



# LABORATORY ASSISTING 51.0802.00

## TECHNICAL STANDARDS

An Industry Technical Standards Validation Committee developed and validated these standards on January 11 and February 10, 2023. The Arizona Career and Technical Education Quality Commission, the validating authority for the Arizona Skills Standards Assessment System, endorsed these standards on July 16, 2023.

Note: Arizona's Professional Skills are taught as an integral part of the Laboratory Assisting program.

**The Technical Skills Assessment for Laboratory Assisting is available SY2024-2025.**

Note: In this document i.e. explains or clarifies the content and e.g. provides examples of the content that must be taught.

### STANDARD 1.0 APPLY STANDARD PRECAUTIONS AND SAFETY MEASURES

- 1.1 Define communicable disease (i.e., airborne, contact/touch, droplet, etc.)
- 1.2 Explain bloodborne pathogen transmission and the requirement for PPE (Personal Protective Equipment) [i.e., human specimens such as tissue, sputum, feces, body fluids (blood, urine, and cavitory specimens), environmental samples, etc.]
- 1.3 Explain Universal Precautions according to OSHA (Occupational Safety and Health Administration) and explain Transmission-based Precautions according to CDC (Center for Disease Control)
- 1.4 Demonstrate proper hand hygiene protocol (e.g., not touching face and phone and before donning, and after doffing gloves)
- 1.5 Demonstrate proper donning, doffing, and discarding PPE (i.e., coats, masks, eye protection, gloves, booties, etc.)
- 1.6 Characterize requirements for isolation and the isolation protocol (i.e., hospital, outpatient clinic, research lab, veterinary clinic, etc.)
- 1.7 Identify hazardous labeling requirements according to OSHA and IATA (International Air Transport Association) (i.e., safety signs, symbols, dating, special instructions, etc.)
- 1.8 Document unsafe conditions for self and others (i.e., frayed cords, spillages, puddles on floor, bed rails down, etc.)
- 1.9 Describe procedures for cleaning laboratory spills according to the type of spill
- 1.10 Summarize OSHA guidelines pertaining to handling and disposal of contaminated and hazardous items (i.e., Sharps, etc.)
- 1.11 Explain fire and chemical safety protocols [e.g., SDSs (Safety Data Sheets), PASS (Pull, Aim, Squeeze, and Sweep), and types of fire extinguishers]
- 1.12 Discuss facility specific evacuation plans and alerts (i.e., meeting places, reporting, red-, blue-, green- codes, etc.)
- 1.13 Categorize cleaning agents [i.e., bleach, ammonia, alcohol, quats (quatarnary ammonium compounds), etc.] and distinguish the interaction with each other (e.g., bleach and ammonia)]
- 1.14 Demonstrate the maintenance of a sanitary and organized work area (i.e., disinfecting work surfaces, spills, sinks, equipment, etc.)
- 1.15 Create and demonstrate a safe work environment in the lab, including proper containment of food as well as proper storage and use of equipment, materials, and chemicals according to manufacturer guidelines
- 1.16 Practice specific professional laboratory attire as recommended by CDC/OSHA (i.e., personal items, including phone; hair tied back, acceptable nail length, closed-toed shoes, minimal jewelry, etc.)
- 1.17 Demonstrate proper body mechanics and lifting techniques

### STANDARD 2.0 MAINTAIN THE LABORATORY ACCORDING TO INDUSTRY REGULATIONS AND STANDARDS

- 2.1 Discuss federal, state, and local laws, regulations, and guidelines for the laboratory [e.g., CMS (Centers for Medicare and Medicaid Services), CDC, OSHA, CAP (The College of American Pathologists) and CLIA (Clinical Laboratory Improvement Act), ISO (International Organization for Standardization), IATA, and AZDHS (Arizona Department of Health Services)]
- 2.2 Explain CLIA regulations and their impact on laboratory functions and procedures
- 2.3 Compare and contrast voluntary accrediting and inspection agency requirements [e.g., CAP, COLA (Commission on Office Laboratory Accreditation), The Joint Commission, and AABB (American Association of Blood Banks)]
- 2.4 Discuss and summarize HIPAA (Health Insurance Portability and Accountability Act) and its guidelines, restrictions, and requirements [e.g., patient and recipient verification, accurately communicating test results (limitations and clarification), and discarding PHI (Personal Health Information)]
- 2.5 Investigate active involvement in local, state, and national associations and organizations (people and resources) to keep up to date regarding the industry [i.e., American Society of Clinical Scientists, NLSW (National Laboratory Science Week), etc.]

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### **STANDARD 3.0 DEMONSTRATE LEGAL AND ETHICAL PRACTICES**

- 3.1 Discuss liability associated with the practice of laboratory assisting [i.e., following manufacturer's instructions on the use of equipment, complying with SOP (Standard Operation Procedure), etc.]
- 3.2 Explain the importance of patient confidentiality according to HIPAA guidelines [i.e., disposal of PHI (patient health information), accessing patient information on a need-to-know basis only, etc.]
- 3.3 Explain the Patients' Bill of Rights according to AMA (American Medical Association) and AHA (American Hospital Association)
- 3.4 Define a laboratory assistant's scope of practice (duties and responsibilities)
- 3.5 Explain the education and training requirements for laboratory assisting per CLIA-88
- 3.6 Explain laboratory management's oversight of POCT (Point of Care Testing)

### **STANDARD 4.0 DEMONSTRATE THE PHLEBOTOMY PROCEDURE**

- 4.1 Explain the scope of practice and regulations regarding phlebotomy according to CLIA and CAP
- 4.2 Recognize terms, abbreviations, and codes commonly used in laboratory testing
- 4.3 Describe basic functions of the cardiovascular system
- 4.4 Distinguish characteristics of arterial, venous, and capillary blood
- 4.5 Demonstrate an understanding of the anatomy and physiology of the hand and arm
- 4.6 Apply laboratory requisitions/orders specified to the necessary specimen requirements (e.g., chemistries, blood bank, serology, hematology, microbiology, urinalysis, coagulation, tube type, and volume)
- 4.7 Follow standard operating procedure
- 4.8 Use the proper method (two proofs of identity) to ensure patient identification [e.g., name, DOB (date of birth), and MRN (medical record number)]
- 4.9 Provide a comfortable, safe environment (i.e., patient position, draw setup, order of draw, butterfly instead of needle, etc.) explaining procedures to the patient, using a medical interpreter, if needed
- 4.10 Use phlebotomy equipment according to manufacturer guidelines
- 4.11 Perform the phlebotomist collection procedures (e.g., venous blood, capillary blood, and blood cultures)

### **STANDARD 5.0 DEMONSTRATE SPECIMEN COLLECTION AND PROCESSING PROCEDURES**

- 5.1 Demonstrate the proper method of patient identification (two proofs of identity) to ensure patient identification (e.g., name, DOB, and MRN)
- 5.2 Instruct the patient in the proper collection of specimens (e.g., semen, urine, feces, and other body fluids)
- 5.3 Describe basic testing for urine, blood, stool, and other body fluids (i.e., kidney profile, liver profile, complete cell count, CBC, etc.)
- 5.4 Recognize terms, abbreviations, and codes commonly used in the laboratory regarding specimen collection and processing (e.g., blood: capillary vs. venous vs. arterial; urine: clean catch, suprapubic vs. catheter; respiratory: spit vs. sputum, bronchial wash; and SWB)
- 5.5 Match laboratory requisitions/orders to the necessary specimen requirements (e.g., chemistries, blood bank, serology, hematology, microbiology, urinalysis, coagulation, tube type, and volume)
- 5.6 Follow facility collection and processing procedures
- 5.7 Choose appropriate equipment and supplies for specimen collection
- 5.8 Label, transport, and store specimens according to standard operating procedure (e.g., chemistry, hematology, coagulation, and microbiology)
- 5.9 Describe handling of blood bank specimens according to standard operating procedure (e.g., apply blood bank bands when required, labeling, and transporting)
- 5.10 Determine specimen acceptability (e.g., preparation; type of specimen; collection, handling, and storage of specimen; and presence of interfering substances)
- 5.11 Perform pre-analytic preparation of specimens (i.e., aliquot, label, centrifuge, etc.) and deliver to testing departments
- 5.12 Perform waived testing and analytical functions (i.e., load analyzer, malfunction identification and troubleshooting, etc.), and report those results
- 5.13 Handle sterile and non-sterile items according to standards and procedures
- 5.14 Store specimens (e.g., time, temperature, light, packaging, and transport offsite)
- 5.15 Explain the chain-of-custody procedure (i.e., drug screen testing, blood alcohol testing, etc.)
- 5.16 Report results according to established protocol within the scope of practice for testing using appropriate documentation
- 5.17 Identify STAT (urgent testing/immediately) and timed orders for priority collection and processing per standard operating procedure

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5.18 Distinguish among pre-analytic, analytic, and post-analytic procedures

## **STANDARD 6.0 DESCRIBE QUALITY CONTROL, QUALITY ASSURANCE, AND DOCUMENTATION OF LABORATORY MAINTENANCE**

- 6.1 Explain the significance of quality control and quality assurance with respect to accurate patient testing results
- 6.2 Describe the importance of calibration and monitoring instruments
- 6.3 Perform maintenance on instruments and equipment to prevent malfunction and notify appropriate authority (i.e., microscopes, centrifuges, water baths, hoods, thawers, etc.)
- 6.4 Explain the quality control check on general laboratory equipment (e.g., refrigerators, centrifuge, rotators, incubators, freezers, coolers, timers, and thermometers)
- 6.5 Discuss key performance indicators for quality improvement activities (i.e., specimen acceptability, blood culture contamination, etc.)
- 6.6 Recognize standard operating procedures and technical issues to take corrective action
- 6.7 Define quality control terms (e.g., trends and shifts, means and modes, and documentation and corrective action)
- 6.8 Discuss maintaining laboratory supplies and equipment inventory (i.e., protocol for ordering, receiving, cataloging, storing supplies/equipment, etc.)
- 6.9 Prepare, label, and store working reagents per SDS

## **STANDARD 7.0 PERFORM URINALYSIS, BODY FLUIDS, AND STOOLS TESTING**

- 7.1 Discuss the basic physiology of urinary/gastrointestinal systems
- 7.2 Prepare for testing (e.g., perform instrument setup, calibration, and maintenance; evaluate reagent/dipstick acceptability; collect, handle, and store specimen; and perform quality control procedures)
- 7.3 Discuss basic macroscopic examination of urine (i.e., physical and chemical tests, identify normal/abnormal values, recognize interfering substances, define method limitations, etc.)
- 7.4 Discuss basic waived and moderate complexity tests (i.e., UA dipstick, automated UA, qualitative UA HCG, fecal occult blood, etc.)

## **STANDARD 8.0 APPLY PRINCIPLES OF IMMUNOLOGY, SEROLOGY, AND BLOOD BANKING**

- 8.1 Distinguish between immunology and immunohematology
- 8.2 Describe purpose for immunological assays
- 8.3 Determine specimen acceptability per test ordered [i.e., infectious mononucleosis, rheumatoid factor, ANA (antinuclear antibody), patient preparation, type of specimen, collection, handling and storage, presence of interfering substances, etc.]
- 8.4 Prepare for reference lab (i.e., centrifuge, aliquot, etc.) per standard operating procedure
- 8.5 Explain “running blood bank specimens to the lab” during MTP (Massive Transfusion Protocol) and dispensing blood units

## **STANDARD 9.0 APPLY PRINCIPLES OF HEMATOLOGY**

- 9.1 Review specimen acceptability for testing (e.g., collect, process, and store specimen according to test requirements; evaluate type and age of specimen and additive; and label properly)
- 9.2 Prepare specimen for analysis (i.e., load sample to analyzer, maintain specimen integrity relative to time and temperature, perform standards or controls where applicable, etc.)
- 9.3 Prepare acceptable blood films [e.g., peripheral (size/width thickness, feather edge, straight, and free of streaks), homogeneity, and labeling]
- 9.4 Stain blood films according to test requirements (e.g., Wright’s stain, iron and controls, and retic)
- 9.5 Perform ESR (Erythrocyte Sedimentation Rates (i.e., Wintrobe, Westergren, manual and instrument applications, etc.)

## **STANDARD 10.0 APPLY PRINCIPLES OF HEMOSTASIS/COAGULATION**

- 10.1 Determine specimen acceptability (e.g., collection techniques; transport conditions; time, temperature, processing, and storage; additive present—blood-to-anticoagulant ratio; and check hemolysis)
- 10.2 Prepare specimen for analysis (e.g., centrifuge, loading sample to analyzer, maintain specimen integrity relative to time and temperature, and perform standards or controls where applicable)

## **STANDARD 11.0 APPLY PRINCIPLES OF MICROBIOLOGY**

- 11.1 Review for specimen acceptability and integrity based on specimen requirements (e.g., type of specimen, collection container, and handling and storage of specimen)
- 11.2 Describe the handling of all microbiological specimens under a biological safety hood (BSL)
- 11.3 Perform visual checks of media (i.e., broken containers, contamination, etc.)

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- 11.4 Inoculate and properly label culture media according to SOP (e.g., nutrient, differential, selective, solid, semi-solid, and liquid)
- 11.5 Prepare smears and load to automated stainer, if available
- 11.6 Handle plated cultures according to SOP (e.g., correct incubator based on temperature and environment)
- 11.7 Explain the atmospheric environment needed for certain types of cultures (e.g., Aerobic, Anaerobic, and CO<sub>2</sub>)
- 11.8 Describe the acceptance of blood cultures, processing of positive blood cultures from the instrument, and finalizing negative blood cultures
- 11.9 Describe acceptable specimens for waived and moderate and complexity microbiology tests (e.g., rapid strep A, rapid COVID/RSV/Flu A-B, vaginitis panel, trichomonas, qualitative Giardia, and Crypto Immunoassay)

## **STANDARD 12.0 APPLY PRINCIPLES OF CHEMISTRY**

- 12.1 Review specimen acceptability for testing (e.g., collect, process, and store specimen according to test requirements; evaluate type and age of specimen and additive; and label properly)
- 12.2 Prepare specimen for analysis (i.e., centrifuging and loading sample to analyzer, maintain specimen integrity relative to time and temperature, perform standards or controls where applicable, etc.)
- 12.3 Discuss quality and maintenance specific to chemistry instrumentation
- 12.4 Discuss measurable ranges for test results [i.e., AMR (Analytical Measurable Range), etc.]
- 12.5 Explain out-of-range AMR reflexes to dilution
- 12.6 Explain that dilutions are based on calculations

## **STANDARD 13.0 REPORT TEST RESULTS**

- 13.1 Use information management systems to record and retrieve laboratory data from work produced onsite and reference laboratories [i.e., LIS (Laboratory Information Systems), etc.]
- 13.2 Discuss the regulations that apply to waived and moderate complexity testing
- 13.3 Discuss the significance of reference values to interpreting patient results
- 13.4 Interpret controls and patient results for reporting (e.g., reference values, respond to critical values, and qualitative results)
- 13.5 Review patient identification with laboratory results prior to final report
- 13.6 Identify abnormal and questionable/contradictory results and refer them to the appropriate authority
- 13.7 Demonstrate competency in using various patient report formats (i.e., manual, electronic, etc.)
- 13.8 Discuss procedural difficulties with specified laboratory personnel (i.e., equivocal results, failed controls, etc.)
- 13.9 Follow established procedure for correcting and/or amending manual or electronic reports

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