CAMLPR
Canadian Alliance of Medical Laboratory Professionals Regulators

ACORPLM
Alliance canadienne des organismes de réglementation des professionnels de laboratoire medical

Flexible Pathways to Registration for Medical Laboratory Technologists

Fields-of-Practice Competency Profiles

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Contents

CAMLPR

The Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR) represents provincial regulatory bodies (also called Colleges) for Medical Laboratory Technologists in Canada.

The role of CAMLPR is to establish standards for the knowledge, skills, and judgement in the practice of medical laboratory technology. CAMLPR is focused on fair, efficient, effective, ethical, transparent, and inclusive regulatory approaches and practices for medical laboratory professional regulation across Canada.

Accountability

CAMLPR is accountable to its member organizations, the professional regulatory bodies for MLTs. Each regulatory body has a board/council that includes professional and public representatives. To serve and protect the public, these boards establish, maintain, and enforce:

- standards for registration
- standards for continuing competency
- standards of practice for registrants

Regulatory bodies are accountable to their respective ministries of health and fairness commissioners, and must comply with privacy, human rights, and other applicable legislation.

The competency profiles have been approved by the CAMLPR Board of Directors.

Scope of Competency Profiles

The Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR) has developed new competency frameworks (profiles) for entry-level Medical Laboratory Technologists (MLTs) in eight fields of practice. These competency profiles establish a uniform knowledge framework for practice standards. This standardization is critical for maintaining a high level of quality across the profession. By clearly defining the competencies needed, the profiles help protect public safety and welfare by providing standards that MLTs must meet to perform their duties.

The competency profiles will be used to assess and evaluate the qualifications and performance of applicants for registration. All MLTs, regardless of their educational background, must meet the same rigorous standards. The competency profiles will also help guide practitioners' pursuit of further education so that they may maintain the currency of their professional knowledge. By establishing and maintaining competency profiles, CAMLPR, and the regulatory bodies it represents, are upholding the quality, safety, and effectiveness of professional services.

The competencies are designed to be:

- **Entry-level:** required upon the first day of practice in the profession
- **In the public's interest:** prioritizes the safety and well-being of the public
- **Relevant**: reflect the current scope and demands of the MLT profession
- **Adaptable:** able to accommodate changes in laboratory technology and the healthcare environment
- **Measurable**: able to be clearly measured to allow for objective assessment of a MLT candidate's abilities

Competency profiles define the essential knowledge, skills, and judgment required for entry-level practitioners in specific fields. The development of these profiles was a collaborative process involving subject matter experts, the Competency Development Advisory Committee, and stakeholders across Canada, including clinical practitioners, employers, educators, and government representatives. A report on the development process is available at www.camlpr.org.

The profiles establish a common foundation of skills applicable across different contexts while acknowledging variations in practice environments (urban vs. rural) and jurisdictional requirements. Although comprehensive, they focus on high-frequency, high-priority competencies rather than being exhaustive.

Educational institutions are expected to use the CAMLPR Fields-of-Practice Competency Profiles to guide student preparation for competency assessments (examinations). They have the flexibility to adapt their curricula to meet the specific needs of their students and align with available institutional resources. To support educators, each field-of-practice competency statement is elaborated in DACUM (Developing a Curriculum) materials available at www.camlpr.org.

Because of the evolving nature of MLT practice, competencies will need to be reviewed periodically (e.g., every 3-5 years) to ensure their continued relevance.

Fields of Practice

Competency profiles have been developed in the following fields of practice:

Clinical Chemistry involves the analysis of components in blood, urine, and other body fluids. Practice in Clinical Chemistry includes knowledge of principles and application of analytical techniques including light measurement, electrochemistry, chromatography, mass spectrometry, electrophoresis, immunoassay, and biochemical analysis. A combination of automated, manual, and microscopic techniques is used. Medical Laboratory Technologists (MLTs) require the skills to produce and assess the validity of results from tests such as urinalysis, blood gas analysis, electrolyte measurement, carbohydrate testing, as well as renal, cardiac, liver, pancreatic, toxicology, metabolic, and osmometry testing. These skills are essential for assisting in the diagnosis, treatment, and prevention of diseases.

Hematology focuses on the principles and analysis of cellular and non-cellular components of blood and hemostasis (clot formation and dissolution) to diagnose or monitor treatment. Practice in Hematology includes the knowledge of principles and application of analytical techniques such as slide preparation, staining, examination of peripheral blood films, use of a compound microscope, manual and automated cell counting, flow cytometry and manual or automated coagulation tests. A combination of automated, manual, and microscopic techniques is used. MLTs require the skill to produce and assess the validity of results of complete blood count (CBC), peripheral blood smear evaluation, and hemostasis testing.

Clinical Microbiology focuses on the principles and skills required to prepare, culture, incubate, and stain clinical microbiology specimens to identify the cause of infection. Practice in Clinical Microbiology includes the knowledge and application to identify and perform susceptibility testing of clinically significant microorganisms, including bacteria, fungi, parasites, and viruses. A combination of automated, manual, molecular, and microscopic techniques are used. MLTs must apply their knowledge of clinically significant microorganisms for various body systems to produce valid results to assist in the diagnosis and treatment of disease.

Transfusion Medicine (Science), also known as Blood Bank, focuses on the principles and skills required for ABO and Rh inheritance, antigens, antibodies, as well as storage and preparation of blood and blood products. Transfusion Science includes the knowledge and application to assess, perform and resolve ABO and Rh grouping, identify blood group system antibodies, hemolytic disease of the fetus and newborn (HDFN), and selection of compatible products for transfusion. A combination of automated and manual techniques is used. MLTs must apply their knowledge of blood group systems, inheritance, inventory management, issuing of blood and blood products, and investigate adverse effects of transfusion.

Histology focuses on the principles and skills to prepare clinical specimens for histological examination. Practice in Histology includes the knowledge and application of fixation, processing, embedding, cutting, and staining techniques to demonstrate cellular and non-cellular elements that are reviewed by pathologists. MLTs must apply their knowledge to differentiate the micro-anatomical structure of the body's major organs including functional cells and tissue arrangements to ensure the pathologist is able to produce valid results.

Cytology

- **Gynecologic Cytology** examines cellular samples from the female reproductive system using conventional smears and liquid-based platforms. Cytotechnologists interpret cellular specimens to identify morphologic abnormalities through the application of their skill, knowledge, and judgement in the female reproductive anatomy (macro and micro anatomy), cellular morphology, and the standardized Bethesda System for reporting. Cytotechnologists will report all negative (normal) results and work with cytopathologists (pathologists) in the diagnosis of abnormal findings including cervical cancer, HPV, or uterine cancer.

- **Non-Gynecologic Cytology** involves the examination of cellular specimens from all types of tissues, organs, and body fluids. Cytotechnologists interpret cellular specimens to identify morphologic abnormalities through the application of their skill, knowledge, and judgement of the tissues, organs, body fluids, anatomy (macro and micro anatomy), cellular morphology and the accepted standardized reporting systems. Cytotechnologists work closely with cytopathologists in the diagnosis of abnormal findings.

Cytogenetics involves the examination of chromosomes, using techniques such as karyotyping, FISH, and chromosomal microarray analysis using advanced microscopes with imaging systems. Cytogenetic technologists identify chromosomal abnormalities and correlate findings with clinical data through the application of knowledge of chromosomal structure, genetic syndromes, and the principles of molecular genetics. The results of these tests are used to diagnose conditions such as Down Syndrome, Leukemia, and chromosome defects, plan a treatment, or evaluate a treatment.

Molecular Diagnostics involves the analysis of DNA and RNA in a variety of specimens using techniques such as PCR, DNA sequencing, and other molecular methods, utilizing instruments such as real-time PCR machines and DNA sequencers. MLTs examine molecular assays and interpret results to diagnose conditions or monitor treatment efficacy involving genetics/genomics, proteomics, infectious disease, such as COVID-19, Cystic fibrosis, and gene mutations in various types of cancer.

Competency Groupings

Competencies are either common, meaning they apply across multiple fields of practice, or are specific to one or more fields of practice. They are also grouped into the following categories:

1. **Specimen Collection**: Collecting, transporting, receiving, handling, and processing specimens according to established guidelines to maintain their integrity and suitability for testing.
2. **Preparation and Testing:** Preparation and analysis of laboratory specimens using various techniques to provide accurate and reliable results.
3. **Evaluation and Interpretation**: Assessment and interpretation of laboratory results for accuracy and clinical relevance to support diagnosis and treatment.
4. **Reporting and Communication:** Documenting and transmitting laboratory results to ensure clarity, accuracy, and effective collaboration with healthcare teams.
5. **Equipment and Resources**: Operating, maintaining, and troubleshooting laboratory instruments and technology and maintaining appropriate levels of resources to support reliable operations.
6. **Safety**: Implementing biological and chemical safety and infection control standards to protect personnel, patients, and the environment.
7. **Professionalism**: Demonstrating ethical and professional conduct, effective communication, and collaboration to maintain legal and professional standards.
8. **Quality Assurance**: Monitoring, validation, and adherence to quality standards to ensure the accuracy and reliability of laboratory results.

Declarative and Practical Knowledge

Proficiency in each competency requires an understanding of both declarative and practical knowledge.

Declarative (theoretical) knowledge encompasses facts and information that can be articulated and shared. In medical laboratory technology, this includes understanding theoretical concepts such as the purpose of specific tests, the interpretation of results, human biology, and laboratory safety protocols. This type of knowledge is crucial because it provides the “what” and “why” behind the procedures and practices used in the laboratory.

Practical knowledge involves the hands-on skills required to perform tasks. It addresses the “how” and “when” aspects of laboratory work, such as how to operate and maintain equipment, conduct experiments, and ensure that safety protocols are followed. Practical knowledge is typically acquired through experience and practice.

Declarative and practical knowledge are deeply interconnected in the field of medical laboratory technology because practical application frequently relies on a solid grasp of theoretical principles.

Competency Assessments (Examinations)

Medical Laboratory Technologist (MLT) applicants can take competency assessments (examinations) in one or more of the fields of practice. Applicants can also take predefined “bundled” examinations that include several field-of-practice assessments in a single exam session.

	FIELDS OF PRACTICE IN BUNDLED EXAM SESSION							
EXAMINATION BUNDLE	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
MLT Core Lab	✓	✓	✓					
MLT Core Lab and Clinical Microbiology	✓	✓	✓	✓				
MLT General	✓	✓	✓	✓	✓			
MLT Diagnostic Cytology					✓	✓		
MLT Clinical Genetics							✓	✓

Examination details are available at www.camlpr.org.

Version Changes

This version of the competency profile includes an expanded introductory section for clarity and additional context. The fields-of-practice descriptions and competency statements that follow remain unchanged from the previous version published on August 13, 2024.

Fields-of-Practice Competency Profiles

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
	SPECIMEN COLLECTION								
1	Instructs patient (or guardian) and healthcare professionals on requirements for specimen collection, transportation, and storage by providing relevant documentation and verbal instructions.	✓	✓	✓	✓	✓	✓	✓	✓
2	Identifies potentially inappropriate test requests in consultation with ordering practitioner or appropriate specialist to minimize ordering errors through evaluation of the paper/electronic requisition.	✓	✓	✓	✓	✓	✓	✓	✓
3	Compares requisition to specimen to verify the correct container, its accurate labeling, and alignment between specimen and requested test(s) by reviewing patient details, specimen labels, and test specifications.	✓	✓	✓	✓	✓	✓	✓	✓
4	Assesses specimen integrity using visual inspection and other techniques to ensure its testing suitability.	✓	✓	✓	✓	✓	✓	✓	✓
5	Applies legal requirements and chain of custody protocols to maintain integrity of the specimen for legal purposes through proper handling, transportation, safekeeping, and recording.	✓	✓	✓	✓	✓	✓	✓	✓
6	Records all required specimen details in the laboratory information system for accurate testing and future reference, by ensuring accurate data entry of patient and specimen information, test requests, requesting practitioner(s), and any additional details.	✓	✓	✓	✓	✓	✓	✓	✓
7	Prioritizes specimen delivery to maintain specimen integrity, priority, and quality by evaluating the specimen specifications, stability requirements, and urgency of each specimen, and organizing timely and efficient transportation of specimen to the appropriate destination.	✓	✓	✓	✓	✓	✓	✓	✓
8	Prioritizes specimen preparation by evaluating the urgency of the test, the volume of specimens, and the timing and availability of lab resources to ensure that laboratory testing is performed by priority and in an efficient manner.	✓	✓	✓	✓	✓	✓	✓	✓
9	Detects discrepancies in specimen procurement or documentation through systematically examining the procedures, recording details, and initiating corrective action to ensure accurate test results.	✓	✓	✓	✓	✓	✓	✓	✓
10	Verifies the patient identity for specimen collection by cross-referencing appropriate patient identifiers to ensure error-free specimen acquisition.	✓	✓	✓	✓	✓	✓		✓

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
11	Collects specimen using correct procurement protocol to ensure specimen integrity and patient safety.	✓	✓	✓			✓		
12	Stores and transports blood products to maintain quality and integrity of the product by adhering to transfusion medicine standards.			✓					
	PREPARATION AND TESTING								
1	Matches specimen to patient identifiers at all stages of specimen preparation, analysis and reporting to ensure traceability and accuracy.	✓	✓	✓	✓	✓	✓	✓	✓
2	Prepares reagents, calibrators, culture media, standards and quality control materials for laboratory use as part of testing systems, according to laboratory standards/protocols.	✓	✓	✓	✓	✓	✓	✓	✓
3	Stains prepared slides to enhance visibility of specimens (cellular or extracellular) using appropriate staining procedures.		✓		✓	✓	✓	✓	
4	Identifies microscopic elements for the analysis of health and diseases by use of appropriate microscope assessment technique.	✓	✓		✓	✓	✓	✓	
5	Applies knowledge of method limitations in laboratory analysis to ensure accurate and reliable test results by selecting appropriate test methodology, accounting for factors like specimen/ substance to be analyzed and required sensitivity of test.	✓	✓	✓	✓	✓	✓	✓	✓
6	Analyzes specimen to identify organisms using techniques such as staining, culturing, biochemical tests, and molecular methods.		✓		✓	✓	✓		✓
7	Prepares and processes specimens to visualize and study gene or DNA sequence expression and localization in cells or tissues by in situ hybridization (ISH).							✓	✓
8	Prepares slides of tissue or cellular material for analysis using grossing, processing, embedding, sectioning (paraffin and frozen), banding, staining and/or mounting techniques.					✓	✓	✓	
9	Prepares and assesses slides to visualize and analyze metaphase chromosomes spreads or nuclei using banding and staining techniques including special stains.							✓	
10	Prepares slides for microscopic analysis by imprinting, smearing, fixing, staining, cover slipping, etc.	✓	✓	✓	✓	✓	✓	✓	
11	Prepares and assesses metaphase chromosome spreads or nuclei to provide slides for microscopic analysis using slide making techniques.						✓	✓	
12	Prepares nucleic acid specimens for analysis to detect genetic variations or mutations using PCR and/or nucleic acid sequencing techniques.				✓			✓	✓

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
13	Prepares bodily fluids for karyotyping, partial karyotyping, or FISH analysis by separating, culturing, and synchronizing cells.							✓	✓
14	Sets-up polymerase chain reaction (PCR) assays to test for various purposes using commercial kits and laboratory developed tests (LDT).	✓	✓		✓		✓	✓	✓
15	Sets up and maintains short term and long-term tissue cultures to identify chromosomal or other genetic abnormalities by establishing the culture, regular feeding and maintenance, monitoring cell growth and health, and cryopreservation.							✓	
16	Selects culture media to inoculate specimens depending on specimen source, following standard operating procedures.				✓			✓	
17	Cultures specimens to identify microorganisms by inoculating specimen in appropriate culture media and environment.				✓				
18	Presumptively identifies microorganisms (bacteria, fungi) to direct their further workup by colony morphology and spot testing (e.g., catalase, coagulase, oxidase, PYR, indole, etc.) and considering the specimen source.				✓				
19	Measures the absorbance/fluorescence of nucleic acids to identify the suitability and concentration of nucleic acid extracts for molecular testing using spectrophotometers and fluorometers.							✓	✓
20	Harvests cells to prepare cell suspensions for metaphase chromosome spreads using harvesting reagents and techniques.							✓	
21	Examines specimens using microscopic or macroscopic techniques to ensure adequate specimen quality and/or volume for the requested analysis.	✓	✓	✓	✓	✓	✓	✓	✓
22	Examines cells and non-cellular components under a microscope to differentiate between normal and abnormal cells based on specific criteria for their shape, features, and the background elements.	✓	✓		✓		✓	✓	
23	Examines metaphase chromosome spreads and nuclei using a microscope or image capture, to detect numerical and structural abnormalities, such as deletions, duplications, inversions, and translocations associated with genetic disease or cancer.							✓	
24	Determines phenotypes to resolve discrepancies, determine product compatibility, and identify donors by using phenotyping and genotyping methods.			✓					
25	Separates and analyzes analytes using quantitative and qualitative methods to identify and quantify components of a specimen.	✓	✓						

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
26	Semi-quantitates / quantitates microscopic elements to provide an estimate of their presence in the specimen using established procedures for cell maturation, indices or other required counts.	✓	✓		✓		✓	✓	
27	Semi-quantitates / quantitates microorganisms to estimate bacterial load in the original specimen by counting colonies in a plate inoculated by a calibrated loop and calculating colony count.				✓				
28	Tests blood specimen to identify common red blood cell antigens and antibodies by using ABO grouping, Rh typing tests, screening, and identification tests.			✓					
29	Assesses compatibility between donor blood products and patient specimen for transfusion suitability, using automated, manual, solid-phase, and gel cross-matching methods.			✓					
30	Tests blood products to provide safe and effective treatment using techniques such as ABO and Rh typing, and visually inspecting the color and clarity of the product.			✓					
31	Analyzes test results to detect the presence of target nucleic acid sequences or variants using various molecular techniques.				✓			✓	✓
32	Analyzes karyotypes and partial karyotypes using captured images of metaphases to screen for and confirm chromosomal abnormalities by counting, sorting, and analyzing chromosome structures.							✓	
33	Tests urine specimen for appearance and chemical composition using visual and reagent strip analysis.	✓							
34	Analyzes blood gas specimen to determine the pH, oxygen, and carbon dioxide content in the blood using ion selective electrode and calculations.	✓							
35	Performs blood and body fluids analyses to determine the cell number, cell type, morphology, hemoglobin, and indices using impedance, conductivity, light scatter, or fluorescence-based methods and calculations.		✓						
36	Analyzes blood to determine secondary hemostasis, measurement of the coagulation proteins, tertiary hemostasis, or fibrinolysis using optical or mechanical detection methodologies.		✓						
37	Processes specimen for molecular testing by extracting, quantitating, evaluating, setting up, and visualizing nucleic acids.				✓		✓	✓	✓
38	Examines urine specimens under a microscope to identify cellular elements, bacteria, crystals, and other significant components, ensuring alignment with gross inspection and chemical analysis results for diagnostic accuracy.	✓			✓				
39	Performs antimicrobial susceptibility testing to identify susceptibility or resistance of microorganisms to by various methods such as disk diffusion, microbroth dilution, and automated methods.				✓				

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
40	Identifies hemolysis, lipemia, and icteric specimens using visual inspection and analysis tools to ensure specimen quality and accuracy for testing.	✓	✓	✓				✓	✓
	EVALUATION AND INTERPRETATION								
1	Differentiates between clinically significant and insignificant findings used to help diagnose, inform treatment and/or monitor disease progression or treatment response by considering normal reference ranges, clinical context, analytical variability, biological variability, and specific conditions.	✓	✓	✓	✓		✓	✓	✓
2	Differentiates clinically significant findings from artifacts occurring as a result of procurement and preparation techniques to ensure accuracy by correct identification of altered morphologies.		✓		✓	✓	✓	✓	
3	Evaluates blood and body fluid test results to detect the presence of abnormalities or analytes with instruments.	✓	✓		✓		✓	✓	✓
4	Evaluates electronic images to identify chromosomal abnormalities using computer-assisted karyotyping systems.							✓	
5	Evaluates digital images for normal and abnormal characteristics by reviewing the image content and morphology.	✓	✓		✓	✓	✓	✓	
6	Evaluates test results for resistance or susceptibility of microorganisms by applying antimicrobial susceptibility techniques.				✓				
7	Identifies unexpected or implausible results by assessing factors such as specimen integrity, reference values, method limitations, critical values, clinical context, patient delta checks, and clinical conditions in order to maintain accuracy of results.	✓	✓	✓	✓		✓	✓	✓
8	Investigates transfusion reactions to document the event and initiate follow up action and/or testing by analyzing pre and post transfusion specimen, visual inspection, and documentation according to established protocol.			✓					
9	Evaluates test results to screen and determine blood product compatibility by differentiation between clinically significant and insignificant antibodies.			✓					
10	Evaluates the appropriate blood product for a patient to meet the desired outcome of the transfusion by assessing patient medical history, clinical needs, current medications, potential risks, and location/facility inventory.			✓					
11	Interprets test results from in situ techniques by detecting and localizing specific nucleic acid sequences in cells, tissue sections and whole tissue.							✓	✓

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
12	Assesses blood gas analysis to interpret validity of results by reviewing previous results and treatment provided if applicable to determine reportability.	✓							
13	Evaluate test results of commercial kits methods to determine the reporting actions.	✓	✓	✓	✓			✓	✓
	REPORTING AND COMMUNICATION								
1	Documents results of tests and analyses and related communications to convey the results to other healthcare providers and to maintain a record of patient testing history using laboratory information systems, electronic medical records, and telecommunications.	✓	✓	✓	✓		✓	✓	✓
2	Documents observations throughout the total testing process to maintain a traceable record for reference by using laboratory information system and other appropriate media.	✓	✓	✓	✓	✓	✓	✓	✓
3	Reports test and analyses outcomes to inform the health care team on patient results for diagnosis and treatment by utilizing current and appropriate medical terminology/ nomenclature and SOP protocol for critical results reporting and documentation and following up to ensure suitable and timely actions are taken.	✓	✓	✓	✓		✓	✓	✓
4	Confirms all test requests are accounted for to ensure completion of results by comparing completed testing with the original test requisition at time of reporting.	✓	✓	✓	✓	✓	✓	✓	✓
5	Refers relevant specimens to appropriate designated individual for confirmation of initial findings and potential reflex testing by communicating test results.	✓	✓	✓	✓		✓	✓	✓
6	Communicates all breaches in quality and safety to ensure integrity of results by informing supervisor and documenting the issue via written report.	✓	✓	✓	✓	✓	✓	✓	✓
7	Inform public health authorities about significant epidemiological findings following regulatory requirements to prevent and control infection.				✓				✓
8	Refers relevant specimens to appropriate designated individual to provide initial diagnosis to physicians, pathologists and other applicable MLT's or health care professionals by preparing slides, providing specimen for additional testing, and providing initial diagnoses and/or accuracy statements verbally, written, or in electronic communications such as Laboratory Information Systems.	✓	✓	✓	✓		✓	✓	✓
9	Issues a final report for gynecological specimens to convey results as negative for intraepithelial lesion or malignancy when appropriate using the current Bethesda reporting system for Gynecologic Cytology.						✓		
	EQUIPMENT AND RESOURCES								

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
1	Operates, calibrates, and maintains laboratory equipment to ensure proper functionality by conducting regular cleaning, inspection and maintenance and comparing instrument performance against known standards.	✓	✓	✓	✓	✓	✓	✓	✓
2	Identifies and troubleshoots equipment malfunctions to maintain operations by recognizing problems, applying corrective actions, and monitoring equipment performance after corrective action is taken.	✓	✓	✓	✓	✓	✓	✓	✓
3	Captures digital images to analyze, refer, or archive images using image capture equipment.	✓	✓		✓	✓	✓	✓	✓
4	Captures and enhances electronic images to optimize images of human, banded metaphase chromosomes, or DNA using computer-assisted karyotyping software or gel documentation software.							✓	✓
	SAFETY								
1	Utilizes personal protective equipment to protect self and others from hazardous materials and infection by proper selection, use, and disposal of personal protective equipment.	✓	✓	✓	✓	✓	✓	✓	✓
2	Practices proper hygiene to protect self and others by following appropriate hand hygiene procedures.	✓	✓	✓	✓	✓	✓	✓	✓
3	Adheres to Transportation of Dangerous Goods (TDG) and all applicable transport guidelines to provide safe transport of specimens by packaging, transporting, and receiving specimens according to established regulations and provincial guidelines.	✓	✓	✓	✓	✓	✓	✓	✓
4	Uses laboratory safety devices and engineering controls to prevent incidents by following standard operating procedures.	✓	✓	✓	✓	✓	✓	✓	✓
5	Manages chemicals, dyes, reagents, and solutions to prevent exposure, injuries, and environmental contamination by appropriate handling, storage, and labelling.	✓	✓	✓	✓	✓	✓	✓	✓
6	Minimize the risk of injury or infection transmission to self, lab personnel and others by storing, handling, transporting, and disposing of sharps, biological and other hazardous material appropriately.	✓	✓	✓	✓	✓	✓	✓	✓
7	Disinfects and sterilizes the laboratory environment and equipment to prevent the spread of infectious diseases and ensure patient safety by using established standard operating procedures for disinfection, sterilization, and disposal.	✓	✓	✓	✓	✓	✓	✓	✓
8	Responds to laboratory safety incidents and emergencies to minimize their impact on staff, patients, environment, and equipment by adhering to standard operating procedures.	✓	✓	✓	✓	✓	✓	✓	✓
9	Contains and ensures the cleanup of spills of biological and chemical materials to prevent contamination and minimize the risk of exposure to self, laboratory personnel and others by following standard operating procedures.	✓	✓	✓	✓	✓	✓	✓	✓

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
10	Reports and documents all incidents related to safety and personal injury to facilitate corrective action by completing appropriate incident report forms and submitting them to the designated authority.	✓	✓	✓	✓	✓	✓	✓	✓
11	Applies ergonomic principles to prevent musculoskeletal injuries by properly adjusting workspace, maintaining proper posture, etc.	✓	✓	✓	✓	✓	✓	✓	✓
12	Identifies bioterrorism agents and BSL-3 (biosafety level 3) and above pathogens to ensure safety and prevent further exposures by following established protocols and legislation such as the Human Pathogens and Toxins Regulations.				✓				
13	Uses infection control and isolation techniques to prevent infection transmission by adhering to isolation protocols to ensure a safe environment.	✓	✓				✓		
14	Identifies and communicates safety concerns to reduce risk by referring them to appropriate personnel.	✓	✓	✓	✓	✓	✓	✓	✓
	PROFESSIONALISM								
1	Protects patient confidentiality to maintain the trust of the public by managing access to patient information and specimens, limiting information sharing, maintaining confidentiality in results communication, and monitoring and reporting breaches in accordance with federal and provincial legislation.	✓	✓	✓	✓	✓	✓	✓	✓
2	Uses time management strategies to complete laboratory tasks and tests efficiently to meet patient care needs by prioritizing tasks, managing interruptions and distractions.	✓	✓	✓	✓	✓	✓	✓	✓
3	Adapts to changing circumstances to maintain the accuracy and reliability of laboratory results by remaining open-minded and embracing new approaches and methods.	✓	✓	✓	✓	✓	✓	✓	✓
4	Exhibits cultural humility towards patients and coworkers by treating them with respect, valuing their backgrounds and beliefs, avoiding biases, and providing culturally safe care.	✓	✓	✓	✓	✓	✓	✓	✓
5	Collaborates with healthcare professionals and laboratory staff to ensure the accurate and timely delivery of laboratory services by demonstrating respect, empathy, and active listening.	✓	✓	✓	✓	✓	✓	✓	✓
6	Collaborates with patients in their care and promote patient-centered care by explaining procedures, answering questions, and responding to concerns (when the knowledge is available) while respecting the patients' decisions.	✓	✓	✓			✓	✓	
7	Reports unprofessional conduct and incompetence to appropriate regulatory body and/or management to uphold professional ethics and standards.	✓	✓	✓	✓	✓	✓	✓	✓
	QUALITY ASSURANCE								

#	Competency	Clinical Chemistry	Hematology	Transfusion Medicine (Science)	Clinical Microbiology	Histology	Cytology	Cytogenetics	Molecular Diagnostics
1	Analyzes proficiency testing specimens to verify testing quality by incorporating them in the regular testing workflow.	✓	✓	✓	✓	✓	✓	✓	✓
2	Monitors quality of point of care testing to ensure validity of results by reviewing their quality control data and maintenance records.	✓	✓						
3	Reports deficiencies or (procedural) non-compliances to ensure the quality of results by documenting and reporting incidents appropriately.	✓	✓	✓	✓	✓	✓	✓	✓
4	Maintains logbooks, control charts, or other records to track quality control and quality assurance using institutional protocols.	✓	✓	✓	✓	✓	✓	✓	✓
5	Assesses quality control and/or calibration data to ensure accuracy of patient results by applying quality control protocols, identifying deviations, documenting, and reporting findings, and implementing corrective actions.	✓	✓	✓	✓	✓	✓	✓	✓
6	Monitors for random and systemic errors to ensure validity of results by statistically analyzing quality control data.	✓	✓	✓	✓			✓	✓
7	Validates new materials, reagents, media, and instruments to ensure safety and accuracy of testing by identifying, documenting, and reporting deficiencies.	✓	✓	✓	✓	✓	✓	✓	✓
8	Maintains inventory to ensure test accuracy, safety, product availability, and waste prevention by tracking volumes, lot numbers, storage limits and expirations dates and notifying appropriate person, if necessary, should action be required.	✓	✓	✓	✓	✓	✓	✓	✓
9	Manages laboratory and patient data to ensure its accuracy using information systems and data accuracy protocols.	✓	✓	✓	✓	✓	✓	✓	✓
10	Assesses stained slides to determine staining quality by reviewing positive and negative controls, and the slides' overall appearance.		✓		✓	✓	✓	✓	
11	Adheres to approved document control procedures and supports the development and refinement of procedures.	✓	✓	✓	✓	✓	✓	✓	✓