# MLPAO MLA/T Competency Guidelines Differences and Clarifications

August 2024

This document has been developed through collaboration and agreement of:

**Background:**
In Ontario, EQual, the Accreditation Canada business unit specialising in health professions' education accreditation, works together with the Canadian Society for Medical Laboratory Science (CSMLS) and the Medical Laboratory Professionals' Association of Ontario (MLPAO) to provide accreditation to MLA programs. Accreditation is a pre-requisite for graduates' eligibility to the CSMLS and MLPAO professional certification examinations.
To achieve accreditation with EQual, all MLA educational programs must demonstrate alignment with the CSMLS competencies. MLPAO partner programs must, additionally, demonstrate alignment with the MLPAO requirements. These requirements are included in this document and are a result of discussions and agreement between CSMLS and MLPAO. They include differences and clarifications between the CSMLS Pan-Canadian MLA Competency Profile and MLPAO MLA/T Competency Guidelines.

**Differences and clarifications:**
This document provides:

(a) Ontario-specific differences required for MLA/T graduates to challenge the MLPAO Certification Exam
(b) Clarification statements to assist Ontario MLA/T programs with curriculum development.

**Differences:**
These competency statements are additional MLPAO competencies not covered in the CSMLS Competency Profile.

| Number | Competency Statement |
|---|---|
| 1.4 | *Legislation specific to Ontario* – Apply the laws and regulations governing medical laboratory technology to their practice including:<br>• Health Care Consent Act, 1996 |

| Number | Competency Statement |
|---|---|
| | • Regulated Health Professions Act (RHPA), 1991, with special attention to Section 11 O. Reg. 107/96 Controlled Acts and Exemptions<br>• Laboratory & Specimen Collection Centre Act, Regulation 45/22<br>• Mandatory Blood Testing Act, 2006, S.O. 2006, c. 26<br>• Personal Health Information Protection Act (PHIPA)<br>• Ontario Human Rights Code, R.S.O. 1990, c. H.19<br>• Occupational Health and Safety Act |
| 5.15 | Perform basic CPR |

**Clarifications:**
These statements are provided by the MLPAO as clarifications between the MLPAO Competency Guidelines and the CSMLS MLA Competency Profile. They provide additional information and knowledge requirements to assist with curriculum development for MLA/T programs.

| Category | Number | Competency Statement |
|---|---|---|
| **Professional Practice** | 1.10 | Demonstrate knowledge of the relationship between the health of the population and the effects on the laboratory system |
| **Laboratory Mathematics, Statistics and Quality Management** | 3.2 | Define terms used in statistical analysis: mean, median, mode, standard deviation, coefficient of variation, uncertainty measurement, accuracy, precision |
| | 3.3 | Describe the difference between critical values, reference ranges and detection limits |
| | 3.4 | Differentiate between standards and controls used in the laboratory |
| | 3.5 | Differentiate between commercial controls, in-house pools, and blind duplicate patient samples |
| | 3.6 | Describe the effects of potential sources of error |
| **Specimen Procurement, Processing and Data Collection** | Phlebotomy Competency | MLA/T programs are advised to verify students as competent to perform phlebotomy during the didactic portion of the MLA/T program, prior to attending clinical place. It is recommended that students complete a minimum of 30 successful patient phlebotomies, with a minimum of 15 being completed during the didactic phase of the program. The remainder can be completed during clinical placement. |
| | 4.13 | Describe the potential hazards to the patient and the MLA/T during specimen collection and handling |

| Category | Number | Competency Statement |
|---|---|---|
| | 4.14 | Adhere to procedures for patient after-care including dealing with complications associated with blood collection |
| **Laboratory Equipment and Supplies** | 6.11 | Use and describe the principles of point of care testing, the requirements for operator training, maintaining certification and instrument verification for, but not limited to, blood glucose |
| **Histology and Cytology** | 7.5 | Explain the risks of cross-contamination and the procedures required during specimen processing and staining to minimize risks |
| **Clinical Microbiology** | 8.1 | Describe the classifications of microorganisms:<br>• Bacteria<br>• Viruses<br>• Parasites<br>• Protozoa<br>• Fungi, molds, and yeasts<br>• Chlamydia<br>• Rickettsia |
| | 8.2 | Describe the following terms:<br>• normal flora<br>• opportunist<br>• commensal<br>• pathogen<br>• Risk Group 1, 2, 3 and 4 organisms |
| | 8.10 | Describe the principle and procedure for gram stain and acid-fast stain |
| | 8.11 | Describe the principle of fluorescent and fluorescent antibody stains |
| | 8.12 | Describe the fundamental differences between gram-positive and gram-negative bacteria |
| | 8.13 | Describe the fundamental differences between cocci and bacilli |
| **Clinical Chemistry** | 9.1 | Recognize the reportable ranges and variant results for routine chemistry tests |
| **Clinical Hematology** | 10.1 | Describe the components and normal ranges of the complete blood count (CBC)<br>• Hemoglobin<br>• Hematocrit<br>• RBC and indices<br>• WBC |

| Category | Number | Competency Statement |
|---|---|---|
| | | • Platelets<br>• Differential |
| | 10.4 | Recognize the most common coagulation tests and their normal ranges (PT, PTT, INR) |
| | 10.10 | Set-up erythrocyte sedimentation rate (ESR) testing and identify potential sources of error |
| | 10.11 | Differentiate between Westergren and Wintrobe methods for ESR testing |
| **Transfusion Medicine** | 11.1 | Describe blood groups and blood products |
| | 11.2 | Identify storage requirements and the effects of storage on blood and blood products, including expiration dates and stock rotation |
| | 11.3 | Describe the tests routinely performed in transfusion medicine including the anticoagulant used for specimen collection |
| | 11.4 | Describe the lab procedure and the implications of errors for ABO grouping, Rh typing, and antibody screening/testing |
| | 11.5 | Describe the collection of whole blood including the anticoagulant used and the preparation of blood components |
| | 11.6 | Describe the name, constitution, handling, and storage of common blood products |
| | 11.7 | Describe the tests routinely performed on all blood donations |
| **Electrocardiograms (ECG) and Holter Monitors** | ECG Competency | MLA/T programs are advised to verify students as competent to perform ECGs during the didactic portion of the MLA/T program, prior to attending clinical placement. It is recommended that students complete a minimum of 5 successful ECG tracings during the didactic phase |
| | 12.1 | Explain anatomy and electrophysiologic principles of the heart, cardiac conduction system and indications associated with ECG and Holter cardiac monitoring |
| | 12.2 | Prepare patient and obtain an electrocardiogram (ECG) and Holter monitor tracings including correct placement of leads |
| | 12.3 | Adapt ECG preparation and assessment techniques based on the patient age and gender |

| Category | Number | Competency Statement |
|---|---|---|
| | 12.4 | Assess the quality of the ECG tracing report, make necessary adjustments to minimize artifacts and take appropriate post-tracing actions |
| | 12.5 | Perform required ECG equipment preventative maintenance and quality control procedures to ensure equipment appropriateness and readiness |
| | 12.6 | Explain the difference between different types of ECG and heart monitors |