CSMLS SCSLM

Canadian Society for Medical Laboratory Science
Société canadienne de science de laboratoire médical

Pan-Canadian Entry-to-Practice Competency Profile for

General Medical Laboratory Technologist (GMLT)

Effective with the February 2029 CSMLS Examination

Clinical Genetics Medical Laboratory Technologist (CGMLT)

Effective with the February 2027 CSMLS Examination

Diagnostic Cytology Medical Laboratory Technologist (DCMLT)

Effective with the February 2027 CSMLS Examination

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CSMLS Code of Professional Conduct©

It is expected that all CSMLS certified Medical Laboratory Professionals follow the CSMLS established Code of Professional Conduct.

- Medical laboratory professionals are dedicated to serving the health care needs of the public. The welfare of the patient and respect for the dignity of the individual shall be paramount at all times.
- Medical laboratory professionals work with other health care professionals to provide effective patient care.
- Medical laboratory professionals shall promote the image and status of their profession by maintaining high standards in their professional practice and through active support of their professional bodies.
- Medical laboratory professionals shall protect the confidentiality of all patient information.
- Medical laboratory professionals shall take responsibility for their professional acts.
- Medical laboratory professionals shall practise within the scope of their professional competence.
- Medical laboratory professionals shall endeavour to maintain and improve their skills and knowledge and keep current with scientific advances. They will uphold academic integrity in all matters of professional certification and continuing education.
- Medical laboratory professionals shall share their knowledge with colleagues and promote learning.
- Medical laboratory professionals shall be aware of the laws and regulations governing medical laboratory science and shall apply them in the practice of their profession.
- Medical laboratory professionals shall practise safe work procedures at all times to ensure the safety of patients and co-workers.

Revised October 2023 © CSMLS

Assumptions About the Medical Laboratory Profession

The Medical Laboratory Technologist

Upon successful completion of the CSMLS National Certification Examinations, it is assumed the Medical Laboratory Technologist:

- has developed a broad knowledge base and practical skills that enable them to analyze specimens and assess and report laboratory results according to institutional policies and professional standards;
- applies critical thinking and problem-solving strategies to ensure best practices;
- practices and promotes the principles of continuous quality improvement including professional development and using personal initiative to improve laboratory practice;
- practices to ensure the safety of patients, colleagues, self, and the environment;
- contributes to the health care and education of the public, promotes patient welfare and respects patient diversity, dignity, and confidentiality;
- is an integral member of the health care team who shares knowledge that is essential to the prevention, diagnosis, treatment and monitoring of disease, promotes learning, and collaborates with other professionals in providing effective patient care;
- is responsible and accountable for professional acts and practices according to standards of practice as well as legislation and regulations governing the profession;
- abides by the CSMLS Code of Professional Conduct;
- abides by the CSMLS Code of Ethics and any other jurisdictional Code of Ethics (provincial regulator and/or employer);
- uses effective interpersonal skills to maintain a professional relationship with colleagues, patients/clients and health care professionals;
- uses all available resources to provide service in a timely, accurate, and cost-effective manner.

The Client/Patient

The client/patient is any individual who interacts with the Medical Laboratory Technologist in their professional capacity, e.g. patient, patient representative, health care professionals, other laboratory professionals.

The Environment

The Medical Laboratory Technologist is prepared to work in a variety of settings including, but not limited to, hospitals, private, and government laboratories, industry, and educational institutions.

The Medical Laboratory Technologist practices in a safe environment that is dynamic and evolving.

Introduction to the CSMLS Competency Profile©

The Canadian Society for Medical Laboratory Science (CSMLS) provides competency profiles to standardize minimal competence at an entry-to-practice level and certification processes for four Medical Laboratory designations.

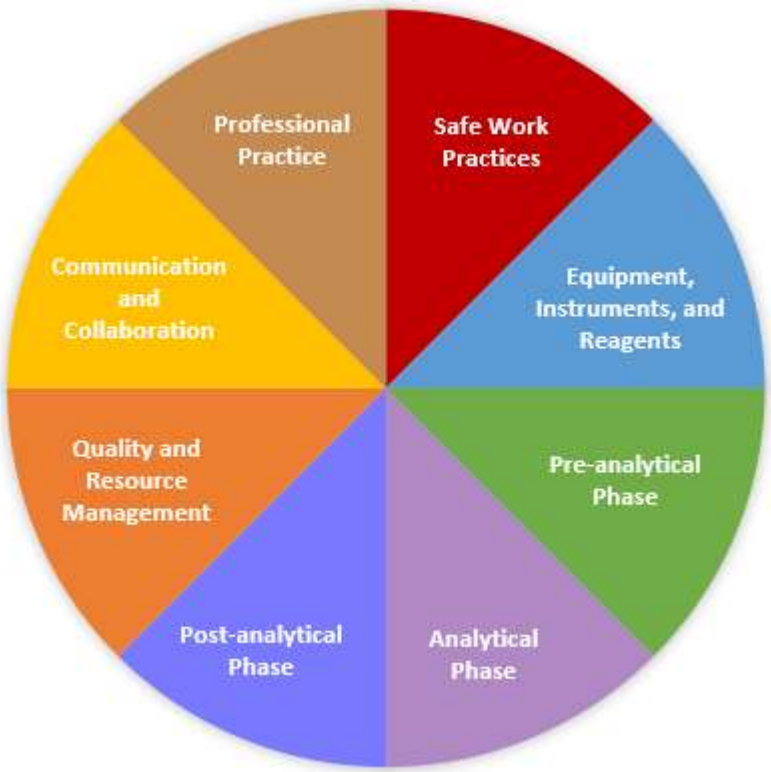
In this document, CSMLS provides an updated entry-to-practice competency profile for the following designations: GMLT, CGMLT, DCMLT. Additionally, CSMLS has outlined the commonalities and the differences between these designations.

General Medical Laboratory Technologist (GMLT)	**Clinical Genetics Medical Laboratory Technologist (CGMLT)**
Medical Laboratory Assistant (MLA)	**Diagnostic Cytology Medical Laboratory Technologist (DCMLT)**

Note: The MLA profile is the subject of a separate competency profile document.

Consistent with previous versions, the updated competency profile is divided into competency categories. However, in this version all three designations now have eight (8) congruent competency categories, as illustrated in Figure 1.

Figure 1 Competency Categories



How to read the competencies

The updated CSMLS Competency Profiles© will support regulators, educators, medical laboratory professionals, employers, Accreditation Canada, and other interested parties in sharing expectations and goals, learning objectives, qualifications, development opportunities and/or training for minimal competence at an entry-to-practice level. The profiles also provide succinct descriptions for patients, clients, and the general public.

The Competency Profile is separated into eight (8) **competency categories**, these are further divided into individual competencies and their performance criteria, all categories include knowledge requirements and some have tables describing expected elements of the profession.

Each **competency** is defined using a short action statement describing what a trained professional must be able to perform to be considered minimally competent at an entry-to-practice level. The verb used provides guidance as to the required level of performance. For example, ''assess'' would be a higher level of performance than ''recall''.

The **performance criteria** for each competency detail the behaviours required for proficiency and to be assessed. Competence requires all performance criteria to be met.

Additionally, there are two competency categories that list distinct and similar equipment, instruments, and reagents (category 2) each designation uses, as well as the technical and analytical processes (category 4) performed by each designation.

This is followed by a list of **knowledge** requirements, which are meant to assist with curriculum development and the assessment of learning.

The **clarification** section, at the end of this document, provides explanations or additional information on the terminology or range of context for the performance criteria. Words or phrases that are clarified are shown <u>underlined</u> throughout the document.

NOTE: MLT Clinical Genetics and MLT Diagnostic Cytology Exams are only available in English as there are no Canadian EQual™ accredited/registered educational programs for these designations in French.

Examination Blueprint: Content Ranges

CSMLS Medical Laboratory Technology examination content is based on these ranges.

Competency Categories	Exam Content Ranges		
	GMLT	CGMLT	DCMLT
1. Safe work practices	5-7%	5-7%	4-7%
2. Equipment, instruments and reagents	10-15%	10-15%	4-7%
3. Preanalytical phase	15-20%	20-30%	9-15%
4. Analytical phase	30-35%	30-40%	43-55%
5. Post-analytical phase	7-10%	10-15%	12-15%
6. Quality and Resource Management	10-12%	5-10%	6-10%
7. Communication and Collaboration	5-7%	3-5%	4-7%
8. Professional Practice	5-10%	3-5%	4-7%

NOTE: MLT Clinical Genetics and MLT Diagnostic Cytology Exams are only available in English as there are no Canadian EQual™ accredited/registered educational programs for these designations in French.

Competency Category 1: Safe Work Practices

The Medical Laboratory Technologist conducts their professional practice according to established protocols, safety guidelines, and existing legislation.

Exam Content

GMLT: 5-7% CGMLT: 5-7% DCMLT: 4-7%

Competencies		Performance Criteria
1.1 Maintain a safe work environment	1.1.1	Use routine practices and additional precautions.
	1.1.2	Apply laboratory hygiene and infection control practices.
	1.1.3	Use laboratory safety devices safely and effectively.
	1.1.4	Handle materials according to standard operating procedures and protocols.
	1.1.5	Practice good ergonomics.
1.2 Minimize dangers from specimens, supplies and equipment	1.2.1	Use and dispose of sharps safely.
	1.2.2	Handle biological and other hazardous materials according to legislation.
	1.2.3	Disinfect and sterilize items using the proper method.
	1.2.4	Minimize potential hazards associated with disinfection and sterilization methods, use of electrical equipment, and flammable materials.
	1.2.5	Refuse unsafe work if necessary.
1.3 Respond to laboratory emergencies, incidents, and accidents according to protocols	1.3.1	Use spill containment and clean-up procedures for biological and other hazardous materials.
	1.3.2	Document and report all safety and personal injury incidents.
	1.3.3	Maintain safety in potentially dangerous situations (including implementing fire containment or escape procedures).
	1.3.4	Obtain assistance when warranted.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Safe Work Practices Knowledge Requirements

Legislative requirements (including WHIMS)
Workplace policies, procedures, manuals
Safe practices and workplace risks (including hazard symbols)
Principles of disinfection and sterilization
Ergonomics and strategies that support ergonomic practice
Occupational health and safety
Prevention of occupational injuries
Management of incidents

Competency Category 2: Equipment, Instruments, and Reagents

The Medical Laboratory Technologist uses laboratory equipment and instruments and prepares reagents according to established protocols.

Exam Content

GMLT: 10-15% CGMLT: 10-15% DCMLT: 4-7%

Competencies		Performance Criteria			
2.1 Operate standard laboratory equipment	2.1.1	Operate equipment correctly, safely, and according to protocols (includes procedures and manuals).			
	2.1.2	Assess equipment operability.			
	2.1.3	Recognize malfunctions in equipment.			
	2.1.4	Perform preventative maintenance.			
	2.1.5	Maintain instrument and equipment logs.			
2.2 Prepare and assess the suitability of reagents	2.2.1	Use/prepare (store/dispose) reagents correctly, safely, and according to protocols.			
	2.2.2	Recognize reagent issues (e.g., out of date, poor quality, incorrect reconstitution, etc.).			
	2.2.3	Maintain reagent preparation logs.			
2.3 Types of Equipment/ Instruments/ Reagents used by the various Medical Laboratory Technologist designations		*This is not an exhaustive list, but rather a list of the most common.*	MLT Designations		
			G	**CG**	**DC**
		Computer and software.	X	X	X
		Vacutainers, tourniquet[1], needles[1], etc.	X	X	X
		Centrifuge, biosafety cabinet, fume hood, pipettes, serological pipette controller, vacuum aspiration system, etc. (GMLT only – also includes micro incinerators/ sterilizers, inoculating loops, inoculating needles)	X	X	X
		Reagent preparation equipment (e.g., pH meter, balance, autoclave, glassware, etc.)	X	X	X
		Microscope (includes bright field, fluorescence, inverted, phase contrast, dissecting, polarizing)	X	X	X
		Stainer	X	X	X
		Thermocyclers (PCR)	X	X	X
		Electrophoresis reagents and equipment	X	X	X
		Automated nucleic acid extractors	X	X	
		Robotic liquid handlers	X	X	

[1] For GMLT (phlebotomy)

Competencies	Performance Criteria			
	This is not an exhaustive list, but rather a list of the most common.	MLT Designations		
		G	**CG**	**DC**
	Light measuring systems, including absorption spectrophotometry, fluorometry, reflectometry, turbidimetry, etc., where required	X	X	X
	Cytospinner	X		X
	Microtome	X		X
	Flow cytometer	X		X
	Osmometer	X		
	Mass spectrometer	X		
	Chromatography	X		
	Electrochemical systems, including ion selective electrodes and conductance electrodes	X		
	Point-of-care testing instruments	X		
	Computer assisted karyotyping systems		X	
	Genetic analyzers (e.g., sequencing, MLPA, and fragment analysis)		X	
	Metaphase finder		X	
	Microarray technology platforms		X	
	Next generation sequencing and library preparation instruments		X	
	Gene mapping and sequencing software		X	
	Materials for liquid-based cytology (e.g., brush, containers, etc.)			X

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Equipment, Instruments, and Reagents Knowledge Requirements

WHMIS (especially SDS in relation to reagents)

Theory of, but not limited to:

- electricity
- light measuring systems
- microscopy
- electrochemical systems
- centrifugation

Chemical properties and reactions

Laboratory mathematics for chemical solutions (stock, working, etc.)

Kohler illumination

Principles and internal workings of common laboratory instrumentation

Competency Category 3: Preanalytical Phase

The Medical Laboratory Technologist verifies relevant data and ensures that appropriate specimens are collected, procured, and handled according to established protocols. Further, the Medical Laboratory Technologist uses judgment and knowledge to perform appropriate preanalytical (preparatory) techniques on specimens that originate from a variety of sources according to established protocols.

Exam Content

GMLT: 15-20% CGMLT: 20-30% DCMLT: 9-15%

Competencies		Performance Criteria
3.1 Collect specimen from patient according to protocols	3.1.1	Verify that specimen collection is appropriate to the patient's clinical presentation (or diagnostic indication).
	3.1.2	Confirm the identity of the patient.
	3.1.3	Obtain informed consent prior to initiating procedure.
	3.1.4	Respect patient's right to refuse collection.
	3.1.5	Perform venipuncture and capillary blood collection. [2]
	3.1.6	Obtain samples suitable for laboratory analysis.
	3.1.7	Adapt approach according to patient response.
3.2 Handle data accurately	3.2.1	Verify relevant information for test request (including suitability for the diagnostic indication).
	3.2.2	Verify that the pertinent data on the specimen and requisition correspond.
	3.2.3	Verify that specimen identification is traceable throughout sample preparation.
	3.2.4	Dispose of data according to protocols.
3.3 Handle specimen according to protocols	3.3.1	Adhere to guidelines for specimen set-up, retention, storage (e.g., refrigerators & freezers), transportation (e.g., dry ice, liquid nitrogen), and disposal.
	3.3.2	Adhere to established protocols for labeling and traceability of specimens.
	3.3.3	Verify accuracy of all information (including that the specimen received is consistent with requisition).
	3.3.4	Handle specimen according to priority and stability.
	3.3.5	Take responsibility for specimen integrity.
	3.3.6	Determine course of action if preanalytical errors detected according to established protocols (including appropriate specimen for the diagnostic indication).

[2] Applies only to GMLT.

Competencies		Performance Criteria
	3.3.7	Safeguard specimen chain of custody.
	3.3.8	Minimize risk of contamination (e.g., disinfection of workspace, clean up of spills, use of biological safety cabinet, etc.).
	3.3.9	Accession specimen into laboratory information system.
3.4 Prepare specimen (sample) for analysis	3.4.1	Assess specimen (sample) suitability.
	3.4.2	Monitor specimen (sample) for preanalytical errors.
	3.4.3	Select appropriate sample preparation method based on procedures.
	3.4.4	Adjust preparatory techniques or methods according to clinical information (or diagnostic indication), as required.
	3.4.5	Prepare specimen (sample) for current and future analysis (e.g., aliquoting, culturing, diluting, extracting/isolating DNA/RNA, quantifying, etc.; for CGMLT this includes performing molecular assays for downstream analyses, e.g., PCR, MLPA, Microarray, NGS, OGM, Sanger sequencing; for DCMLT, this can include immunohistochemistry and flow cytometry).
	3.4.6	Prepare smears (and/or slides) manually or using automated equipment (for microscopic analysis).
	3.4.7	Load specimen (samples) on laboratory equipment.
	3.4.8	Harvest specimen for cytogenetic analyses. [3]
	3.4.9	Perform staining correctly.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Preanalytical Phase Knowledge Requirements

Medical terminology and anatomy

Specimen collection methods

Specimen transportation methods and requirements (e.g., Transportation of Dangerous Goods (TDG) Standards and Regulations, dry ice, etc.)

Specimen integrity

Standard operating procedures (for medical laboratory professionals and related health care workers)

Accessioning laboratory information systems, manual or electronic

Biologic variables and their impact on test results (e.g., age, gender, race, exercise, diet, posture, genetic predisposition)

[3] Applies only to CGMLT.

Preanalytical Phase Knowledge Requirements

Physical and chemical principles of (routine and special) staining (routine staining, e.g., Jenner-Giemsa, Gram, Wright, Hematoxylin and Eosin, Papanicolaou, Leishman, FISH (CG/CY), NOR (CG), G-banding (CG), etc.)

Sampling requirements for tests (referring to test library)

Competency Category 4: Analytical Phase

The medical laboratory technologist, understanding the principles of testing, uses their skills to perform analytical techniques, and critically evaluates the test results on a variety of specimens to interpret and provide accurate diagnostic information according to established protocols.

Exam Content

GMLT: 30-35% CGMLT: 30-40% DCMLT: 43-55%

Competencies		Performance Criteria
4.1 Perform analysis according to standard operating procedures	4.1.1	Adhere to regulatory and accreditation requirements.
	4.1.2	Capture and enhance electronic images (where required).
	4.1.3	Analyze specimen using direct or indirect methods.
	4.1.4	Validate test result using selected controls.
	4.1.5	Identify sources of interference or error (e.g., equipment, reagents).
	4.1.6	Flag unacceptable data for further investigation.
4.2 Interpret result	4.2.1	Interpret test result in the context of clinical situation, reference ranges, or degree of satisfaction (identify the type of pathology (CD), mutation (GC), variant (GC) present).
	4.2.2	Identify critical results.[4]
	4.2.3	Act immediately when critical results obtained.[4]
	4.2.4	Initiate and conduct follow-up testing if indicated/required.
	4.2.5	Address uncertain or ambiguous results by conferring with other professionals.
	4.2.6	Recognize variant or abnormal findings.
	4.2.7	Follow-up on unexpected result.

The following list of analytical techniques, assessments, and results interpretation are performed by the various Medical Laboratory Technologist designations. While not a new competency, the types of analyses most commonly used are included in this profile revision for educational and studying proposes. This is not an exhaustive list, but rather a list of the most common analytical tests performed by discipline within the various designations.

[4] GMLT

Designation Discipline Key

General (G)	DISCIPLINES for Clinical Genetics (CG)	Diagnostic Cytology (DC)
CC=Clinical Chemistry; HE = Hematology HI = Histotechnology MI = Clinical Microbiology TS = Transfusion Science X = All disciplines	MlG = Molecular Genetics CtG = Cytogenetics X = All disciplines	GY = Gynecological nGY = Non-Gynecological HI = Histotechnology X = All disciplines

Competencies	Performance Criteria			
4.3 Analyses/ Assessments/ Interpretation	*This is not an exhaustive list, but rather a list of the most common.*	MLT Designations		
		G	**CG**	**DC**
	Identification of nucleic acid sequences using molecular diagnostics (e.g., PCR – routine or real-time, etc.; for CGMLT, this can be done for downstream specialized molecular analyses)	MI	MlG	GY nGY
	In situ hybridization preparation (for staining)	HI[5]	MlG	X
	Morphology of cellular and non-cellular elements in stained and/or wet prep microscopic preparations	CC HE HI MI		X
	Techniques to demonstrate cellular and non-cellular components in tissue and body fluids (e.g., routine and special stains)	HE HI		X
	Immunoassays (for the detection of antigens and antibodies; may include the use of commercially available diagnostic testing kits)	CC HE HI[6] MI TS		HI[4]
	Tissue preparation techniques, including: • Grossing • Processing • Embedding • Sectioning (paraffin and frozen)	HI		HI
	Determining clinically significant micro-organisms [according to body site] to include: • Culture media selection, isolation environment • Identification confirmation using staining techniques, wet prep, biochemical, serological, and automated testing methods • Detection instrumentation	MI		

[5] New

[6] Understanding of Immunohistochemistry testing principles and methods in relation to Histotechnology.

Competencies	Performance Criteria			
	This is not an exhaustive list, but rather a list of the most common.	MLT Designations		
		G	**CG**	**DC**
	Antimicrobial susceptibility analyses	MI		
	Point-of-care techniques for screening, e.g.: • blood gases • cardiac markers • cholesterol • drugs of abuse • electrolytes • enzymes • fecal occult blood (or FIT) • glucose • infectious diseases • pregnancy, etc.	CC MI		
	Qualitative and quantitative biochemical analyses[7]; including, but not limited to: • blood gases • cardiac markers • diabetes profile • electrolytes • endocrinology markers • enzymes • kidney function markers • lipid profile • liver function markers • pregnancy • therapeutic drug monitoring & toxicology • urinalysis & other body fluid analysis	CC		
	Blood cell antigens and antibodies (clinically significant and insignificant; and common red blood cell antigens and antibodies)	TS		
	Compatibility analyses	TS		
	Blood product preparation (and management), including: • appropriateness for the patient's clinical situation • quality evaluation • storage • issuing/releasing for use	TS		
	Adverse effects of transfusions	TS		

[7] While not a new competency, the types of biochemical analyses listed are commonly used. They are included in the updated profile for educational and studying proposes.

Competencies	Performance Criteria			
	This is not an exhaustive list, but rather a list of the most common.	MLT Designations		
		G	**CG**	**CY**
	Phenotyping and genotyping	MI TS	X	
	Particle analysis used in common hematology instrumentation	HE		
	Hemostasis (e.g., coagulation testing)	HE		
	Metaphase chromosome preparations, and karyotypes and partial karyotypes (using karyograms)		CtG	
	Staining of chromosomes		CtG	
	Gene mutation analysis (e.g., PCR [real time, droplet digital, etc.], MLPA, fragment, linkage, Sanger sequencing, microsatellite)		MlG	
	Optical genome mapping, next generation sequencing (whole exome sequencing & whole genome sequencing), and Microarray		MlG	

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Analytical Phase Knowledge Requirements

Normal and abnormal medical physiology, disease processes, and principles of human body systems (including genetics)

Normal and abnormal results (patient and quality control)

Correlation of laboratory data to specific diseases

Laboratory statistics in relation to test results (i.e., QC) where required; includes Westgard rules when appropriate

Testing principles and methodologies

Troubleshooting (simple and complex)

Competency Category 5: Post-Analytical Phase

The medical laboratory technologist uses appropriate terminology to correctly record, release, and report laboratory results according to established protocols.

Exam Content

GMLT: 7-10% CGMLT: 10-15% DCMLT: 12-15%

Competencies		Performance Criteria
5.1 Record result	5.1.1	Record result according to protocols, and suited to legal and regulatory requirements (using the established laboratory information system).
	5.1.2	Verify accuracy, completeness, and clarity of information (results are released for reporting when the MLT validates the recorded results).
5.2 Report result	5.2.1	Report results in a timely manner (using the established laboratory information system).
	5.2.2	Report critical results and stat results according to priority.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Post-Analytical Phase Knowledge Requirements

Recording protocols
Standard reporting mechanisms
Information included in laboratory reports

Additionally, there are specific reporting systems used in both the ***Clinical Genetics*** and ***Diagnostic Cytology*** medical laboratories:

The **CGMLT** must understand and use reporting systems appropriately. These may include:

- ISCN 2020: An International System for Human Cytogenomic Nomenclature
- Sequence Variant Nomenclature, HUGO International, or other comparable nomenclature

The **DCMLT** must understand and use reporting systems appropriately. These may include:

- Paris (urinary), Milan (salivary), Bethesda (gynecological and thyroid), the International System for Reporting Serous Fluid Cytopathology, the International Academy of Cytology Yokohama System for Reporting Breast Find Needle Aspiration Biopsy Cytopathology, and the Papanicolaou Society of Cytopathology Guidelines for Respiratory Cytology and Reporting Pancreaticobiliary Cytology

Competency Category 6:
Quality and Resource Management

The medical laboratory technologist practises and promotes the principles of quality management and addresses workplace challenges by applying skills in change management, materials management, financial management, and information management.

Exam Content

GMLT: 10-12% CGMLT: 5-10% DCMLT: 6-10%

Competencies		Performance Criteria
6.1 Perform internal and external quality control measures	6.1.1	Make quality a primary objective in all aspects of work so work can be done correctly and efficiently.
	6.1.2	Document quality control data according to procedures.
	6.1.3	Use information management systems correctly.
	6.1.4	Verify the quality of new reagents and media.
	6.1.5	Respond to deficiencies that may affect the quality of testing.
	6.1.6	Prepare and run quality control and calibration of equipment/instruments.
	6.1.7	Assess quality control of tests and calibration data of equipment/instruments.
	6.1.8	Recognize when quality control measures must be implemented, including when equipment requires calibration.
	6.1.9	Apply continuous quality improvement techniques.
	6.1.10	Contribute to the revision of procedures, protocols, and reference information.
	6.1.11	Follow guidelines in filling out incident reports (ensuring timeliness).
	6.1.12	Participate in quality assurance activities.
6.2 Apply risk management processes	6.2.1	Address errors and occurrences.
	6.2.2	Assess the frequency and consequences of errors and occurrences.
	6.2.3	Reduce risk of potential harm to an acceptable level.
6.3 Manage health care resources	6.3.1	Adapt to change in a dynamic environment.
	6.3.2	Manage time, priorities, and work quality.
	6.3.3	Maximize efficient use of resources.
	6.3.4	Maintain inventory according to organizational requirements.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Quality and Resource Management

Quality management systems: principles, procedures, tools, techniques, and resources
Inventory systems
Time management
Legislative/regulatory requirements
Creation and revision of workplace policies, procedures, and manuals
Continuous quality management, monitoring, and improvement

Competency Category 7: Communication and Collaboration

The medical laboratory technologist interacts using effective communication and teamwork and interprofessional interpersonal skills to collaborate with colleagues, other health care professionals, and patients/clients.

Exam Content

GMLT: 5-7% CGMLT: -3-5% DCMLT: 4-7%

Competencies		Performance Criteria
7.1 Communicate effectively	7.1.1	Meet language proficiency requirements in English or French (where required).[8]
	7.1.2	Use format, medium, and techniques suited to purpose and audience.
	7.1.3	Consider how context affects meaning and messaging.
	7.1.4	Use precise language and correct grammar.
	7.1.5	Present information that is accurate, concise, and complete.
	7.1.6	Adjust speech according to intent of message.
	7.1.7	Repair communication breakdowns.
	7.1.8	Work with interpreters as needed.
	7.1.9	Clarify to enhance understanding.
	7.1.10	Respond to individual and group stress.
	7.1.11	Check quality of written text.
	7.1.12	Maintain and retain accurate records.
	7.1.13	Use electronic and digital technologies appropriately and responsibly.
7.2 Interact with patients/clients	7.2.1	Apply patient-, family-, and community-centred approaches to care.
	7.2.2	Develop professional relationships based on mutual trust, integrity, and respect.
	7.2.3	Respond to signs of client/patient stress.
	7.2.4	Show empathy when assisting clients/patients.

[8] See provincial MLT regulatory requirements for practice
See https://csmls.org/csmls/media/documents/publications/reports/CSMLS_Project_Report_to_Ministry_-_Final.pdf
See https://www.merx.com/canadianallianceofmedicallaboratoryprofessionalsregulatorscamlp/solicitations/English-and-French-Language-Benchmarking/0000198076

Competencies		Performance Criteria
	7.2.5	Provide information on specimen collection, transportation, and storage.
	7.2.6	Collaborate with people's support networks for best possible outcomes.
7.3 Collaborate with other laboratory and health professionals	7.3.1	Maintain mutually supportive working relationships.
	7.3.2	Respect the perspective of others.
	7.3.3	Consult with members of the health care team when warranted.
	7.3.4	Share patient/client information with others as applicable and in line with legislative requirements.
	7.3.5	Clarify one's role and scope of practice.
	7.3.6	Manage conflicts.
7.4 Demonstrate respect for diversity, dignity, values, and beliefs of others	7.4.1	Challenge own assumptions about self or others.
	7.4.2	Learn about the ideas and opinions of others.
	7.4.3	Exhibit inclusive behaviour.
	7.4.4	Practise cultural humility.
	7.4.5	Use vocabulary that is respectful and inclusive of others.
	7.4.6	Recognize systems and behaviours that exclude others.
	7.4.7	Meet employer policies regarding cultural safety, diversity, equity, harassment, and discrimination.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Communication and Collaboration

Communication principles and strategies
Diversity, cultural awareness, and acceptance
Emotional intelligence
Correct use of information management systems, manual or electronic
Legislation and standards of practice
Ethical practice
Health care privacy and confidentiality laws
Scope of practice, role clarification
Professional codes of ethics
Cultural safety and cultural humility
Disruptive behaviour
Power, hierarchy
Conflict resolution and negotiation techniques

Communication and Collaboration

Human rights
Knowledge translation and dissemination
Team functioning, group dynamics and processes
Interprofessional communication and collaborative practice
Trust and partnership
Contribution and commitment

Competency Category 8: Professional Practice

The medical laboratory technologist meets the legal and ethical requirements of practice and protects the patient's right to a reasonable standard of care. Professional responsibility encompasses scope of practice, accountability, and professional development.

Exam Content

GMLT: 5-10% CGMLT: -3-5% DCMLT: 4-7%

Competencies		Performance Criteria
8.1 Exhibit professional behaviour	8.1.1	Be accountable for own decisions and actions.
	8.1.2	Manage own biases, perspectives, and world views.
	8.1.3	Demonstrate a professional presence.
	8.1.4	Act in the face of conflicts of interest.
	8.1.5	Practise in a manner than sustains public trust in the profession.
	8.1.6	Promote the image and status of the profession as part of the health care team.
	8.1.7	Maintain personal health and wellbeing.
	8.1.8	Enhance effective and sustainable practice through self-care and lifestyle strategies.
8.2 Integrate professional responsibilities into practice	8.2.1	Comply with regulatory requirements if applicable to designation.
	8.2.2	Follow relevant codes of ethics, codes of conduct, and standards of practice.
	8.2.3	Maintain privacy, confidentiality, security, and data integrity.
	8.2.4	Work within scope of practice and area of expertise.
	8.2.5	Respect professional boundaries.
	8.2.6	Seek help or decline to act when a matter is beyond own competence or scope.
	8.2.7	Manage moral and ethical issues that may affect outcomes.
	8.2.8	Report unprofessional, unethical, unsafe, or oppressive behaviours to the appropriate authorities.
8.3 Demonstrate a commitment to lifelong learning	8.3.1	Reflect on opportunities for improvement through continual evaluation.
	8.3.2	Formulate specific, measurable, and realistic learning goals.
	8.3.3	Implement strategies to achieve learning goals.

Competencies		Performance Criteria
	8.3.4	Integrate new knowledge and skills into practice.
	8.3.5	Remain open to learning new skills throughout career.
	8.3.6	Assist others with their learning.
8.4 Engage in reflective and evidence-informed practice	8.4.1	Access reliable sources of information.
	8.4.2	Seek out varied sources of information and feedback.
	8.4.3	Evaluate information using relevant tools.
	8.4.4	Use evidence and other knowledge sources to draw conclusions.
	8.4.5	Evaluate outcomes of decisions.
8.5 Apply problem-solving strategies	8.5.1	Demonstrate effective trouble-shooting strategies.
	8.5.2	Develop approaches for managing ambiguities, incomplete information, and uncertainty.
	8.5.3	Explore complex issues from many points of view.
	8.5.4	Initiate corrective action as indicated.
	8.5.5	Initiate follow-up as required.
	8.5.6	Seek the advice of others as required.

The medical laboratory technologist requires scientific and diagnostic knowledge and critical thinking skills to constructively investigate, evaluate, and problem solve. This list is meant to assist with curriculum development and the assessment of learning.

Professional Practice

Legislation, standards of practice, codes of ethics/conduct
Ethical practice
Professionalism
Professional values, responsibility, and accountability
Professional boundaries
Culture of safety
Conflicts of interest
Self-regulated professions
Professional quality assurance, professional development, and continuing competence
Setting learning goals
Lifelong learning
Best practices and sources of evidence
Knowledge-based practice, research its use
Change management strategies and their implementation
Mentorship
Self-awareness and critical reflection
Self-care strategies, fitness to practice

Clarifications

TERM	CLARIFICATION
adapt	e.g., consider effects of changes in other areas of health care
address	e.g., seek the advice of others, conduct additional inquiries
as indicated	e.g., related to equipment deficiency, specimen integrity
assess	through quality control and calibration
assumptions	i.e., based on culture, orientation, working style, general world view
boundaries	an invisible structure imposed by legal, ethical, and professional standards that respect the rights of the practitioner and others
communication breakdowns	a failure in the exchange of information, often due to the use of ambiguous and confusing messages
common	in the case of patients: this should be interpreted as occurring frequently in the population and encountered on a regular basis in clinical practice; in the case of the medical laboratory: this should be interpreted as equipment, instruments, reagents, and tests that are used/ordered on a regular basis
conflicts of interest	both real and perceived
course of action	e.g., test cancellation, caregiver notification
critical results	result that shows a marked deviation from reference ranges, with no clear indication that these are expected; may indicate a significant risk or a life-threatening event; prompt medical intervention may be required
cultural humility[9]	a process of self-reflection to understand personal and systemic conditioned biases and to develop and maintain respectful processes and relationships based on mutual trust
cultural safety[10]	an outcome based on respectful engagement that recognizes and strives to address power imbalances inherent in the health care system; it results in an environment free of racism and discrimination, where people feel safe when receiving health care
diagnostic indication[11]	diagnosis is a specific condition, e.g. Hepatitis C, and the indication is the reason a test might be ordered, i.e., liver failure; in the medical laboratory this can be understood as test use
ergonomics	the design and modification of work and the work environment to eliminate discomfort and risk of injury
evidence	e.g., literature review, data analysis, research methodologies/studies, patient information
follow-up	may include reviewing the process and result with a member of the team, conferring with colleagues, delivering result to a supervisor
group stress	the result of poor interpersonal relationships and conflicts
handle	label, date, store, transport, dispose
health and wellbeing	including physical, mental, emotional, and spiritual health

[9] FNHA, 2020
[10] Ibid
[11] Wolters Kluwer [archived]

TERM	CLARIFICATION
inclusive behaviour	as measured by a sense of belonging, connection, and community
information	e.g., spelling of name on labels; for: patients, reagents, tests, reports; etc.
information management systems	e.g., computer, laboratory information systems, related technology
integrity	e.g., temperature requirements; centrifuge/serum separation requirements; aseptic technique; cryopreservation
interpret/ interpretation	a cognitive process that requires not only checking a result against a reference interval that is used to distinguish between "health" and "disease"; the practitioner must also evaluate the result from the knowledge of biological variation and be aware of the potential risk of false interpretation; likewise, understanding the influence of random errors and systematic errors on the result is of importance, as well as diagnostic sensitivity and specificity
laboratory information system	used for ordering, recording, releasing, and reporting laboratory tests; also known as LIS
maintain / retain	according to standard operating procedures, protocols, regulations, legislation, etc.
manage	identify, develop, correct, seek assistance when required
manage conflicts	includes resolve, accommodate, communicate about, report if appropriate; keep private and do not discuss publicly
materials	chemicals, dyes, reagents, solutions, including dry ice/liquid nitrogen for transportation of dangerous goods, disposable supplies, and waste
others	e.g., supervisors, co-workers, other health care professionals, patients, new staff, students, etc.
preanalytical errors	e.g., mislabeled or unlabeled; quantity not sufficient; use of inappropriate container; insufficient or clotted specimen; transport delay; requisition error; storage/temperature; leaking; improper collection
professional presence	behaviour and presentation in accordance with professional standards and expectations, including verbal and non-verbal communication—including on social media—and articulation of a positive role and professional image
quality assurance activities	focuses on "process management": a broader focus than quality control measures - e.g., participate in proficiency testing, audits, accreditation
quality control measures	focuses on "method control": verified examination methods controlled to ensure production of correct results - e.g., verify instrument's internal controls, ensure data points are within acceptable ranges, assess specimen integrity, ensure specimen is correctly identified at all times
quality improvement techniques	e.g., through aligning priorities, analyzing workflows, openly discussing change
relevant	e.g., patient history, specimen source
record (ed, ing)	enter or print result obtained using an electronic interface or manual process
release (ed)	sign-off that results are entered correctly and can be reported, using an electronic interface or manual process

TERM	CLARIFICATION
report (s, ing)	using an electronic interface or manual process to disseminate result to ordering health practitioners
requirements	e.g., standard operating procedures, quality control measurements, instrument calibration schedules, preventative maintenance schedules, analyte (proficiency) testing; or in terms of accreditation, ethical, legal, legislative, organizational, regulatory, i.e., legislation, codes of ethics, rules, regulations, etc.
resources	e.g., time, equipment, personnel
respond	i.e., identify, document, report, trouble-shoot, follow standard operating procedures
routine practices	a combination of universal precautions and body substance isolation; routine practices aim to protect against the transmission of all microorganisms through contact with all body fluids, excretions, mucous membranes, non-intact skin, and soiled items in addition to precautions for blood; there are 5 major components to routine practices: risk assessment, hand hygiene, personal protective equipment, environmental controls, and administrative controls
safety devices	e.g., biological safety cabinet, fume hood, laminar flow cabinet, safety pipetting device, safety container and carrier, safety shower, eye wash station, personal protective equipment
selected controls	e.g., using positive/negative/blind controls; verification of procedural elements by another technologist; compare results to other facilities using same equipment to ensure results are within range
sources of interference or error	e.g., instrumentation, substance or process, transcription error; systemic or random sources of error
standard laboratory equipment	e.g., microscope, centrifuge, biosafety cabinet, various pipettes, autoclave, balance, pH meter, various automated systems, computer, etc.
strategies	e.g., informal learning opportunities, mentorship, workshops, conferences, webinars, advanced education
suitable	e.g., through the delivery of accurate instructions to patient; collection time/day; use proper containers; obtain sufficient volume
support networks	i.e., family members, substitute decision-makers, powers of attorney, interpreters
techniques	includes using technology to perform a procedure, facilitate communication, etc.
unexpected result	i.e., results that are critical in guiding further patient evaluation and management; practitioners will remain vigilant for the possibility that these may be from improper specimen collection, mislabeled specimens, clerical errors, and/or other issues
warranted	e.g., for questions about interpretation of results, assurance of quality of a test, discussion of potential sources of error or variables to be considered in test interpretation, determination of need for a specialized test

Revision History Table

Date	Revision
2024-NOV-14	Replaced Professional Code of Conduct with the most recent version