MEDICAL LABORATORY TECHNOLOGISTS

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Medical Laboratory Technologists

Introduction

Medical laboratory technologists (MLTs) are health care professionals who provide objective data by managing and performing laboratory testing. They analyze tissue samples, blood and other body fluids as part of diagnostic procedures using a variety of instruments (Canadian Society for Medical Laboratory Science [CSMLS], 2015). The results from the tests conducted by MLTs allow physicians and other care providers (e.g., nurse practitioners) to make accurate diagnoses and prescribe appropriate treatment if required (CSMLS, 2015).

MLTs provide approximately 60–70% of the objective data required for patient diagnosis, monitoring and treatment (Abdollahi, Saffar & Saffar, 2014), which means they play an important role in the quality of care a patient receives (Gamble, Bourne, & Deber, 2014). By delivering high-quality laboratory services, MLTs also support public health, particularly in matters of infection control and surveillance. Moreover, their work helps to reduce length of stay and re-admission of patients, decrease the number of public inquiries and decrease the number of malpractise lawsuits (Bourne, 2013).

MLTs must have a high level of scientific knowledge related to the theories, techniques and clinical applications of laboratory analysis (CSMLS, 2014c). They not only test samples but also assess the reliability and validity of the results, which requires proficiency in both analytical and critical thinking (Michener Institute of Applied Health Sciences, 2013).

History of the Profession

Introduction of the laboratory

Medical laboratories arose in Canada as a part of the public health reform that took place around the turn of the 20th century (Twohig, 2005). Starting in the 1870s, hospitals evolved from refuges for the homeless, poor and mentally ill to places of science and medicine, where doctors would treat all types and classes of patients (Starr, 1984). Between 1880 and 1920, municipal and provincial governments established public health boards and departments across Canada (Twohig, 2005). During his time as medical officer in Montreal (1885 to 1913), Dr. Louis Laberge initiated the scientific foundation of laboratory services in the fields of bacteriology, microbiology, immunology and biochemistry (Twohig, 2005).

Public health work and the role of the laboratory were initially defined by the burden of disease. Laboratories provided the evidence needed to diagnose a number of diseases by conducting tests and reporting findings to local physicians and public health authorities (Twohig, 2005). Efforts to fight venereal disease were the main focus of laboratories during the formative years. These efforts caught the interest of the federal government, which committed resources to support the expansion of provincial laboratories.

Large municipalities and provinces were quick to realize the benefits of using laboratory testing in diagnosing serious and contagious diseases such as diphtheria and tuberculosis (Twohig, 2005). After it became clear that conducting such tests in hospitals would be beneficial, doctors began to set up laboratories inside their wards.

Introduction of medical laboratory technologists

At first, laboratory testing was performed by doctors and volunteers on an as-needed basis. As the number of hospitals across Canada grew during the early years of the 20th century, testing was performed by nurses, whose roles also included caring for patients, typing reports, and setting up and cleaning apparatus (Twohig, 2005). An expansion in workload in the 1920s then brought many different workers from a wide range of academic backgrounds into the laboratory to meet the increasing demand for enhanced testing and diagnostic services. While some had university science degrees, the majority of laboratory workers moved directly from secondary school to the lab (Twohig, 2005).

Regardless of academic background, laboratory workers received basic setting-specific training from laboratory directors. They further developed their laboratory skills through on-the-job training such as tutorials or supervised practise (Twohig, 2005). These laboratory workers were then required to train the newer workers who followed.

Table 1 highlights the development of the MLT profession, from its early days to the modern era.

TABLE 1: Timeline of development of MLT profession

Year	Event
1890s	• Pathologists use assistants.
1910	• Lab technicians begin working in hospitals.
1920s	• Departments of pathology are established. • Huge demand for laboratory personnel develops due to the creation of laboratories to meet hospital accreditation standards and a growing range of public health tests. • Hospitals across Canada launch training programs to meet their labour requirements. • Physicians direct laboratory work, but qualified technicians carry out tests. • Physicians continue to interpret the results of diagnostic tests.
1920s–1930s	• New areas, such as blood chemistry, are developed, leading to dramatic growth in the scope and content of laboratory work.
1937	• The Canadian Society of Laboratory Technologists (CSLT) is incorporated May 20, 1937, to improve qualifications and standing through standardized education and certification.
1938	• The first set of examinations are offered by the CSLT. • The first issue of the *Canadian Journal of Medical Technology* (CJMT) is published.
1942	• Nine schools are approved to provide standardized education for MLTs.
1950	• There are 1,200 CSLT members in Canada.
1961	• 120 laboratories are approved to provide 14-month training. • The Canadian Medical Association (CMA) and the CSLT jointly revise the "basis of approval" for educational programs.
1970s	• Laboratory technicians become known as technologists, reflecting their increased knowledge base, the increasing scope of their practise and their increasing responsibilities in the laboratory.
1980s	• There are more than 20,000 CSLT members.
1997	• The CSLT changes its name to the Canadian Society for Medical Laboratory Sciences (CSMLS) to reflect the changing role of MLTs in the hospital and private sectors, and the increase in unregulated medical laboratory assistants (MLAs) in the workforce.
2017	• There are 14,100 CSMLS members.

Source: Canadian Journal of Medical Laboratory Science – 75th Anniversary Issue (Summer 2012)

Regulation of the Profession

With a focus on patient safety, regulation defines the practise of medical laboratory science, sets out the requirements and qualifications needed to practise in the profession, and creates the boundaries within which the profession functions (CSMLS, 2013c). Provincial regulatory bodies establish the rules and regulations that determine who may practise as an MLT (CSMLS, 2013c). At the time of the writing of this chapter, MLTs are regulated in eight provinces. In unregulated provinces and territories, requirements to practise are determined by employers. Table 2 presents the regulation status of MLTs by province and territory.

Additional regulatory oversight

The medical laboratory sector is also regulated by numerous other organizations, including Accreditation Canada (AC), Industry Canada, Revenue Canada and local laboratory accreditation bodies, such as Ontario's Institute for Quality Management in Healthcare (now a part of Accreditation Canada) or the Manitoba Quality Assurance Program. Various fairness commissioners provide additional oversight for personnel in Ontario, Manitoba, Québec and Nova Scotia.

Laboratory accreditation bodies have proficiency testing requirements that vary by jurisdiction; however, participation is mandatory. Some Canadian laboratories perform testing for the United States and are subject to additional oversight by the College of American Pathologists. In Canada, the Canadian Association of Pathologists (CAP) provides oversight for pathologists. Founded in 1949, the CAP has played a leading role in promoting pathology to the national and international health care communities and to Canadian society (College of American Pathologists, 2013).

TABLE 2: MLT regulation status of provinces and territories

Regulated jurisdictions	First year of regulation	Regulatory authority	Protected titles
Alberta	2002	College of Medical Laboratory Technologists of Alberta	*MLT*
Saskatchewan	1996	Saskatchewan Society of Medical Laboratory Technologists	*MLT*
Manitoba	2007	College of Medical Laboratory Technologists of Manitoba	*MLT*
Ontario	1994	College of Medical Laboratory Technologists of Ontario	*MLT*
Québec	1973	Ordre professionnel des technologistes médicaux du Québec	*Technologiste Médical (TM), Registered Technologist (RT), Technologist Médical Laboratoire (TML)*
New Brunswick	1992	New Brunswick Society of Medical Laboratory Technologists	*Registered Technologist (RT), Advanced Registered Technologist (ART), MLT, Fellowship of the CSLMS (FCSLMS)*
Nova Scotia	2004	Nova Scotia College of Medical Laboratory Technologists	*MLT*
Newfoundland and Labrador	2012	Newfoundland and Labrador College of Medical Laboratory Sciences	*MLT*
Unregulated jurisdictions		**Association**	
British Columbia		British Columbia Society of Laboratory Science	
North West Territories		*N/A*	
Nunavut		*N/A*	
Prince Edward Island		College of Allied Health Professionals of Prince Edward Island	
Yukon Territories		*N/A*	

Source: CSMLS

Regulations and statutes in Ontario

A number of regulations and statutes exist that directly impact the medical laboratory sector. The table below provides examples of acts in Ontario and a brief description of their impacts on health care or the medical laboratory sector.

Year	Legislation	Impact on the health care / medical laboratory sector
1958	*Hospital Insurance and Diagnostic Services Act*	Provides provinces with matching funds for health care from the federal government. Laboratory services fall under the "comprehensive" clause, which provides funding for diagnostic services.
1990	*Public Hospitals Act*	Provides the framework within which hospitals operate. Laboratory services are included in the clauses relating to diagnostic services.
1990	*Laboratory and Specimen Collection Centre Licensing Act*	Provides legislation governing the licensing of laboratory and specimen collection centres in Ontario.
1991	*Regulated Health Professions Act*	Includes a general act, a procedural code for all regulated health professions and profession-specific acts. Medical laboratory technologists are included as one of the 23 regulated health professions.
1991	*Medical Laboratory Technology Act*	Provides the operating guidelines for the College of Medical Laboratory Technologists of Ontario.
1997	Corporate cap model, set out in Regulation 2/98.	Prescribes the industry-wide cap and sets out the formula for the calculation of the corporate cap of for-profit community laboratories.
1992	*Transportation of Dangerous Goods Act*	Provides safety standards and regulations on dangerous goods to promote public safety in the transportation of dangerous goods by all modes of transport in Canada.
2015	*Human Pathogens and Toxins Act*	Establishes a safety and security regime to protect the health and safety of the public against the risks posed by human pathogens and toxins.

Source: Bourne, 2013

Scope of Practise

The laboratory system is highly complex. The testing process starts when an authorized health care professional orders a test and ends with the interpretation of the test results. This process has a significant impact on patient care (Gamble & Deber, 2004; Plebani, 2009). There are three phases in the laboratory process:

1. Pre-analytical phase, when tests are ordered, samples are collected and transported;
2. Analytical or technical phase, when tests are conducted; and
3. Post-analytical phase, when results are interpreted and their significance to patient care is determined (Gamble et al., 2014).

Within this system, the scope of practise of MLTs varies little across Canadian jurisdictions (Health Professionals Regulatory Advisory Council [HPRAC], 2008). The duties of an MLT generally include:

- Performing and interpreting diagnostic tests on blood, tissue and body fluids;
- Cultivating, isolating and identifying bacteria, fungi, viruses and parasites that invade the body, and conducting follow-up testing as indicated (e.g., antibiotic susceptibility testing);
- Counting blood cells, recognizing abnormalities and reporting changes that have taken place in blood cells;
- Determining blood type, performing pre-transfusion testing and identifying any discrepancies detected (e.g., investigation of irregular antibodies); and
- Arranging tissue in sections, staining and preparing specimens for examination under the microscope (CIHI, 2006).

Medical laboratory sciences include laboratory analysis in five different disciplines: Clinical chemistry, Hematology, Histotechnology, Microbiology and Transfusion Science. Areas of specialization include cytotechnology and clinical genetics. Cytotechnologists determine the presence of specific diseases by analyzing cellular changes. They are able to detect cellular-based infection and diseases (e.g., cancer) through the use of slides under a microscope. Clinical genetic technologists use a variety of instruments to analyze and diagnose changes or abnormalities in chromosomes and DNA that are often causes of genetic disease (CSMLS, 2013a).

Table 3 highlights the major functions and areas of practise of MLTs based on 2015 data from Nova Scotia, New Brunswick, Québec, Ontario, Manitoba, Saskatchewan and Alberta.

TABLE 3: MLT major functions and areas of practise

		Count	Percentage	Jurisdictions with available data
Major function	Diagnostic and therapeutic lab services	9,169	82.6	*Alberta* *Manitoba* *New Brunswick* *Nova Scotia* *Ontario* *Saskatchewan*
	Administration	734	6.6	
	Other*	1,195	10.8	
	Total	11,098		
Area of practise	Clinical chemistry	4,295	20.3	*Alberta* *Manitoba* *New Brunswick* *Nova Scotia* *Québec* *Saskatchewan*
	Hematology	4,014	19.0	
	Transfusion medicine/science	3,358	15.9	
	Microbiology	2,712	12.8	
	Specimen procurement, receipt and dispatch	2,873	13.6	
	Histology	1,338	6.3	
	Immunology	296	1.4	
	Point-of-care testing	248	1.2	
	Diagnostic cytology	328	1.6	
	Clinical genetics	152	0.7	
	Other areas of practise	1,494	7.1	
	Total	21,108		

* *Other* includes quality management, medical laboratory technology-related teaching, research and other major functions not otherwise specified.

Source: CIHI, 2017b

Education and Training

Although statistics are not available for all provinces, in 2015, 93% of registered MLTs had diplomas in medical laboratory technology, 6.7% had bachelor's degrees, and 0.3% had master's or doctorate degrees (CIHI, 2017b). The length of and prerequisites for medical laboratory science programs accredited by Accreditation Canada vary across Canada. Most require a high school diploma with average marks of at least 75%, with courses in English, biology, chemistry and mathematics (Michener Institute, 2013; University of Ontario Institute of Technology, 2014; Saskatchewan Institute of Applied Science and Technology, 2014). However, competition for entry is high, so many applicants also have some form of post-secondary education (e.g., university science degree).

Students in MLT programs are required to take courses in clinical chemistry, clinical microbiology, hematology, histotechnology and transfusion science. Most provinces have general MLT programs; some offer separate programs in cytotechnology and clinical genetics (See Table 4).

TABLE 4: Accredited MLT programs by province

Type of training program	Province	No. of programs available	Average program length
General MLT	Newfoundland and Labrador	1	3 years
	New Brunswick	3	2–3 years
	Nova Scotia	1	3 years
	Québec	3	2–4 years
	Ontario	5	2.5–4 years
	Manitoba	1	2 years
	Saskatchewan	1	3 years
	Alberta	3	2–4 years
	British Columbia	2	2.5 years
Diagnostic Cytology	Ontario	5	1.5 years
	Saskatchewan	1	2 years
	Alberta	1	2.5 years
Clinical genetics	Ontario	1	17 months
	British Columbia	1	2 years
Cytotechnology	Ontario	1	62 weeks
	Saskatchewan	1	86 weeks
	Alberta	1	2.5 years

Source: Accreditation Canada, 2018

Certification

The CSMLS "promotes and maintains the nationally accepted standard of medical laboratory technology by which other health professionals and the public are assured of effective laboratory services" (CSMLS, 2014c). It has provided national certification of MLTs since 1938, which is used by regulatory bodies and employers as an entry-to-practise standard. The CSMLS currently uses Accreditation Canada's EQual program for education program accreditation. Prior to 2018, it used the Canadian Medical Association's Conjoint Accreditation Services.

CSMLS Certification is offered in general medical laboratory technology, diagnostic cytology, clinical genetics, and for medical laboratory assistants. Certification is formal recognition by CSMLS that an individual has proficiency within, and a comprehension of, a specified body of knowledge (CSMLS, 2022).

Recent graduates from accredited MLT programs can progress directly to the CSMLS National Certification Examination. Once they pass the exam, they receive their certification to practise, as illustrated in Figure 1.

Figure 1: Certification process for recent graduates of accredited MLT programs

Internationally educated MLTs

Only 7% of MLTs in Canada were trained internationally (CIHI, 2017b). An internationally educated MLT must complete several additional steps before they can write the CSMLS exam. First, they must provide a credential evaluation of their medical laboratory technology education from either the International Credential Evaluation Services or World Education Services Canada. If the language of instruction was not English or French, a language proficiency test may be required such as the Michener English Language Assessment, Test of English as Foreign Language, International English Language Testing System, or the Canadian Test of English for Scholars and Trainees.

Next, the internationally educated MLT will undergo a prior learning assessment (PLA) to determine their eligibility to write the certification exam. The PLA evaluates their education and experience and compares it to the national standard (CSMLS, 2022). If the PLA finds that the applicant's education is acceptable, the applicant may write the certification exam. Once they have passed, they will be certified as an MLT.

If the PLA indicates that the applicant's education is not adequate, the applicant will require further training. This could include a learning plan or a full-time training program (CSMLS, 2022).

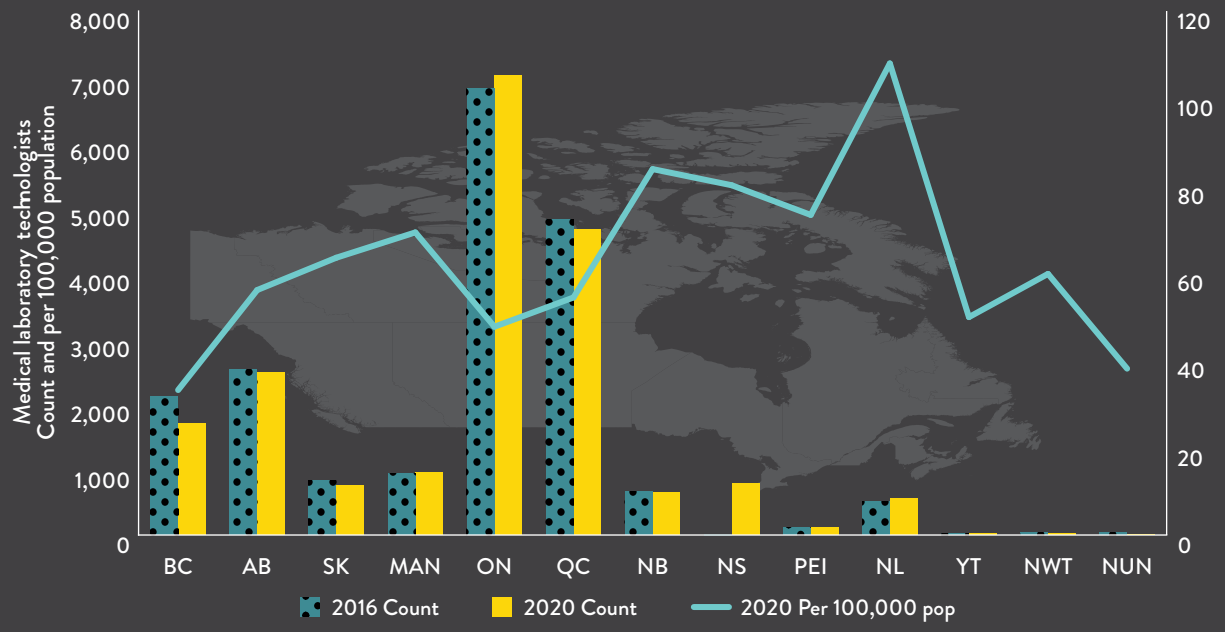
This process is illustrated in Figure 2.

Figure 2: Certification process for internationally educated MLTs

Demographics

There were 19,757 MLTs registered with the CSMLS in 2020 (see Figure 3) (CIHI 2022). The number of MLTs per 100,000 population in 2020 was 52 (CIHI, 2022a). As Figure 3 illustrates, although the provinces of Ontario and Quebec have the greatest numbers of MLTs, their per population is lower than the provinces of Newfoundland, New Brunswick and PEI.

Figure 3: Medical laboratory technologists—count and per population rates in Canadian provinces and territories, 2016 and 2020



Source: Canadian Institute for Health Information, 2022, Health Workforce Database.
Statistics Canada, Demography Division.

Shortage of clinical training sites

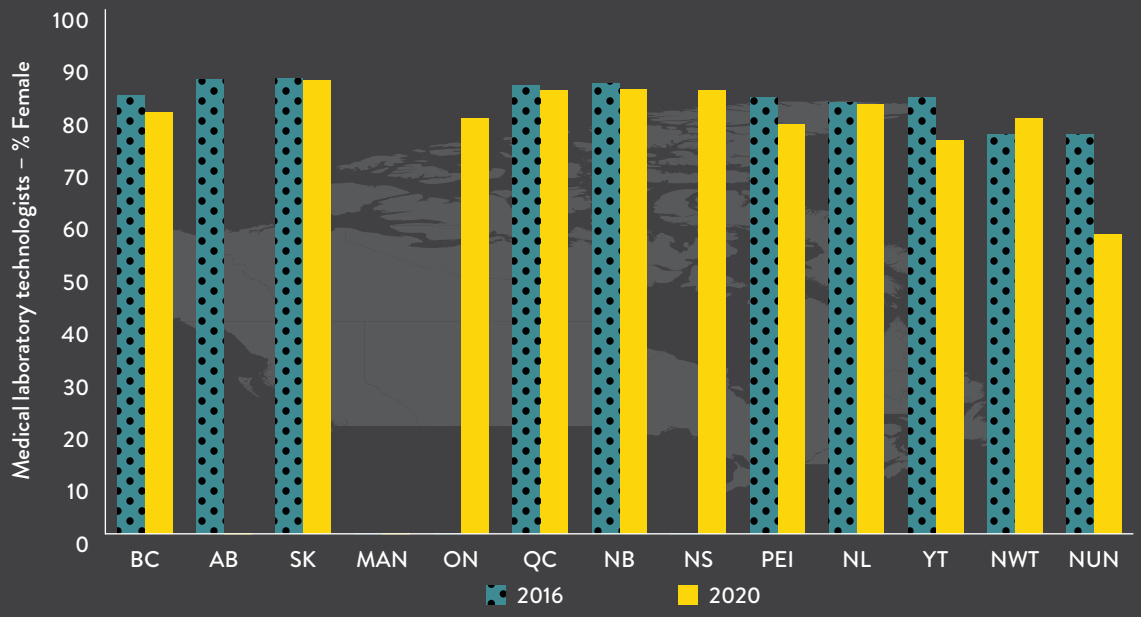
The practise of laboratory medicine requires a dynamic, technology-rich workplace. As with all allied health professions, hands-on experience is critical. Education programs can teach technology and techniques, but volume and real-life situations come from clinical practise, such as an internship.

Health Canada has been calling attention to the serious shortage of clinical education sites since 2001. Several factors contribute to this shortage across Canada. Some institutional departments have been closed or amalgamated within regional programs and can no longer offer clinical experience in all laboratory disciplines. In some cases, aspects of the workload have been transferred to private-sector laboratories. As the workload demands on MLTs in diagnostic settings continues to rise, MLTs have less time to train students. The retirement of senior technologists with teaching expertise creates another gap if existing staff have not had the opportunity to develop such skills (Health Canada, 2001).

Gender distribution

Figure 4 shows the distribution of MLTs by gender and province in 2020. The MLT workforce is made up predominantly of those who identify as women: 83% (CIHI, 2022). This gender split varied across the provinces. Yukon had the lowest percentage of female MLTs at 75% and Saskatchewan had the highest at 86%. The trend over the past five years has been a lowering percentage of women in the profession.

Figure 4: Percentage distribution of MLTs by gender and province, 2020



Source: Canadian Institute for Health Information, 2022, Health Workforce Database.

Employment profile

MLTs may be employed on a full-time, part-time or casual basis. In 2015, the majority of MLTs provided diagnostic and therapeutic laboratory services (82.6%) (CIHI, 2017b). The percentage of MLTs who worked in hospital settings varied across the provinces, from 51.5% in Alberta to 94.1% in New Brunswick (CIHI, 2017b).

MLTs may work in any discipline in which they are certified. Based on 2015 data from Nova Scotia, New Brunswick, Québec, Ontario, Manitoba, Saskatchewan and Alberta, the top five areas in which MLTs practised were:

- Clinical chemistry (20.3%);
- Hematology (19.0%);
- Transfusion medicine/science (15.9%);
- Specimen procurement, receipt and dispatch (15.9%); and
- Microbiology (12.8%) (CIHI, 2017b).

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Coverage of Services and Remuneration

Financing and delivery of medical laboratory services

The majority of medical laboratory services in Canada are funded by the public sector (i.e., government) through provincial/territorial health insurance plans. Testing not covered by public funding is funded from private sources (e.g., employers, individuals, private insurance programs). For example, employers may request and pay for drug testing.

Financing private medical laboratories in Ontario

Ontario's system for financing private medical laboratories is quite controversial, according to an article by Glauser and colleagues (2015). Seven companies are currently receiving government dollars to finance outpatient lab requirements. The government pays each company per test but sets the maximum amount of money per year that each company can receive based on the company's market share in 1996. The purpose of the capped funding model is to "encourage reduction in overall utilization" and "ensure the viability of the laboratory system through reduced upfront costs" (Glauser et al., 2015).

Through discussions with a variety of key stakeholders in the field of medical laboratory in Toronto, Glauser and colleagues identified the following three challenges with the current funding model for outpatient laboratories in Ontario:

1. Government price list for tests haven't been updated in over a decade despite cost savings brought by rapidly evolving technology, meaning Ontario may be overpaying for laboratory tests.
2. Private laboratories appear to have little incentive to provide more accessible services to Ontario patients.
3. Hospitals are sometimes picking up the slack of private laboratories without adequate funding, leaving rural hospitals in particular with unfair cost burdens.

A study conducted by Lvin (2019) illustrates further the challenges associated with publicly funding services delivered in the private (for-profit) sector in Ontario. This study also documents the changes that have occurred since 2015 in this sector in response to an Ontario government expert panel's review of private for-profit laboratories that operate in the community (Ontario Ministry of Health and Long-Term Care, 2019).

TABLE 5: Average hourly (median) wages for medical laboratory technologists in Canada, 2018

Location	Average Wage
Calgary – Alberta	43.00
Toronto – Ontario	39.00
Ottawa – Ontario	39.00
Kitchener / Waterloo / Barrie – Ontario	39.00
London – Ontario	39.00
Edmonton – Alberta	38.33
Saskatoon / Biggar – Saskatchewan	36.63
Vancouver / Lower Mainland – British Columbia	35.00
Winnipeg – Manitoba	33.00
Halifax – Nova Scotia	33.00
Prince Edward Island	33.00
Fredericton / Oromocto – New Brunswick	32.00
Montreal – Québec	31.98

Source: Living in Canada, 2020

MLTs work in a variety of settings, including community-based laboratories (owned by private for-profit organizations), hospital-based laboratories, physician's offices that include laboratory services and public health laboratories. Community-based laboratories conduct the majority of outpatient testing.

Salary

The typical annual salary for an MLT ranges from $60,000 to $80,000 (Living in Canada, 2020). MLTs in Calgary and cities in Ontario receive the highest hourly average wages; MLTs in Montreal receive the lowest hourly average wages (Living in Canada, 2020). Table 7 presents the hourly wages for various locations in Canada.

Key Issues for the Profession

Canada is facing a serious shortage of MLTs: about half of all MLTs will be eligible to retire in the next 10 years (CSMLS, 2018). MLTs are already faced with growing workload burdens due to more precarious employment positions, the increasing demands of an aging population and the health care spending recession (CSMLS, 2018). Their workloads will further increase as eligible MLTs retire, especially in rural and remote communities (CSMLS, 2018).

There are not enough newly certified entrants into the workforce to replace the retiring MLTs, leading to a net labour market loss (C. Nielsen, personal communication, August 17, 2018). Student training is also affected by the shortages of experienced MLTs, with a reported change in the quality of the training they receive (CSMLS, 2018). Moreover, the number of laboratory sites receiving clinical placement students is decreasing, which increases the burden on the clinical sites that are accepting students, making it difficult to maintain the high standard of quality training required for students to achieve competency (CSMLS, 2018).

The CSMLS recommends increasing the number of new graduates and facilitating greater integration of internationally educated MLTs into the Canadian workforce as strategies to help address the upcoming shortage. Bridging programs have been created and piloted with success, but were then dismantled in the sustainability phase in multiple provinces (British Columbia, Alberta and Ontario) due to lack of ongoing funding. Without adequate access to bridge training and clinical placements, internationally educated MLTs will continue to struggle with the certification examination and entrance into the workplace (CSMLS, 2015). The CSMLS also recommends that both public

Impact of COVID-19 on the profession

The global COVID-19 pandemic has highlighted the vital role of medical laboratory professionals and the need to deliver meaningful results in a timely matter. Early in the pandemic, the capacity for centralized testing at Canada's National Microbiology Laboratory in Winnipeg, Manitoba, was not sufficient to meet the surging testing needs. A decentralized approach by jurisdiction would see medical laboratory professionals taking on COVID-19 testing to contribute to the nation's pandemic response and ongoing management.

Demands for testing grew exponentially. Mount Sinai Hospital in Toronto, Ontario, one of the first hospitals to obtain a license for COVID-19 testing, at first was performing 654 tests per day. By December of 2020, the lab was performing 17,000 tests per day.

The increase in demand for testing further exasperated the existing shortage of medical laboratory technologists and highlighted the need to increase the supply of new professionals. Increases in certification examination sessions and the introduction of remote testing options were piloted to ensure a supply of new professionals. Of ongoing concern is the lasting impact of the mental well-being of medical laboratory professionals. A study by the CSMLS reported:

- 29% of respondents are experiencing incidences of nonspecific serious psychological distress
- 57% of respondents perceived increases in psychological distress in the month prior to the survey
- 20% of respondents saw a doctor or other health professional about these feelings

Concerted efforts by key stakeholders such as regulators, associations, educators, practitioners and employers must come together, and create meaningful action to increase the labour supply in the interest of public safety.

and private laboratories understand the negative impact of precarious employment and evaluate their human resources and infrastructure budgets under a long-term lens. It also continue to advocate for permanent full-time positions and for the creation of new collaborations with academic partners for student clinical placements (CSMLS, 2018).

Identifying and securing clinical placements for medical laboratory studies is challenging. MLT educational programs in response to this challenge have introduced into the curriculum he use of simulation for the attainment of certain competencies/skills. The use of simulation in the class also better prepares students for their clinical place through the acquisition of a number of competencies/skills. Thereby reducing the workload for clinical instructors in the clinical setting.

Conclusion

As integral members of the health care team, MLTs have a key impact on patient care. They provide vital information by performing complex procedures on tissue specimens, blood samples and other body fluids, enabling physicians and other care providers to diagnose, treat and monitor a patient's condition.

The continuing expansion of knowledge and scope of practise create gaps in the educational process as new entrants to the field are expected to do more than their predecessors. This includes increased oversight of the work of others and has become a greater issue due to COVID-19. These gaps must be filled so that MLTs can continue to provide the highest quality of test results. Increased funding is required to allow for more clinical placements so that more MLTs can receive the high-quality education that is crucial for their success. As well, full-time, sustainable bridging programs must be established to accelerate the integration of internationally educated MLTs.

As the Canadian population ages, demand for laboratory testing escalates and provincial health care budgets shrink, the health human resources capacity needs of the profession are critical to ensuring appropriate diagnostic services for Canadians.

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Acronym

AC	Accreditation Canada
ART	Advanced Registered Technologist
CAP-ACP	Canadian Association of Pathologists-Association canadienne des pathologistes
CIHI	Canadian Institute of Health Information
CJMT	Canadian Journal of Medical Technology
CMA	Canadian Medical Association
CMLTO	College of Medical Laboratory Technologists of Ontario
CSLT	Canadian Society of Laboratory Technologists
CSMLS	Canadian Society of Medical Laboratory Science
FCSLMS	Fellowship of the Canadian Society of Medical Laboratory Science
HPRAC	Health Professionals Regulatory Advisory Council
MLA	Medical laboratory assistant
MLT	Medical laboratory technologist
PLA	Prior Learning Assessment
RT	Registered Technologist
TML	Technologist Médical Laboratoire
TM	Technologiste Médical

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