines, gallbladder, liver, spleen, kidneys, and pancreas, and the pelvic organs: bladder and internal reproductive organs.

**accession number** Sequential number assigned in the order received.

**acculturation** Changes made by minorities in response to the dominant culture.

**accuracy** Achieving complete correctness or acceptable measures as close as possible to the true value.

**acid citrate dextrose (ACD)** Additive that maintains red cell viability.

**additive** Substance, such as an anticoagulant, an antiglycolytic agent, a separator gel, a cell preservative, or a clot activator, added to a blood collection tube.

**additive-to-blood ratio** Balance between the amount of additive or anticoagulant and the amount of blood.

**aerobic** Microorganism that can live and grow in the presence of oxygen or air.

**aerosol** Fine mist of substances or particles suspended in a gas or the air.

**agglutination** Clumping of red blood cells that occurs from the binding of antibodies and antigens.

**airborne transmission** Spread of disease by small particles carried through the air.

**aliquoting** Dividing or separating samples into separate containers.

**ambulatory** Walking about.

**American Medical Technologists (AMT)** Organization that provides certification to phlebotomy personnel and approves phlebotomy programs.

**anaerobic** Microorganism that can live and grow in the absence of oxygen or air.

**analyte** Substance undergoing analysis, such as glucose or cholesterol.

**anatomical position** Body facing forward with the arms at the sides and the palms of the hands facing forward.

**anatomy** Study of the structure of the body.

**antecubital fossa** Area in the middle of the arm, in front of the elbow, that houses the veins most commonly used for venipuncture.

**anterior** Toward the front of the body.

**antibiotic removal device (ARD)** A special resin designed to remove antibiotics from a patient's bloodstream in order to increase the chances of recovering microorganisms in the blood culture.

**antibodies** Complex protein substance produced in the presence of foreign substances, such as bacteria, viruses, lipids, or carbohydrates, in order to protect the body.

**anticoagulant** Agent that prevents blood from clotting.

**antigen** Substance that causes the formation of an antibody when introduced into blood or tissue.

**antiglycolytic** Glucose preservative found in some blood collection tubes.

**antiseptic** Germicidal solution used to clean the skin prior to venipuncture or dermal (capillary) puncture.

**aorta** Largest artery in the body.

**arterial puncture** The procedure used to obtain blood samples from the artery.

**arteriole** Smaller branch of an artery; a miniature artery.

**artery** Blood vessel that carries blood from the heart to the tissues.

**ASAP** Abbreviation for "as soon as possible."

**aseptic** Pertaining to a condition that is free of disease-producing microorganisms (germs).

**assault** Unlawful act of threatening or causing a person to experience fear.

**assigned protection factor (APF)** Number assigned to indicate the amount of protection from microorganism particles of a respirator. For example, 10 indicates that there are one-tenth the number of particles inside the respirator as compared to air outside the respirator.

**atoms** Simplest units of all matter.

**atrium (plural: atria)** One of two top chambers of the heart, known as the holding chambers.

**attribute** Defining quality or personal characteristic.

**audit** Review of records and documents.

**autoantibody** Immunoglobulin created in response to damaged antigens on the surface of one's own blood or body cells.

**autoimmune disease** A disease in which the body fights against itself.

**autologous** Pertaining to oneself, as in donating blood for self-use.

## B

**B lymphocyte (B-cell)** Type of lymphocyte that produces antibodies upon stimulation.

**bacteremia** Presence of bacteria in the blood.

**bacteriostatic** Substance that is capable of inhibiting the growth of bacteria.

**basal state** Metabolic condition after 12 hours of fasting and lack of exercise.

**basilic vein** Vein, used for venipuncture, that is not well anchored and tends to roll.

**basophil** Least numerous type of leukocytes; the granules are large and stain dark blue from basic dyes and often obscure the nucleus.

**battery** Unlawful use of physical force or contact toward another individual.

**bedside manner** Behavior that puts a patient at ease while healthcare personnel perform a procedure.

**bevel** Point of the needle that has been cut on a slant for ease of entry.

**biconcave** Having two concave sides.

**biohazard** Risk associated with exposure to biological substances that can threaten human health.

**biotinidase** Enzyme that breaks down the vitamin biotin.

**blood type** Description, based on the ABO classification system, of the presence of specific antigens on the surface of red blood cells.

**bloodborne pathogens** Disease-causing organisms that are carried in the blood.

**Bloodborne Pathogens Standard** Federal guidelines developed by OSHA, specifying practices that ensure safe handling of specimens that may contain pathogens.

**Body mechanics** Positions and movements used to maintain proper posture and to avoid muscle and bone injury.

**brachial** Pertaining to the arm.

**burnout** Result of prolonged periods of stress without relief.

## C

**calcaneus** Heel bone in the foot.

**calibration** Comparison of a known constant to the test equipment reading or measurement.

**cannula** Hollow tube used for temporary access to a vein or an artery to administer medication or draw blood.

**capillary** Smallest of all blood vessels, which allow the exchange of nutrients and oxygen between the cells and blood; capillaries connect arteries to veins.

**capillary action** Process in which blood automatically flows into a thin tube.

**cardiovascular system** Body system of organs that work to circulate blood throughout the body.

**catheter** Medically approved tube that can be inserted in the body to treat diseases, perform a surgical procedure, or collect specimens.

**caudal** Toward the feet.

**cells** Smallest living units in the body.

**Centers for Disease Control and Prevention (CDC)** Federal agency responsible for identifying, monitoring, and reporting diseases, especially infectious diseases capable of becoming widespread or epidemic.

**Centers for Medicare & Medicaid Services (CMS)** Federal agency that established regulations to implement CLIA '88 and COLA.

**centrifugation** Process of separating components of a specimen using a centrifuge.

**centrifuging** The act of using the centrifuge.

**cephalic vein** Vein, used for venipuncture, that may be difficult to palpate.

**Certificate of Waiver** Certification that allows laboratories to perform waived testing.

**certification** Process that ensures successful completion of defined academic and training requirements.

**chain of custody** Protocol that must be strictly followed and documented for specimen accountability.

**chain of infection** Six steps (links) that must take place for infection to occur (reservoir, infectious agent, portal of exit, mode of transmission, portal of entry, and susceptible host).

**chemical hazard** Contamination of an area with harmful or potentially harmful chemicals.

**chemical hygiene plan** A plan that specifies practices to ensure safe handling of chemicals.

**citrate** Additive, usually sodium citrate, that prevents coagulation by binding calcium.

**CLAS standards** A set of standards that attempt to help eliminate misunderstandings in healthcare interactions, improve patient compliance, and eliminate healthcare disparities. Also known as *National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care.*

**clean-catch midstream specimen** Urine collection procedure for culture, which requires skin cleansing and collection of the mid-portion of the urine stream.

**Clinical and Laboratory Standards Institute (CLSI)** Nonprofit organization that sets recommendations, guidelines, or standards for all areas of the laboratory to improve the quality of medical care.

**clinical chemistry** Evaluation of chemical constituents that normally occur in the human body, such as glucose, sodium, and potassium.

**Clinical Laboratory Improvement Advisory Committee (CLIAC)** A committee that provides scientific and technical advice and guidance to the Department of Health and Human Services (HHS) that pertain to issues related to improvement in clinical laboratory quality and laboratory medicine practice as well as the specific questions related to CLIA standards.

**Clinical Laboratory Improvement Amendments (CLIA '88)** Federal legislation that became effective in 1992; it mandates that all laboratories be regulated using the same standards, regardless of size, type, or location.

**clot activator** An additive that speeds up the clotting of blood in a collection tube.

**coagulation** Cessation of bleeding; clot formation.

**code of ethics** A statement adopted by a profession that states the expected professional and personal conduct of its members.

**cold agglutinin** Antibody present in certain disease conditions, such as primary atypical pneumonia; located on the surface of the red blood cells, and at temperatures lower than normal body temperature they cause the blood cells to clump together.

**collapsed vein** An abnormal retraction of the vessel walls, stopping blood flow.

**College of American Pathologists (CAP)** Agency that accredits medical laboratories.

**combining vowel** Vowel placed between a word root and a suffix to make pronunciation easier.

**Commission on Office Laboratory Accreditation (COLA)** Agency that accredits physician office laboratories.

**competency assessment** Method of documenting an employee's ability to perform assigned tasks correctly.

**concentric circles** Circular motion starting from the center and moving outward in ever-widening, even circles.

**confidentiality** Privacy regarding patient information.

**congenital** A disorder or disease existing at birth.

**contact transmission** Spread of disease through physical transfer of pathogens from reservoir to susceptible host (person).

**continence** Abstinence (used in reference to sexual activity).

**continuing education** Education that occurs after professional training in order to enhance skills.

**continuous quality improvement (CQI)** Another term for quality assessment and process improvement.

**control material** A liquid or cellular material or substance with a known range of analyte values used for performing equipment system checks.

**coronal** Toward the head.

**corrective action** Steps to remedy a problem.

**cranial** Pertaining to the brain.

**cross-trained** Being trained to perform multiple tasks.

**culture** (1) Specific ethnic, religious, or socioeconomic background; (2) growing microorganisms under controlled conditions (verb); groups of microorganisms that are grown under controlled conditions (noun).

**culture media** Material added to blood collection tubes that enhances the growth of microorganisms.

**cystic fibrosis** Systemic disorder that causes particular damage to the respiratory and digestive systems.

**cytology** Study of human cells for the presence of cancer.

**cytoplasm** Area of the cell outside the nucleus.

## D

**deep** Internally away from the surface of the body.

**delta check** Amount of change in patient results from one time to the next.

**deoxygenated** Presence of a larger quantity of carbon dioxide than oxygen.

**deoxyribonucleic acid (DNA)** Genetic code that contains all the information needed for body processes.

**Department of Health and Human Services (HHS)** Federal agency that oversees the Centers for Medicare & Medicaid Services (CMS).

**dermal (capillary) puncture** Use of a sharp device to make an incision into the skin for the collection of small amounts of blood.

**diabetes mellitus** Any of several related endocrine disorders characterized by an elevated level of glucose in the blood, caused by a deficiency of insulin or insulin resistance at the cellular level.

**diapedesis** Process by which certain white blood cells can exit the capillaries and enter the tissues in response to pathogens.

**diaphragm** Muscle that separates the thoracic and abdominopelvic cavities.

**differential** Hematology test that is a microscopic examination of a monolayer stained blood smear; indicates the percentage of different types of white blood cells, the number of both platelets and white blood cells, red blood cell size and shape, and any other blood abnormalities, such as leukemia.

**digestive system** Body system that takes in and digests food, absorbs nutrients, and removes solid waste.

**dipstick test** Plastic strip with reagent pads containing chemicals for urine or blood testing.

**distal** Away from the point of attachment or farther from the trunk of the body.

**diurnal variation** Normal changes in laboratory values throughout the day.

**diversity** Variation of a category.

**dorsal** Pertaining to the backside.

**double-bagging** Enclosing contaminated equipment in a biohazard bag and placing that bag within a second biohazard bag.

**droplet transmission** Spread of disease through droplets propelled short distances.

## E

**ecchymosis** Discoloration or bruising caused by the seeping of blood underneath the skin.

**edematous** Marked by edema; the result of swelling due to fluid accumulation.

**elastomeric facepiece respiratory (EFR)** Specialized PPE to be worn when caring for patients with or with the potential for respiratory illnesses or contagious diseases.

**electrical hazard** Contact with electrical equipment or the failure of equipment that creates a dangerous condition.

**electrolytes** Positively or negatively charged particles released from some substances when they are mixed with water.

**electronic health record (EHR)** Medical information stored in computerized formats.

**electronic medical record (EMR)** Another term used to describe computerized documents.

**emergency preparedness** Readiness for response during times of crisis.

**endocrine system** The body system that regulates body functions by releasing hormones into the bloodstream.

**Environmental Protection Agency (EPA)** Ensures that healthcare providers follow the Medical Waste Tracking Act.

**eosinophil** Leukocyte whose granules stain bright orange-red from eosin; aids the body in fighting parasites and numbers increase in allergies.

**ergonomics** The practice of adapting the job task or equipment so that you can perform the task safely and productively.

**erythrocyte** Red blood cell; a nuclear, biconcave disk-shaped blood cell that is responsible for transporting oxygen.

**erythrocyte sedimentation rate (ESR)** Rate at which red blood cells settle in whole blood (measured in millimeters) in 1 hour of falling.

**ethics** Area of philosophy that examines values, actions, and choices to determine right and wrong.

**ethylenediaminetetraacetic acid (EDTA)** Additive that prevents coagulation by binding calcium.

**evacuated collection tube** Stoppered glass or plastic tube used for collecting blood; contains a premeasured vacuum.

**evacuated tube holder** Specialized plastic adaptor that holds both a needle and a tube for blood collection; *adaptor* and *barrel* are also common names.

**evaluation** Examination of the evidence found when measuring the indicators.

**expectorate** Generate a cough from deep within the lungs and bronchi.

**exposure control plan** A protocol to be followed in the event an employee is exposed to bloodborne pathogens.

**expressed consent** Abstinence from food and liquids (except for water) for a specified period.

**expressed consent** Patient consent given verbally.

**exsanguination** Process of blood loss to a degree sufficient to cause death.

**external respiration** The exchange of air between the lungs and the outside environment.

**externship** Training in a clinical setting.

## F

**false-negative** Test result that does not indicate a condition or substance that is actually present.

**false-positive** Test result that indicates a positive result that is not true.

**fasting** Abstinence from food and liquids (except for water) for a specified period.

**fecal occult blood** Small amounts of blood found in the feces/stool.

**female reproductive system** The organs of a female that are involved in sexual reproduction.

**femoral** Pertaining to the thigh.

**fibrin** Filamentous protein formed by the action of thrombin on fibrinogen.

**fibrinogen** Protein found in plasma; essential for clotting blood.

**filtering facepiece respiratory (FFR)** Specialized PPE to be worn when caring for patients with or with the potential for respiratory illnesses or contagious diseases.

**fire and explosive hazard** Situation in which the likelihood of fire or explosions exists.

**first morning void** Urine that is produced during the night and collected in the morning at the first void.

**fistula** Surgically inserted shunt (U-shaped tube) connecting an artery and a vein.

**fomite** Inanimate object capable of transmitting infectious organisms.

**Food and Drug Administration (FDA)** Federal agency that approves medical and diagnostic equipment, pharmaceuticals, reagents, diagnostic tests, and content labeling.

**frontal plane** Plane dividing the body into front and back portions.

## G

**galactosemia** Increased levels of galactose in the blood caused by the inability to break down the milk sugar galactose.

**gauge** Unit of measure assigned to the diameter of the lumen (hole) of a needle.

**gestational diabetes** Elevated blood sugar during pregnancy.

**Globally Harmonized System (GHS)** An internationally agreed-upon system for communicating chemical hazards.

**glucose testing** Measurement of blood glucose levels.

**glycolysis** Normal body reaction in which glucose is converted to lactic acid.

**granulocytes** White blood cells containing granules of various colors and chemical makeup: basophils, eosinophils, and neutrophils.

## H

**hand hygiene** A general term that includes both handwashing and the use of alcohol-based hand rubs.

**hard skills** Specific technical and operational proficiencies.

**hazard statement** Description of the nature and degree of a chemical's hazard(s).

**hazardous materials (HAZMATS)** Chemicals that pose a hazard when exposure occurs.

**Health Insurance Portability and Accountability Act (HIPAA)** Federal law that establishes a national standard for electronic healthcare transactions and protects the privacy and confidentiality of patient information; among other provisions, HIPAA states that information about a patient must not be discussed with individuals other than the patient unless the patient has given written or verbal permission.

**healthcare-associated infections (HAIs)** Infections acquired in healthcare settings.

**heel warmer** Chemically activated heating device.

**hematocrit** Percentage of space taken up by red blood cells in a whole blood sample; also referred to as *packed cell volume* and *microhematocrit.*

**hematology** Study of blood and blood-forming tissues.

**hematoma** Collection of blood under the skin due to leakage of blood from a punctured vein or artery.

**hematopoietic** Blood-forming tissues.

**hemochromatosis** Disorder of iron metabolism in which too much iron is stored in the body, reaching toxic levels.

**hemoconcentration** Rapid increase in the ratio of blood components (cells) to plasma (liquid).

**hemodilution** Increase in plasma water.

**hemoglobin** Iron-rich protein molecules found in red blood cells; transports oxygen and carbon dioxide.

**hemolysis** Destruction of red blood cells that allows hemoglobin to be released from the red blood cells.

**hemostasis** Coagulation, or clot formation, that repairs vessel damage and stops blood loss.

**heparin** Additive that prevents coagulation by inactivating thrombin.

**heparin lock** Winged needle set that remains in a patient's vein for a certain amount of time. Also known as a saline lock.

**high complexity tests** Classification of laboratory tests that require close attention to detail and specialized training.

**high-efficiency particulate air (HEPA)** A type of air filter that is intended to remove at least 99.97% of dust, pollen, mold, bacteria, and any airborne particles with a size of 0.3 microns (μm).

**histology** Study of human body tissues and cells.

**homeostatis** The state of balance or condition of optimal functioning of the body.

**human chorionic gonadotropin (hCG)** Hormone produced by the placenta.

**hypothyroidism** Decreased thyroid function.

## I

**iatrogenic anemia** Lowering of a patient's red blood cell count due to a medical treatment such as excessively repeated phlebotomy.

**icteric** Greenish yellow coloring indicating an elevated level of bilirubin.

**immune system** The body system responsible for protecting the body against microorganisms, toxins, and cancer.

**immunohematology (blood bank)** Collection and preparation of donor blood for transfusion.

**immunology** Study of how the body resists allergies and other agents that affect the body's immune system; also called *serology*.

**implied consent** Patient consent given with expected actions and behaviors such as arriving in the laboratory for a blood test.

**incident forms** Documents recording procedural or process errors.

**indicators** Observable events used as evidence.

**inferior** Below or toward the feet.

**informed consent** Permission to perform a procedure.

**integumentary system** Body system that provides protection, regulates temperature, prevents water loss, and synthesizes vitamin D.

**interfering substance** Substance that produces incorrect laboratory test results.

**internal respiration** The movement of gases between tissue cells and blood.

**interprofessional** Pertaining to people from different professions.

**interstitial fluid** Fluid between cells and tissues.

**isoenzyme** An enzyme in a group of enzymes that catalyzes the same chemical reaction but have different physical properties.

**isolation precautions** Practices to prevent the spread of infection based on how the infectious agent is transmitted.

## J

**jaundice** Yellow coloration to skin, eyes, and mucous membranes.

## L

**lancet** Small cutting instrument that controls the depth of the cutting blade.

**lateral** Away from the middle of the body.

**law** Rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority.

**legal specimens** Specimens requiring special handling for criminal investigation.

**leukocyte** White blood cell, round cell with a nucleus whose main function is to combat infection and remove disintegrating tissues.

**Levey-Jennings chart** Graph showing acceptable limits for results of control substance testing.

**liability** Legal obligation to compensate another for loss or damages.

**licensure** Process that is enforced by a governmental agency to ensure adequacy of training.

**ligament** Fibrous tissue connecting bones to other bones.

**light-sensitive** Type of substances for which specimens need to be covered.

**lipemia** Cloudy serum or plasma following or caused by increased lipids (fats).

**litigation** Legal action or lawsuit.

**lymphatic system** Body system that removes foreign substances from the blood and lymph.

**lymphocyte** Leukocyte produced in the lymphoid tissue; a nongranular leukocyte that has a role in the body's immune system.

**lymphoid** Pertaining to the lymphatic system or resembling lymphocytes.

**lymphostasis** Lack of fluid drainage in the lymph system, usually caused by lymph node removal.

## M

**male reproductive system** The organs of a male that are involved in sexual reproduction.

**malpractice** Incorrect treatment of a patient by a healthcare worker.

**medial** Close to the middle of the body.

**median basilic vein** Vein located near the median cutaneous nerve making it more painful for venipuncture for patients with M pattern antecubital veins.

**median cephalic vein** The second choice vein for venipuncture for patients with an M pattern that is accessible and away from major arteries and nerves.

**median cubital vein** Most commonly used vein for venipuncture; located in the middle of the forearm.

**median vein** Vein located in the center of the forearm that is most commonly used for venipuncture on patients with M pattern antecubital veins.

**medical microbiology** Study of one-cell organisms (microorganisms) that are usually visible only under a microscope; the main focus is on bacteria.

**metabolic acidosis** A condition in which the body retains too much acid, resulting in a lower blood pH.

**metabolic alkalosis** A condition in which the body retains too much bicarbonate, resulting in a higher blood pH.

**microcollection** Process of obtaining blood using a dermal (capillary) puncture procedure; also known as *microtechnique.*

**microhematocrit** Manual procedure for determining hematocrit that requires only a small amount of blood.

**microsurgery** Surgery involving reconstruction of small tissue structures.

**midsagittal plane** Plane dividing the body into equal left and right halves.

**moderate complexity tests** Classification of laboratory tests that fall between low (waived) and high complexity tests with respect to the complexity of the test and the training required.

**molecular diagnostics** Detection and classification of disease states using molecular and DNA-based testing.

**molecules** Atoms that have bonded together.

**monocyte** Large leukocyte formed in bone marrow, with abundant cytoplasm and a kidney-shaped nucleus; ingests bacteria, dying cells, and debris in tissues.

**mononuclear** Having a single-lobed nucleus.

**multicultural** Many different cultures.

**multiskilled** Trained in more than one job function.

**muscular system** Body system that produces movement, maintains posture, and produces body heat.

**myeloid** Developed from bone marrow.

## N

**nasal swab** Used to collect a specimen from the cavities just inside the nose; also called the nares.

**nasopharyngeal swab** Used to collect a specimen from the area behind the nasal sinuses.

**National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)** Organization that provides accreditation to phlebotomy training programs and offers certification for structured educational programs.

**natural killer (NK) cells** Type of lymphocytes that can attack and destroy tumor cells or cells that have been infected by viruses.

**needlestick injury** Accidental puncture of skin with a needle.

**Needlestick Safety and Prevention Act** Legislation that mandates the use of safety devices that reduce needlestick injuries in the clinical setting.

**negligence** Intentional or unintentional error or wrongdoing; failure to perform reasonably expected duties to patients.

**nervous system** Body system that is responsible for conscious and unconscious actions.

**networking** Building social and professional alliances.

**neutrophil** Leukocyte that engulfs and digests pathogens found in tissues; its granules stain lavender.

**normal flora** Microorganisms that typically live on and in the body, normally causing no harm to the host.

## O

**Occupational Safety and Health Administration (OSHA)** Federal body responsible for preventing and minimizing employee injuries and exposure to harmful agents.

**organelles** Parts of a cell, such as nuclei, lysosomes, and mitochondria.

**organism** Living creature composed of organ systems.

**organs** Combination of two or more tissue types to form a system.

**osteomyelitis** Infection or inflammation of the bone or bone marrow.

**other potentially infectious materials (OPIMs)** Body fluids, soiled laundry, or any item that may be contaminated with pathogens.

**oxygenated** Containing a higher concentration of oxygen than carbon dioxide.

## P

**packed cell volume (PCV)** Hematocrit.

**palmar** Pertaining to the palm side of the hand.

**palpate** Examine by touching with the fingers, using pressure, then releasing.

**parameters** Limitations.

**patient advocate** Someone who helps guide patients through the healthcare system.

**patient outcomes** The condition of a patient after treatment or a disease, including the degree of wellness and the need for continuing care, length of stay (if hospitalized), medication, support, counseling, or education.

**peak level** Specimen collected when a serum drug level is at its highest level, usually 15 to 30 minutes after administration.

**personal protective equipment (PPE)** Protective coverings, such as gloves, goggles, gowns, and masks, that are worn to minimize exposure to blood and body fluids; required by OSHA to be worn when handling body fluids.

**petechiae** Small, nonraised, red spots appearing on the skin due to minor hemorrhage in underlying tissue.

**phagocytosis** Process by which bacteria and antigens are surrounded and engulfed by leukocytes.

**phenylketonuria (PKU)** Increased level of phenylketone in the blood.

**phlebotomist** Individual trained and skilled in obtaining blood samples for clinical testing.

**phlebotomy** Invasive procedure in which a sharp object is introduced into a vein to obtain blood.

**physical hazards** Nonbiological objects that may cause injury or illness.

**physician office laboratory (POL)** Small laboratory that is operated in a clinical practice office.

**physiology** Study of the function of the body.

**pictogram** A symbol that conveys specific information about the hazards of a chemical.

**plantar** Pertaining to the sole, or bottom, of the foot.

**plasma** Clear, pale yellow fluid component of blood that contains fibrinogen; obtained from a tube that has an anticoagulant and has been centrifuged.

**pneumatic tube system** Transporting of tubes through pipes using vacuum forces.

**point-of-care testing (POCT)** Tests performed at the patient's bedside or work area, using a portable instrument.

**polycythemia vera** Condition in which there is an overproduction of red blood cells.

**polymorphonuclear** Having multiple-lobed nuclei.

**posterior** Toward the back of the body.

**postprandial** After eating a meal.

**powered air-purifying respiratory (PAPR)** Specialized PPE to be worn when caring for patients with or with the potential for respiratory illnesses or contagious diseases.

**precautionary statement** Document that describes measures to minimize or prevent adverse effects resulting from exposure to a hazardous chemical.

**precision** Ability to give nearly the same result when performed repeatedly.

**preexamination error** Events before, during, or after the collection of blood and other specimens and before analysis.

**prefix** Placed at the beginning of a word to alter its meaning.

**presumptive negative** When a rapid diagnostic test (RDT) is performed and no antigens are detected but the patient may still be infected with the organism

**preventive action** Activity that helps ensure that an error does not occur again.

**process** Procedure or duty that is to be done to a patient.

**professional** (1) A member of a vocation requiring specialized educational training; (2) a manner of behavior.

**professional development** Attaining skills and knowledge for both personal growth and career advancement.

**professionalism** Group of characteristics or qualities that display a positive image or code of ethics; behavior that exhibits the traits or features that correspond to the models and standards of a profession.

**proficiency testing (PT)** Means of evaluating the performance of a laboratory and its personnel in comparison with that of other similar laboratories.

**prone** Lying face down.

**provider-performed microscopy procedures (PPMPs)** Subcategory of moderate complexity testing that allows healthcare providers to perform certain tests only for their own patients.

**proximal** Closer to the point of attachment or toward the trunk of the body.

**pulmonary arteries** Arteries that transport deoxygenated blood to the lungs.

**pus** Substance containing old leukocytes, pathogens, and other debris; created at the site of infection once the white blood cells undergo phagocytosis.

## Q

**quality assessment and process improvement (QAPI)** The review of documentation to discover and eliminate weaknesses in a process and improve the quality of patient outcomes.

**quality assurance (QA)** System of planned activities that assess operational processes for the delivery of services or the quality of products provided to consumers, customers, or patients.

**quality control (QC)** Activities that ensure that specific steps in a process meet acceptable standards.

**quality cost management (QCM)** System to measure and manage the cost of quality.

**quality management system (QMS)** Establishment of quality objectives and the methods used to monitor the achievement of those objectives.

## R

**radioactive hazard** A hazard that exists where ionizing radiation is present.

**random errors** Errors that occur with no predictable pattern and may have several different causes.

**rapid diagnostic test** Laboratory tests that provide fast results performed on various specimen type to test for pathogenic organisms or an immune system response.

**rapid diagnostic test (RDT)** Laboratory tests that provide fast results performed on various specimen type to test for pathogenic organisms or an immune system response.

**rapport** Behavior, courtesy, and respect given a patient.

**reagents** Chemicals used in performing laboratory tests.

**real-time tracking** Continuous monitoring of a specimen's status from the time of the test request to reporting of the results.

**reference laboratory** Offsite lab to which specimens are referred for testing; usually used for tests not routinely performed in physician offices.

**registration** Placement on a membership list for a professional association (usually requiring certification).

**reliable** Believable and dependable.

**requisition** Documentation of a blood test order, usually generated by or at the request of a physician.

**respiratory acidosis** A condition in which the lungs do not remove enough $CO_2$ from the body, resulting in a lower blood pH and making the blood too acidic.

**respiratory alkalosis** A condition in which the lungs remove too much $CO_2$ from the body, resulting in a higher blood pH and making the blood too alkaline.

**respiratory system** Body system that provides oxygen to body cells and removes carbon dioxide.

**respondeat superior** The employer is responsible for the acts of his or her employees.

**résumé** Document summarizing employment and educational history.

**Rh antigen** Protein originally found on the red blood cells of Rhesus monkeys.

**ribonucleic acid (RNA)** Protein that assists in translating information from DNA.

**risk management** Policies and procedures to protect patients, employees, and the employer from loss or injury; generated and conducted by a department in healthcare facilities.

**rouleaux formation** The sticking of red bloods cells to one another in rows, usually caused by increased plasma proteins; these are not the same as clots.

## S

**safety data sheets (SDS)** Documentation of specific chemical ingredients found in hazardous substances and emergency instructions to follow if abnormal contact occurs.

**sagittal plane** Plane dividing the body into left and right portions.

**saline lock** Winged needle set that remains in a patient's vein for a certain amount of time. Also known as a heparin lock.

**sclerosis** Abnormal hardening of tissue.

**scope of practice** Procedures and processes permitted for a specific profession.

**sedentary** Not engaged in any physical activity.

**semen** Fluid produced by the male reproductive system, containing sperm and some substances necessary for fertilization.

**sepsis** A life-threatening response of the body to infection.

**septicemia** Presence of pathogenic microorganisms in the blood, causing symptoms such as fever, chills, and changes in mental state.

**septum** Muscular wall between the left and right sides of the heart.

**serology** Identification of antibodies in the blood's serum.

**serum** Clear, pale yellow fluid that remains after blood clots and is separated; does not contain fibrinogen; plasma minus the clotting factors.

**sharps container** Clearly marked container that is rigid, leak-proof, and puncture resistant, for the disposal of needles, lancets, and other contaminated sharps.

**shelter-in-place** An interior room or rooms within a building with few or no windows that could be used as a refuge.

**shift** Sudden jump in results that continues at a higher or lower level.

**sickle cell disease** Hemoglobin that causes red blood cells to have an abnormal structure due to a genetic mutation.

**signal word** A word or term (usually either "danger" or "warning") used on a label to indicate the relative level of severity of hazard.

**skeletal system** Body system that provides the body with protection and support.

**soft skills** Personal attributes or behaviors that enhance an individual's interactions on the job.

**sputum** Mucus that collects in the air passages of the respiratory system.

**standard operating procedure (SOP)** Purpose, specimen requirements, step-by-step procedure, limitations, normal and critical values, and interpretation for each procedure performed in the laboratory.

**standard precautions** Infection control guidelines issued by the CDC to decrease exposure to potentially infectious substances in acute care settings.

**standards** Rules of practice.

**STAT (ST)** Immediate need.

**stereotypes** Commonly held beliefs and concepts about a specific group of people.

**sterile** Free of microorganisms.

**stool specimen** Fecal matter that is waste discharged from the digestive system.

**strep screening** Test used to determine if the bacteria Group A *Streptococcus* is present in the throat.

**stress** The body's nonspecific response to change or demands.

**suffix** Placed at the end of a word to alter its meaning.

**superficial** Close to the surface of the body.

**superior** Above or toward the head.

**supine** Face upward, lying on the back.

**suprapubic puncture (aspirate)** Urine collection procedure requiring the insertion of a needle through the area just above the pubic bone and directly into the bladder to remove urine by aspiration.

**syncope** Fainting.

**systematic errors** Errors that occur due to differences in performance among staff.

## T

**T lymphocyte (T-cell)** A type of lymphocyte that originates from the lymphoid tissue and assists the immune system through interactions with other leukocytes.

**tendon** Fibrous tissue connecting bones to muscles.

**test panel** A group of laboratory tests associated with a single organ or body system.

**test profile** A group of laboratory tests that provide an assessment of two or more body systems.

**The Joint Commission (TJC; formerly Joint Commission on the Accreditation of Healthcare Organizations)** Agency that accredits healthcare facilities to ensure high standards of patient care.

**therapeutic drug monitoring (TDM)** Physician management of an effective drug dose.

**therapeutic phlebotomy** Removal of large amounts of blood.

**thixotropic separator gel** Semisolid that forms a barrier between cells and plasma or serum upon centrifugation of blood specimens.

**thoracic cavity** Body cavity that contains the lungs, heart, esophagus, and trachea.

**throat swabs** Specimens taken from the back of the throat using a fabric-tipped applicator stick.

**thrombin** Enzyme formed in response to an injury that converts fibrinogen to a fibrin clot.

**thrombocyte** Smallest of the formed elements in the bloodstream; also called *platelet.*

**tissue** A group of biological cells that perform a similar function.

**total quality management (TQM)** Identification of an organization's internal and external customers in an effort to design operations that produce the highest customer satisfaction.

**tourniquet** Device that impedes or stops the flow of blood.

**toxicology** Detection and study of agents that are harmful to the body.

**training** Providing staff with the knowledge to perform their jobs correctly.

**transmission-based precautions** Various levels of isolation and PPE uses that are based on how the infectious agent is transmitted.

**transverse plane** Plane dividing the body into upper and lower portions.

**trend** Results showing an upward or downward progression.

**trough level** Specimen collected when a serum drug level is at its lowest level, usually immediately before the next scheduled dose is administered.

**tunica adventitia** Outermost covering of arteries and veins.

**tunica intima** Innermost layer of arteries and veins.

**tunica media** Middle layer of arteries and veins.

## U

**urinalysis** The testing of urine for physical, chemical, and microscopic characteristics.

**urinary system** Body system that removes liquid waste from the blood and maintains the proper balance of water and salts in the body.

**urine chemical screening** The testing of urine for various chemicals, most not normally present in the urine.

**urine pregnancy tests** The testing of urine for the presence of human chorionic gonadotropin (hCG), indicating pregnancy.

## V

**validation** Ensuring accuracy and precision of laboratory test results.

**valves** Flaps of tissue that open in one direction to let blood pass through.

**variances** Deviations from the procedure.

**vector-borne transmission** Spread of disease through insect or animal bites.

**vehicle-borne transmission** Spread of disease through contact with contaminated items, such as food, linen, or equipment.

**vein** Blood vessel that transports blood from body tissues back to the heart.

**venae cavae (singular: vena cava)** Largest veins in the body.

**venipuncture** Procedure in which a sharp object is introduced into a vein for the purpose of withdrawing blood or instilling medications.

**venous reflux** Backward flow of blood into the patient's veins during venipuncture.

**ventral** Body cavity that contains the thoracic cavity and abdominopelvic cavity.

**ventricle** One of two bottom chambers of the heart, known as the pumping chambers.

**venule** Minute vein.

## W

**waived tests** FDA-approved laboratory tests that are minimally complicated and pose little risk of harm to the patient.

**winged infusion set** Stainless steel collection needle connected to 5 to 12 inches of plastic tubing; also called a *butterfly needle set.*

**word root** Part of a medical term that contains the base meaning of the term.

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