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# JOURNAL

of medical laboratory science

## The Evolving World of Laboratory Medicine

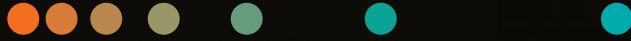
### Mental Health Survey:

Taking Stock  
of Your Health

### THE "BLUE TOP BLUES" AND COAGULATION CLARIFICATION

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<sup>2</sup> Columbus Regional Health Leverages informatics and automation efficiency. Siemens Healthcare Diagnostics Inc. 30-19-13821-01-76. 2019 May.

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## Creating Quality

As medical laboratory professionals, we pride ourselves on getting high quality results. We are not the “good enough” sort of people. We live and die on precision and accuracy. There are little to no grey zones when it comes to lab test results; that has everything to do with a national network of systems and collaborators that uphold Canada’s health care system — and our incredible qualified laboratory professionals.



Christine Nielsen  
CHIEF EXECUTIVE  
OFFICER

Health care delivery is managed by the provinces and territories, as well as the federal government. You might think having 13 separate health care systems would create a disjointed network, but Canadians are lucky to avoid that fate thanks to a significant degree of harmonization, at least for medical laboratory standards. Case in point: the accreditation of our medical laboratory education programs.

Just like health care, education is provincially and territorially operated. Our MLT programs have diverse models, which include universities, community colleges, technical institutes, and CEGEPs. Yet the national accreditation process ensures that, despite regional and institutional differences, the same standards are met across Canada. That’s why we strongly support accreditation. We want to ensure that every future laboratory professional’s education meets the highest standards in the medical laboratory.

Partner that with the national certification exam as part of an entry to practice standard, Canadians can be assured that new professionals are meeting the same standard of quality that we’ve come to depend on. Every one of your colleagues who has finished the certification process has demonstrated their commitment to upholding standards in the lab. This point of entry to the profession puts everyone on the same level of quality. Professionals can enjoy the labour mobility to take their skills, and their lives, across our country. (Note that entry to practice standards in Quebec remains unique: [www.optmq.org](http://www.optmq.org))

So many Canadians are proud of our health care system, and your work — backed by harmonized standards — is a big reason why. We’re proud of our role in maintaining this framework, and we will always work towards helping the profession and each of you, our members, strive to reach the highest standards in health care. So, stay with us, and over 13,000 of your colleagues, as a member of the CSMLS through 2022 and we promise to help you thrive. ■

## A Rich Tapestry

Where did the year go? How did these 12 months fly by so fast? Was it the constant adaptation to a changing...everything?

Despite flying by at breakneck speed, this past year was an incredible privilege for me. I’m honoured to say that the Society and the Board made it through another year of this pandemic. We made great strides in strategic planning, regional advocacy efforts, and homing in on what you, our members, consider truly important. To name just a few examples, we advocated for the profession through a virtual Advocacy Week, kept you connected with lab experts through the new Insights Speaker Series, and supported your professional needs with an even wider range of topics online and in the CJMLS, including mental health (one of my personal passions).

I’ve been privileged to serve on the board for several years now; my time as president has been unique. Serving as president came, of course, with more commitment and responsibility, but I can honestly say I enjoyed every opportunity to steer the conversation. I’ve enjoyed seeing our lab community grow and continue to make waves. Member engagement is the backbone of our society which, in my opinion, is one of the best benefits of being a CSMLS member.

I am incredibly thankful to the countless volunteers and committee members who contribute to our society’s success. They are everyday members, just like you and me, who donate their own time, contribute hours of their day, or share personal knowledge and expertise for our own benefit and betterment. Contributing a personal thread to the tapestry of the med lab story, that is a powerful thing.

I encourage you to get involved and add to the story. I don’t mean sign up for a committee or run for the board (but go for it if you can!). When I say add to the story, it could be almost anything — share your copy of the journal with a non-member, give shout-outs to a med lab member on social media, connect with your Board of Directors, subscribe to eNEWS, attend and recommend webinars, interact with and share our Facebook and Twitter posts — anything that creates a connection between you, your fellow members, and the general public.

Each of you makes our community stronger — and the more you engage, the stronger we are, and the better, more authentic story we can tell. Because at the end of the day, we are nothing without you. I am very much looking forward to seeing what amazing stories our members create in 2022. ■



Joël Rivero  
2021 CSMLS  
PRESIDENT



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## IN FOCUS



# Minimizing Reproductive Hazards in the Lab

It is incredibly important for an organization to support you and your colleagues throughout your entire working lives. Some physical, biological, chemical, and radiological hazards have been shown to affect human reproductive systems, or the health and survival of the developing embryo or fetus.<sup>1,2,3,4,5,6</sup> A healthy and happy pregnancy is possible while working in the lab, and controlling hazards during this important life stage is just as important as other safety controls in the lab.

## Identifying and Controlling Reproductive Hazards

It is best to fully inform yourself about hazard controls to protect yourself if considering this important step of your life. The hazard assessment and control form is the best starting point to identify potential hazards, methods of control and the way to minimize risk, while working in the lab. Take the opportunity to work by yourself or engage a trusted colleague to review what is already documented.

Several items can prompt a revision of the hazard assessment, such as:

- new process or procedure
- new equipment
- post-incident learnings
- several years since last review

Identify reproductive hazards and focus your efforts on controlling those hazards. Depending on your organization's policy, you may have a duty to inform when considering pregnancy or as soon as you become aware of pregnancy. Focus on the hierarchy of controls — engineering, administrative, and personal protective equipment (PPE) — and ensure that the listed controls are still effective for you.



### Reducing Exposure for All Workers is Important


While reducing exposure for all workers is important, in the case of reproductive hazards, some hazard controls may need specific changes to be more effective:

- lowering the limit on exposure to radiation hazards as required by legislation
- limiting use of respirators if they become uncomfortable
- lowering the limits on lifting from the ground, above the waist or above shoulder height
- increased breaks and extra attention to ergonomics

Restrictions and limitations provided by a medical professional for the pregnant worker are an important part of ensuring a healthy and happy pregnancy. Work with your medical, occupational health or safety professional to determine

what can be safely continued or what must change. It is also important to continue implementing controls post-pregnancy to ensure that breastfed children are not exposed to hazards arising in the workplace.

### Supporting a Healthy and Happy Pregnancy

- When management of the organization has become aware of the need to modify duties, it is important that the leadership effectively protects your confidential medical information and works collaboratively with you when discussing duties. The organization and management must demonstrate support for pregnant staff by providing reasonable accommodation. It is best
- when the reasons for modifying work duties are clearly communicated to you by management, as well as colleagues. Management may need to consider finding alternative work or backfill certain parts of your role. Accommodating your needs, as part of the occupational health and safety management system, demonstrates commitment to you and your colleagues throughout your working lives — a key element leading towards success of the organization and the patients you serve. 



EOIN O'GRADY  
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Occupational Health and Safety  
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Safe Environments  
Healthy Workers

This has been reprinted with permission from Public Services Health and Safety Association. For more mental health resources for medical laboratory professionals, visit the Mental Health Toolkit at [mentalhealth.csmls.org](http://mentalhealth.csmls.org).

## STOPPING STIGMA - 6 TIPS FOR CREATING AN OPEN AND SUPPORTIVE WORKPLACE CULTURE



### HERE ARE SIX TIPS FOR CREATING AN OPEN AND SUPPORTIVE WORKPLACE CULTURE

#### 1. EDUCATE AND INFORM

Provide educational sessions and information aimed at raising awareness about mental health. Ensure that everyone knows what programs are offered through your organization. Educational materials should include the importance of taking care of your own mental health as well as being supportive of co-workers, family and friends.



## 2. CREATE AN ENVIRONMENT WHERE EVERYONE CAN DISCUSS MENTAL HEALTH AND WELLNESS

Make mental health and wellness part of ongoing communications. Provide supervisors with tools and training on how to have conversations with staff and coworkers. Encourage people to share their experiences.

## 3. TALK ABOUT MENTAL HEALTH USING RESPECTFUL LANGUAGE AND POSITIVE SELF TALK

Respectful language avoids personal characteristics, unless it is relevant and it is inclusive and person-first meaning that it does not include stereotypes or labels (“that is crazy”) and it puts the person ahead of personal characteristics. Self stigma can be a challenge as well, so it is important that our own self talk is positive and supportive.

## 4. SHOW YOU CARE

Ask co-workers how they are doing and if there is anything that they would like to talk about. If someone does start to share, do not interrupt, listen. Make sure you know what resources are offered through your workplace. If your co-worker asks for help work with them to understand what resources are available through your workplace and outside of the workplace. If appropriate, and your co-worker has stopped sharing, share your own experiences.

## 5. BE DESCREET. KEEP CONVERSATIONS CONFIDENTIAL

Keep conversations confidential. Remember opening up and talking about mental health may not be easy for everyone. Reassuring your team or co-workers that anything they share is confidential can help build bridges and break down barriers to help seeking.

## 6. ENCOURAGE HELP SEEKING BEHAVIOURS

Encourage people to seek help if they are experiencing a difficult time, or are feeling anxious, depressed or worried.

## WEBSITES OR RESOURCES FOR MENTAL HEALTH INFORMATION

[Canadian Mental Health Association](#)

[Mental Health Commission of Canada](#)

[Centre for Addiction and Mental Health](#)

[ConnexOntario](#)

[Homewood Health](#)

[First Responders First](#)

[Boots on the Ground Peer Support for First Responders](#)

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Pivoting the Delivery of an  
Interprofessional Experience to an  
**Online Virtual Simulation Game**



The COVID-19 pandemic resulted in a drastic and sudden shift in health care education as campuses partially closed and some clinical experiences were discontinued. As practice professions, it was paramount that nursing and medical laboratory science programs continue their students' education in such a time of need, but within the constraints of public health measures. The Ontario Tech Medical Laboratory Science (MLSc) program moved to virtual asynchronous and synchronous online theory lectures, with face-to-face laboratory components reduced to half capacity to adhere to physical distancing. Half-capacity enrollment reduced the actual time students spent in the lab session. Here at the Durham College/Ontario Tech University Collaborative Nursing program, we were in a similar position, and we transitioned to fully online. Committed to interprofessional education (IPE), we soon realized that if we were to offer our annual IPE experience, it needed to be offered in a virtual form. Creating this virtual experience proved to be a challenge, but the reward in student experience was well worth the effort.

While many "real life" simulation scenarios are currently available for either group of students, the foci remain uniprofessional. There exists a paucity of literature concerning interprofessional practice (IPP) between these two groups, despite medical laboratory technologists (MLTs) being the fourth largest group of health care professionals, and nurses being the largest group in Canada. Our simulation-based IPE opportunity breaks down professional silos by offering a unique opportunity for nursing and MLSc students to improve collaboration, role clarification, communication and patient safety.

Following the best practices for simulation-based experiences, our team adapted the validated face-to-face simulation scenario to a virtual simulation game (VSG). The new VSG was built on the principles of serious gaming theory and cognitive load theory. The learning objectives were modified to reflect the VSG environment. Using the Can-Sim process, a script was developed and vetted, the pre-simulation activities were modified, debriefing questions were created to reflect the online environment and an evaluation tool was authored to align with the learning objectives. In addition, we created a self-assessment rubric for the students to reflect and self-identify learning gaps prior to engaging in the simulation. The self-assessment rubric also was completed after the VSG, thereby enabling the students to see their progress and knowledge development. Once the script was finalized, filming was done on campus with faculty as the actors. Enlisting faculty actors contributed to realism and expedited the filming as they enacted their professional roles. Finally, post-production editing was completed, and the VSG was pilot tested and edited to reflect feedback from students and subject matter experts.

Once completed, the recruitment for the simulation experience was through each course's learning management system (LMS). The simulation links were placed in the LMS so the students could complete the VSG at any time during the week prior to the scheduled debriefing date.

Lessons learned during this process included how to film during a pandemic lockdown while maintaining public health guidelines. Accessing the university campus during a lockdown proved to be a challenge which delayed filming. During the filming, wearing all the necessary personal protective equipment resulted in muffled voices. Maintaining physical distancing during filming was awkward at times and seemed artificial; however, it was necessary to be compliant with public health guidelines. To adhere to new pandemic protocols, we needed to plan in advance which physical spaces and equipment we would need to access, as well as create a contingency plan. In the future, due to the mask requirements, we would enhance audio quality by strategically placing microphones on the set. For an immediate resolution, and in response to student feedback, we inserted an additional audio clip describing the actions of the MLT actor, as they were unfamiliar to the students.

In comparing other virtual platforms, this program has ease of use in allowing many students to access the game simultaneously. The interoperability of this technology permitted across multiple software platforms made a seamless experience for the students.

Student feedback from both professions was favourable, as they appreciated having exemplars to follow in clinical placement. Importantly, the students expressed appreciation for the opportunity for MLSc and nursing students to learn together. They also saw the benefit of having the opportunity for cognitive training rather than reacting to a scenario in the moment. Most students found the game to be very helpful in providing varying perspectives in how the two professions work together to improve patient outcomes. Important IPE competencies such as role clarification and conflict resolution were illustrated with this VSG. Through reflection, students examined their own roles and the roles of others. Through the VSG, the students gained a new respect of each other's profession and connected in a meaningful way. ■

## LEARN MORE

Dive deeper with Goulding and Graham by watching their webinar, "Bridging Communication Gaps Between Nursing and the Lab: A virtual interprofessional simulation" at [learn.csmls.org](http://learn.csmls.org).



HELENE-MARIE GOULDING,  
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# The “BLUE TOP BLUES” and Coagulation Clarification



The COVID-19 pandemic continues to change our jobs and our everyday lives in many unforeseeable ways. On June 10, the United States Food and Drug Administration (USFDA) added light blue top (sodium citrate) tubes to section 506J of the Device Shortage List, a list of medical devices that the USFDA has determined to be in shortage.<sup>1</sup> While the USFDA continues to update the list as the COVID-19 public health emergency evolves, medical laboratory professionals will have to adapt to the changing supply and restrictions on the use of blue top tubes to balance the shortage with upholding patient care.

The shortage of blue top tubes is due mainly to the increase in coagulation screening assays being requested and performed for suspected COVID-19 patients and COVID-19 patients with a confirmed positive PCR result.<sup>2</sup> In particular, COVID-19 patients who require ventilation and transfer to an ICU are at severe risk of developing blood clots and other related coagulopathies. In COVID-19 disease progression, an increase in plasma D-Dimers and a decrease in plasma fibrinogen have been associated with hypercoagulability and rapid thrombotic complications.<sup>3</sup> As such, it has become necessary to perform more frequent coagulation assays for these patients to provide early detection and treatment of the increasingly common life-and-limb-threatening coagulopathies associated with COVID-19.

On July 22, the USFDA issued an Emergency Use Authorization (EUA) to Becton Dickinson regarding the blue top tube shortage, acknowledging the need for an increased number of coagulation tests amid the COVID-19 pandemic.<sup>1</sup> It also authorizes the emergency release of blue top tubes before all the good manufacturing practice

requirements have been met, with respect to design, manufacture, packaging, labeling, storage and distribution of blue top tubes. This is in large part due to the decision by the USFDA that “the known and potential benefits of your product when used for such use, outweigh the known and potential risks of your product.”<sup>4</sup> The USFDA will carefully monitor the current situation and encourages the reporting of any and all problems with medical devices (including blue top tubes) using its website and online forms for the duration of the EUA.<sup>1</sup>

Both the USFDA and the College of American Pathologists (CAP) have compiled and released several new recommendations for ordering coagulation tests and drawing blue top tubes, to help mitigate the worldwide shortage (see Table 1 on the next page).<sup>1, 5</sup> These new recommendations are meant to help medical laboratory professionals and nurses decide when to use the blue top tubes and when to use an alternative, as every use of the tubes takes on a new relevance.

Despite the worldwide supply shortage, the rules and commonly accepted protocols for proper blue top tube collection have remained steadfast. However, it has now become imperative to ensure that proper collection procedures are observed to minimize the need for blue top redraws (see Table 2 on the next page).<sup>6</sup> The decision to accept or reject drawn blue top tubes is never one that is taken lightly by coagulation technologists. While we all understandably sympathize when a difficult and awkward situation arises regarding a repeat venipuncture, the need for accurate coagulation results far outweighs the inconvenience to the patient and the phlebotomist performing the redraw.

**Table 1: Summary of CAP and USFDA recommendations for current blue top tube shortage, as of June 2021<sup>1,5</sup>**

**Nursing/Phlebotomy**

- Do not use sodium citrate tubes unless medically necessary.
- Immediately stop drawing sodium citrate tubes as part of a “hold” request or a routine “rainbow draw.” Only draw blue top tubes when coagulation testing has been ordered or is likely to be ordered.
- Avoid using sodium citrate tubes as discard tubes; only draw tubes containing no additives, such as a plastic clear top tube or a glass red top tube (plastic red top tubes contain silicate), as discard tubes.
- Reserve the use of smaller 1.8 mL sodium citrate tubes for patient populations that cannot be drawn with larger 2.7 mL sodium citrate tubes.
- Use expired sodium citrate tubes only as a last resort, but they must pass quality control tests with each assay run.

**Ordering Providers**

- Evaluate the clinical necessity of all coagulation testing orders to ensure only vital tests are ordered.
- Where possible, reduce the frequency and/or extend the timing of standing prothrombin time (PT/INR) orders, especially for stable patients on long-term warfarin.
- Reduce routine coagulation testing where not clinically necessary (e.g., avoid routine preoperative testing for low-risk surgeries without a clinical indication).

During this very challenging time, we must all do our best to provide the essential health care that every patient is entitled to. Even while there are new sources of stress being added to our daily tasks all the time, we must also keep in mind that our resources, human and otherwise, are limited. Therefore, it becomes essential for each one of us to stay informed about the kinds of changes and information updates in the medical field that I have described above. It is my sincere hope that we will all rise to face the challenges ahead, while offering each other compassion and support as we work together. ■

**Table 2: Partial list of recommendations for drawing blue top tubes<sup>6</sup>**

- The patient should be relaxed; stress should be avoided.
- Collect venipuncture directly from a peripheral vein, preferably the antecubital vein.
- The diameter of the needle should preferably be between 19 and 22 gauge.
- Release the tourniquet when the first tube starts to fill (<1 minute).
- Draw a discard tube when citrated plasma is obtained using butterfly systems or other IV catheter.
- Ensure correct filling of tubes (>90% filling) to respect the required ratio of sodium citrate to whole blood (1:9).



TERENCE LITAVEC, BSc, MLT, SH(ASCP)

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# **PROFESSIONAL NETWORKING** FOR MEDICAL LABORATORY PROFESSIONALS IN THE DIGITAL AGE

The pandemic has impacted the lives of professionals in a variety of ways in that we have adjusted our work, communication styles, and everyday life. Prior to the pandemic, many of us looked forward to networking opportunities where we could meet in-person and connect with other professionals to build relationships. However, since the advent of social distancing measures, in-person conferences and other networking events have had to be cancelled or adapted to virtual settings. In addition, other less traditional methods of networking, such as digital or virtual networking, have started to be used increasingly within professional settings. With these types of networking opportunities emerging as our new normal, how can medical laboratory professionals best navigate these virtual spaces?

One of the best ways to get started is to build an online presence through social media. Various social media platforms can be utilized to help create personal connections with those you want to connect with professionally, as well as to maintain professional relationships with those you have met previously in person. The online presence that you leave in the digital space has become a new kind of “first impression,” one that would normally occur when you meet with someone for the first time face-to-face. When creating a professional online presence, think about what you want your digital first impression to say about you.

Although social media platforms may be the easiest way to build a digital network, they are only one of the tools available to you. Virtual meeting platforms have become more popular during the pandemic as many professionals have been using this technology, while working from home. It has also been gaining popularity with professional educational events, such as conferences and continuing education opportunities. The main benefit associated with these platforms is the increased accessibility of content, as many medical laboratory professionals can attend and access these virtual opportunities from their own homes. Attending educational events on virtual meeting platforms also helps maintain contact within your current professional network, as well as expanding it. When operating new technologies that you are unfamiliar with, it is always important to remember that practice makes perfect. The more you use the various virtual meeting technologies out there, the more you will become familiar and comfortable with them.

Although some may be hesitant to begin networking within a digital environment, there are many benefits to this approach. These include diversifying your network for future job searches, creating a network of contacts with whom you can collaborate in the future, and building close personal connections. With the current job market trends, creating and maintaining connections through a digital network may be beneficial, since these connections may lead to new opportunities that you were previously unaware of. In

addition, for the many medical laboratory professionals who have been affected by the increasing amount of social isolation, a digital network of like-minded professionals could serve as a supportive network.

With all these benefits in mind, how does a medical laboratory professional start with creating their own digital network? There is no single answer to this question, since everyone is different in their comfort levels and networking styles. Professionals with active networking styles tend to plan their networking to maximize their interactions, either by reaching out to professionals directly on social media or by speaking up at virtual events. They may also be more likely to create opportunities in which they can showcase their talents. Professionals with passive networking styles tend to connect with other professionals on social media to follow their career progress, commenting about it along the way. They may also be more likely to attend educational webinars to learn new topics or skills and connect with other attendees.

No matter what digital networking tools you use, or which kind of digital networking style you have, it is always important to remember that building your network takes time. However, take it step-by-step and reflect on your growth and you will be happy with the connections that you have made in the process. ■



MARIA ROUSSAKIS, MLT, MSc  
Platelet Immunology Laboratory, McMaster University



# THE EVOLVING WORLD OF LABORATORY MEDICINE

What does the future look like in the lab? CJMLS author Lisa Bendall spoke to four medical laboratory leaders to get their expert perspective. >>

Scientific breakthroughs are game-changers. Recently, and with the world watching, cutting-edge vaccines have changed the path of a devastating pandemic. Laboratory medicine, too is constantly evolving, and new technologies are poised to change the way we practise it. What might be coming in the near or distant future, and how will it impact work in the laboratory? We spoke to four leaders across the country about what they're keeping their eye on.

## Ivan Miller

Operations Director,  
Cowichan/South Island  
Laboratory Medicine,  
Pathology & Medical  
Genetics Island Health,  
British Columbia



## Diagnostics Based on Your Protein “Fingerprint”

A lot is rapidly changing now, like the constant pressure to look towards automation to see if it can improve our efficiency. One of the other trends I've seen just explode in our time is point-of-care testing. As the technology improves every year, the use of devices that can test patients at bedside also grows every year. That's only going to get more advanced in the years to come. The work in genomics — identifying a gene mutation, allowing physicians to decide the best treatment based on that mutation, and seeing pharmaceutical companies design drugs based on genetics — is still in its infancy, and will only grow.

Proteomics is an area that I think will be huge in the future. It's in the research stage; we have a physician here, one of the top experts in the field, working on it.<sup>1</sup> The human body produces hundreds of thousands of proteins, and researchers are looking at these proteins with mass spectrometry, which has become more sophisticated in recent years. They're trying to identify proteins associated with a

normal human state and proteins associated with specific human disease states. The thought is that in the future, you'll be able to run diagnostic tests based on which proteins the person is producing. That should enable you to diagnose specific diseases and suggest effective treatment for them. It would be a very sensitive test, so hopefully it would reduce the number of things we miss in the lab, and allow for a more accurate diagnosis.

I can't forecast how far into the future we'll be before it might become a common test in the lab. I don't know if this will be a reality in ten years or twenty years. Trying to decipher the pattern that you're seeing, and trying to associate those protein patterns with specific disease states, is going to be a challenge. There's a lot of information. But I think we will get there eventually, and it holds tremendous potential. The technology is there, it's just getting the meaning behind what we're seeing.



## Christine Bruce

Senior Director, Laboratory Medicine  
University Health Network, Ontario

### Automation Where No Automation Has Gone Before

As an industry, we've worked through a tremendous amount of change over the past couple of decades. I don't think it's a turn-on-and-off situation; there are constant changes happening, either disease-driven or even vendor-driven. The lab needs to stay ahead of the change or respond to it, so that we drive the change, not the other way around.

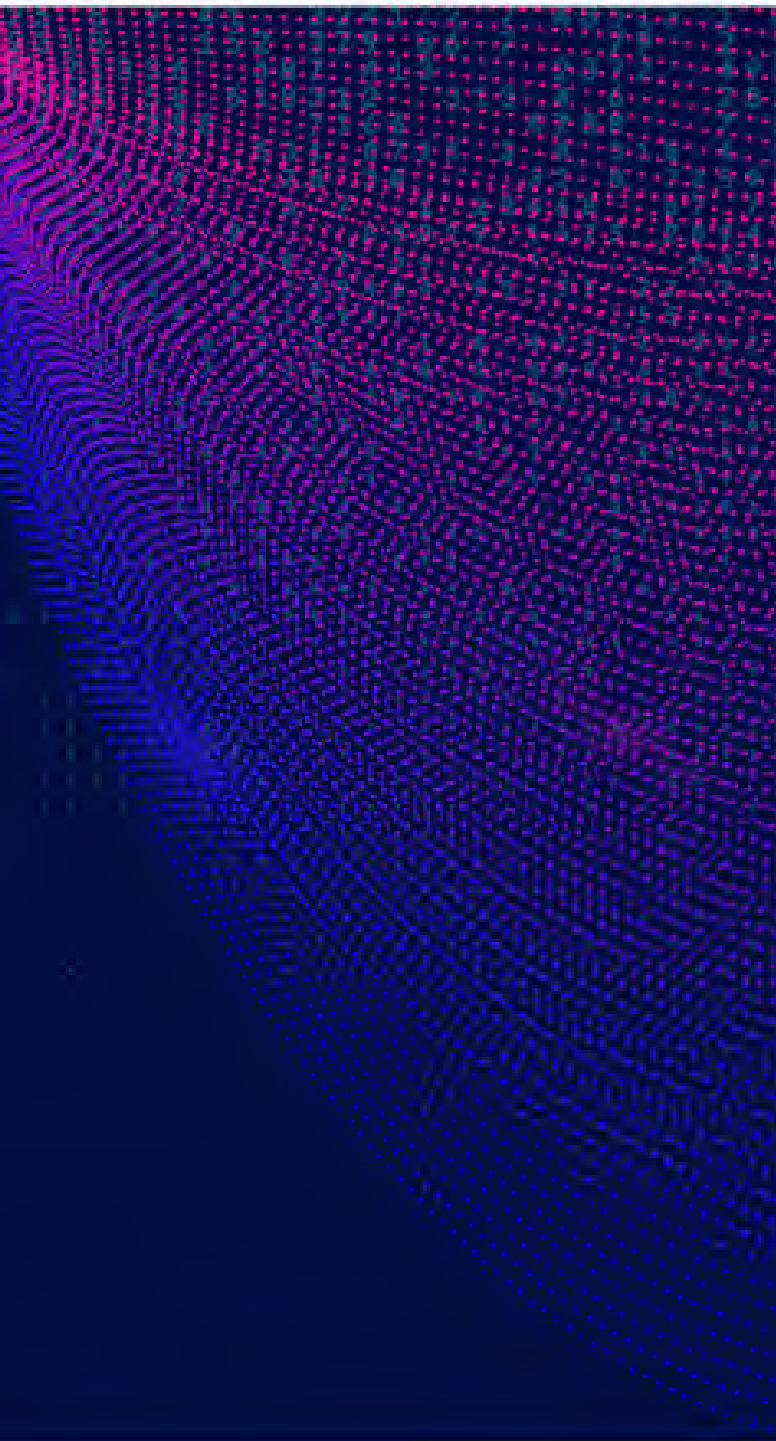
Where I work, precision diagnostics and personalized medicine are becoming the norm, particularly within the genome diagnostics space. There is this incredible pressure to be nimble and run any genetic panel at the drop of a dime, and facilitate diagnosis or treatment plans that much faster. It's the right thing to do, but how can it be achieved in a way that still uses our limited resources responsibly for the greater good?

I've particularly seen advancements in the automation of traditionally non-automatable practices. An example is something as niche as karyotyping in my cytogenetics group. Having a set of eyes looking at the actual chromosome to try to identify the abnormality normally takes weeks to do. There's now innovation in the beta-testing stage: a new product that has automated that set of eyes.<sup>2,3</sup> Imagine, before you couldn't make your diagnosis in less than 15 days; now you can potentially do it inside of five days.

We're the first in Canada to try and apply this product clinically; we're validating the instrumentation and running it parallel with our routine methods, and will understand its potential by spring 2022. Hopefully it will revolutionize how we apply automated cancer cytogenetic testing in medicine. It comes at a handy time, where the need for cytogenetics is increasing and there's a need to be swifter, but also when there's a real scarcity of lab professionals able to do this kind of work; it takes time to build and refine that skill. There's no down side to enabling these folks with some automation, because there's still a high degree of manual work that needs to continue to happen in cytogenetics. This innovation will help decompress workload and enable faster diagnosis.

The challenge with automating anything is understanding what it does to the people who do the work. We need to reinforce our commitment to the laboratory professionals' value. We need to continue to create a great place to work in spite of automation.





## Dr. Michael Mengel

Medical Director (North),  
Alberta Precision Laboratories  
Chair, Department of Laboratory Medicine  
and Pathology, University of Alberta

### Analyzing Big Data with A.I.

One development that will transform our field over the next years is the digitization of health information and big data, and the resulting need for artificial intelligence-driven support tools for analysis.

In Alberta, with the introduction of one uniform health record,<sup>4</sup> large amounts of standardized or harmonized data will become accessible — to study them, to discover inter-relationships of processes and disease, for risk stratification of patients, and for informing health providers in decision-making in essentially all areas.

In laboratory medicine, the big topic is, how can the data inform our processes and quality? The data are so large, it's beyond a human's mind, so we require the support of artificial intelligence (A.I.) tools to understand where our gaps and weaknesses are. Currently we look at data in a descriptive manner: we have 30 million tests, and 2 million need to be repeated. With A.I., we could understand why we need to repeat them and how to improve our process so that we do not need to repeat them in the future.

The other challenge is making these data accessible in a relevant format to patients, to guide their health. Patients can now sign up to see their health record and all their lab data, and take more responsibility for their health. There have been examples where patients fell through the cracks in the health care system because they were between doctors and no one looked at their lab results. But this requires that they're also health care literate, and the engagement of patients into medicine is a new field.

Lab technologists will need to increase their literacy in the complexity of the data, understanding analysis of data, and in data safety and privacy. That needs to be part of their training. And now that the lab results are visible to the patients, we expect an increased frequency of patients approaching the lab with questions. Our health professionals in the lab will need to be educated in how to interact with and engage patients. In the past, we were behind the scenes, but now with COVID-19, suddenly the whole population knows what the lab does, and how important it is to guide their health.

## Josh MacDonald


Client & Support Services Program Manager  
Pathology and Laboratory Medicine  
Nova Scotia Health Authority

### Tinier, Higher-Tech Blood Tests

I think phlebotomy is not only overdue for a widespread and drastic change, but is probably close to having that change. Safety-engineered needles have improved the practice. There are other technologies that make it easier for the technologist to find the vein, like using infrared LED or ultrasound, or reduce the prevalence of hemolysis when collecting from an IV line.

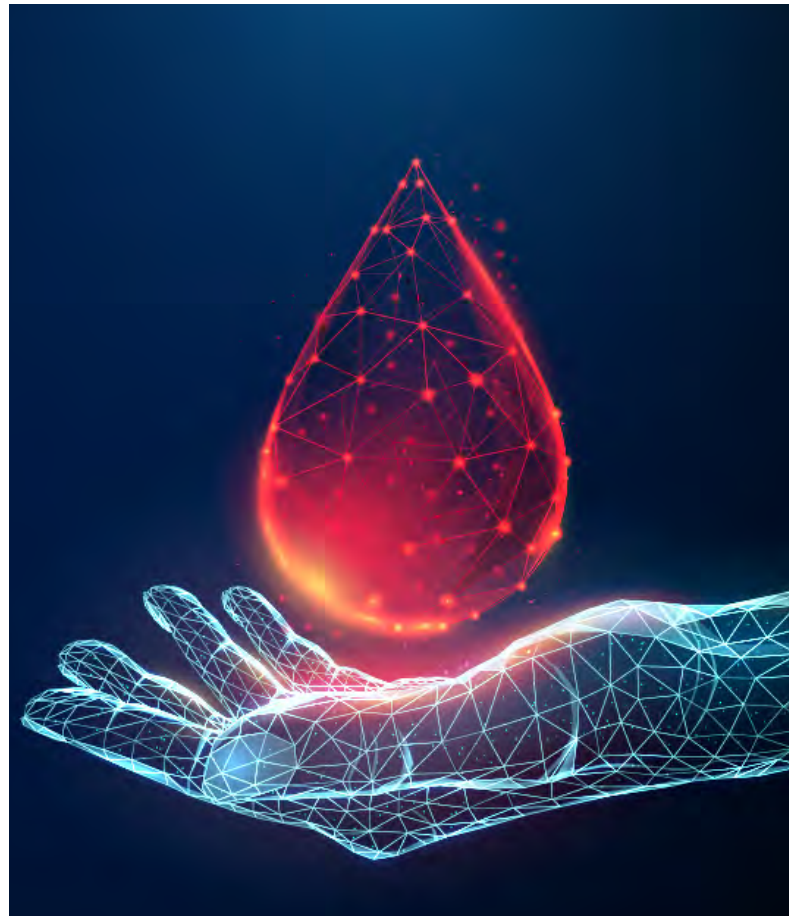
I expect the next paradigm of blood collection to be more focused on microsampling, using very small amounts of capillary samples to perform testing,<sup>5</sup> using volumetric absorptive sampling or microfluid chips — essentially, a laboratory on a microchip — to perform the collections. It takes only a few microlitres of blood to perform hundreds of tests, in some cases.

I've seen devices in use in military settings where the user can essentially press a device against themselves, much like glucose testing, and it automatically collects a capillary sample. Patients as a whole are currently looking for clinical care that's less intrusive or invasive. At the same time, they want to have more control over their treatment and maintaining the stability of their medical condition. I think that precise type of technology, where even the patients themselves could be the ones collecting the sample, could very well be the eventuality of laboratory sampling. There are a number of those testing kits on the market now, but they are typically offered by private labs using the device for one specific test.

At what point we see a shift in appetite from a venous sample toward a capillary one will probably depend on when these devices become the affordable alternative. I wouldn't be surprised if a switch to microsampling analyses started to happen before the end of my career. I expect that the samples would still be tested in the lab, you'd just have a different sample container. The idea of shifting types of analyses and shifting types of specimens is certainly nothing out of the ordinary in the laboratory. 



LISA BENDALL  
Special to CJMLS



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# The Future of CSMLS

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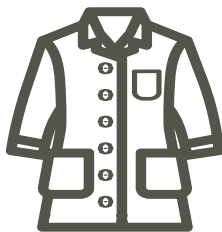


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# Community

## BRIDGING THE LAB AND PUBLIC HEALTH: Tuberculosis Screening in Nunavut



Author Kevin Yoo (bottom row, second from left) and his clinic colleagues received a visit from Chief Public Health officer of Canada Dr. Theresa Tam (bottom row, middle). Photo via Dr. Theresa Tam's Twitter account, @CPHO\_Canada.

In 2019, long before COVID-19 would have a monumental impact on communities across Canada, another terrible disease was ravaging the northern territory of Nunavut and had been doing so for quite some time. This disease is tuberculosis, also known as TB. While not prevalent in any other parts of Canada, Nunavut has seen a surge in TB cases within the last decade, the effects of which continue to devastate the large Inuit population that resides there.

To combat the growing epidemic, the Government of Nunavut partnered with the Public Health Agency of Canada and the National Microbiology Laboratory, located in Winnipeg, to set up mobile clinics in remote communities. The inaugural clinic was set up in Qikiqtarjuaq in early 2018, and a second clinic was set up later that year in Whale Cove. Both clinics were run by dedicated health professionals from all over the country, from medical laboratory technologists (MLTs) to X-ray technologists to respiratory therapists, as well as nurses, doctors and public health professionals. Recognizing that these initiatives were integral to the process of eliminating TB in Nunavut, talks about opening a third clinic in early 2019 began, as well as speculation that Cape Dorset, a remote hamlet some 300 kilometres away from the capital city of Iqaluit, would be the next designated location.

After graduating from the University of Alberta's Medical Laboratory Science program in 2018, I had the privilege of working as a laboratory technologist at the University of Alberta Hospital toxicology department and as a laboratory assistant at the Provincial Laboratory for Public Health, both in Edmonton. Working these two positions, I came to recognize and understand the different aspects of public health at play. At the provincial lab, I learned the basic concepts

of infection control, including outbreak management and surveillance of pathogenic organisms. At the toxicology laboratory, I learned more about the social aspects of public health, as Alberta was dealing with a growing fentanyl crisis that was rapidly claiming lives and uprooting families. While I greatly valued the experiences between these two positions, I had a desire to further expand my capabilities. In March 2019, I received a recruitment call for MLTs to work at a mobile clinic in Nunavut for approximately two months, which I accepted. The decision would lead to an eye-opening experience and would motivate me to apply for the Master of Public Health program at the University of Waterloo in 2021.

The clinic in Cape Dorset was the largest and most ambitious TB screening effort to date, with the goal of screening its 1,500 residents in a span of four months. The local community centre served as the main hub of the clinic, with wooden columns and tarps separating one area from another. There were four main stations through which an individual would have to rotate to complete the screening. First, they would check in with the attending nurses and get their vitals taken, as well as the injection for their TB skin test. X-ray technologists would help take their chest X-ray, and doctors would be on standby for consultation. Respiratory therapists assisted individuals and children who had problems coughing up sputum. For my part, I served as the laboratory liaison, where I distributed containers for depositing sputum and mobilized patients for screening. I also assisted with phlebotomy and other duties that were assigned to me by nurses. Personnel from the National Microbiology Laboratory, as well as MLTs working from Iqaluit, set up a special tent where they performed rapid testing using the GeneXpert platform.

Our diverse team diligently worked six to seven days a week to ensure as many residents as possible were screened. By the end of the clinic, we were successful in screening nearly 80 per cent of the residents and identified a few individuals with latent TB, as well as those who were at risk of developing active TB. Our efforts were recognized by the Chief Public Health officer of Canada, Dr. Theresa Tam, who visited the clinic to offer encouragement and to discuss ways in which the initiatives to stop TB could be expanded in the coming future.

Deeply impacted by this short, but rewarding, experience, I returned from Nunavut with an urge to continue my studies and focus my career on population health. In late 2019, I enrolled in a course by Infection Prevention and Control Canada, which I successfully completed in June 2020. The course gave me the added knowledge to deal with community outbreaks, at a time when COVID-19 was starting to take over. As the pandemic raged on, I realized I needed to dedicate my abilities to serve the underprivileged groups that have been, and continue to be, severely impacted by the virus. With new

motivation, I am currently looking forward to learning as much as I can in my Master of Public Health program. I aim to use my newfound skills to develop strategies that I hope will improve the health outcomes in marginalized societies in a post-COVID world.

I would like to thank the CSMLS for giving me the opportunity to pursue my graduate studies with the help of the BD Young Leaders Scholarship (Journey to Greatness Award). With the resources given, I hope to demonstrate my capability to influence and inspire by rising to meet the many challenges that surround public health and by providing innovative solutions that will advance the profession in the years to come. 🙏



KEVIN YOO, BSc (MLS), MLT  
Whitehorse General Hospital Laboratory



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## MEMBER SPOTLIGHT

# Blending the Lab and Art



Photo courtesy Noemi Divino

## Q+A with NOEMI DIVINO

**W**hen Noemi Divino is not in the lab, you might find her with a stylus in hand, digitally sketching sample bags, collection tubes and professionals in indigo lab coats. After completing her BSc in General Science with a minor in biology from the University of Waterloo, she became CSMLS certified in 2021 and started working as a medical laboratory assistant/technician (MLA). New to the field, Noemi is eager to learn more about medical laboratory science and the many facets of the lab by exploring the profession through art.

Noemi's illustrations are not only artistically impressive, but a fun and engaging way to #Labvocate for the profession. We caught up with Noemi to learn more about her art and to paint a picture of her as a new professional.

### **Many people like to keep work and play separate, yet you blend your artistic passion with your profession. Why?**

I've been combining my love for science with art since high school; it's something I've enjoyed doing for years. It felt natural to blend

this profession with my art, not only to show the medical laboratory profession to the public on social media, but also for myself to feel more connected to the field. It helps me document my journey so far and my understanding of the different departments in a medical laboratory.

### **Your Indigo Lab Coat illustration for National Medical Laboratory Week 2021 was a hit on #MedLab Twitter. What inspired you to create that piece?**

Over the months leading up to National Medical Laboratory Week, I slowly drew characters for each department in the medical laboratory (e.g., one for clinical chemistry, one for histology, one for MLAs, etc.). Then, on my social media for Lab Week, I combined some of these characters to thank specific sections: thanks to MLAs, thanks to MLTs, and thanks to cytotechnologists and genetics technologists. Towards the end of the week, I decided to include all these characters I had made into a "group photo" with the Indigo Lab Coat. It felt right to have all of them together, to show that we're all on one team.





Original art by Noemi Divino.

**Not only do you share your art on social media, but you also run your own website ([stuffomaticblog.ca](http://stuffomaticblog.ca)) with a blog, your artwork and information on STEM and the profession. Can you tell us more about that?**

I started my blog towards the end of my third year of university. Initially, it was a way to document my last year or so of my undergraduate degree. It also encouraged me to talk about some topics I found interesting and wanted to do more research on, such as sustainability, invasive species and flaviviruses. Once I graduated and enrolled in an MLA program, I decided to focus more on med lab topics and my experience, for two main reasons:

1. I didn't even realize medical laboratory science existed until the last couple of months of undergrad, so it encouraged me to do more research; and
2. to share that knowledge with the public, since it's something I wish I had to help me with my decision.

**What advice or message do you have for other artists in the medical laboratory profession?**

I would encourage other artists in the profession to just keep creating art. It's a great way to relax and destress after a long day of work. If you choose to blend the med lab with art, I highly suggest you share it on social media! It's an effective way to communicate what you do in this profession and connect with others, and a great way to mix your passion for med lab and art. 📌



Original art by Noemi Divino.

# Accepting Proposals for Translation Services

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# Society News

## BRINGING THE INDIGO LAB COAT TO LIFE

In the fall of 2020, as the pandemic wore on and its impact started to take a toll on the medical laboratory profession, a new symbol for the lab was created: the Indigo Lab Coat. And while the coat was created as part of a public awareness campaign that included bus shelter ads across the country, a new website and a series of social media ads, it became a symbol of distinction for the medical lab community.

When CSMLS envisioned the campaign, it was meant to make the public more aware of lab professionals and the work you do. The campaign itself was a success, yet it was the reaction of members who wanted the coat, to wear it with pride, and who identified with its meaning, that really made it soar.

So how does a professional symbol come to life? For the Indigo Lab Coat campaign, CSMLS partnered with award-winning Canadian advertising agency Arrivals + Departures (A+D) to help us launch this ambitious project.

We recently spoke with Jeff MacEachern, chief creative officer at A+D, to talk about the creative process of dreaming up the Indigo Lab Coat, as well as how his team used knowledge about the lab and worked it into the design. Here's a look into the creative minds at work.

### What did the creative team at A+D take into consideration when starting this project?

After learning more about what lab professionals do, I knew this was something important and exciting. We wanted to be sure we were doing members justice by bringing attention to the work they do every day. We wanted to create something that everyone in the organization would be proud of and would want to rally behind.

When we start a creative process on any project, we look at three elements that we believe contribute to its success: originality, engagement and execution. Originality is really the element that shows innovation and progress; it's when something is so unique, people take notice. That was our mindset going into this — we wanted to create something worth talking about. When people proactively share and talk about the idea with others, then you know it hit the mark.

### How did the idea of the Indigo Lab Coat come to life?

The Indigo Lab Coat was actually one of the very first ideas the team brought forward, but it didn't look how it does now. It was a fully indigo-coloured lab coat. The team wanted to take an iconic symbol of the lab and flip it on its head to make lab professionals stand out. I thought that worked well because we knew that lab work often goes unseen, so this was a way for us to make it seen.

The team chose the colour indigo purposefully, too, because it stands for devotion, helping others and other values associated with the lab profession.

### How did the coat evolve to include the printed words?

I liked the initial idea, but I pushed the team to think: Is there a bigger story we can tell with this coat? We had ideas about printing visuals on the coat, or even headlines. The team took those ideas away, but what stuck with them was the data CSMLS gave us about the approximate 1.2 million lab tests performed each day. To me, that data was shocking, but in a lovely way. It was impressive, and we felt it was an important part of what we were doing with this campaign. Internally, the team would talk about needing to "magnify" the work of these health care heroes. That concept stuck as we played with the idea of microprinting the tests onto the coat.





## Championing the Lab

This year, we partnered with Canadian Olympian, hockey player and resident physician Dr. Hayley Wickenheiser for another national campaign featuring the Indigo Lab Coat. Visit [IndigoLabCoat.ca](http://IndigoLabCoat.ca) to see the new video honouring medical laboratory professionals and your incredible work.



**Why do you think the microprinted tests on the coat worked so well?**

This whole campaign was an unconventional solution to a complicated problem. When I saw what the team came up with, I was excited and we could see everyone else was excited about it. This felt worth talking about. It really held some important pieces, it had the “talk” value that I mentioned before, but it also had the “why” baked right into the idea. It told the story of why your members do what they do every day, and it evoked emotion around it. Once we heard this idea, honestly, I don’t remember the other ideas. I think it’s a sign that if you hear something and you still are thinking about it the next day, you’ve got something special.



**How do you feel about the final product and campaign?**

We’re really pleased about how this idea came together. In fact, we often use it as an example when we are pitching for new business. Not only was it a unique way to highlight lab professionals, and in something so eye-catching, but it’s how members have reacted to it. That’s not something you can ever predict. You can have a campaign come and go quickly, but having your audience really embrace it and take ownership of it is rare and exciting.

Our team worked to really put lab professionals on a pedestal with this coat, and the creative decisions were done with that in mind. The Indigo Lab Coat has not only made the professionals themselves stand out, but it has given us a tool to continue to tell their stories in an impactful way. 📌





# Automated IFA microscopy incorporating AI

The indirect immunofluorescence assay (IFA) is an important antibody screening method in laboratory diagnostics. However, the traditional microscopic evaluation is time-consuming and subject to variability. Automated microscopy systems improve the efficiency and standardisation of IFA diagnostics by providing fast digital acquisition of immunofluorescence images, interpretation of results, and data archiving. Evaluation software based on artificial intelligence provides the most accurate result proposals.

## COMPREHENSIVE ANTIBODY PROFILES

IFA utilises cells and tissues as antigenic substrates for sensitive and specific detection of a broad range of antibodies. With BIOCHIP Technology, miniature sections of different substrates are positioned side by side in the reaction fields of microscope slides and incubated in parallel under standardised conditions. This multiplex approach enables comprehensive antibody profiles to be established with a single analysis. EUROIMMUN offers the largest portfolio of IFA substrate combinations, encompassing all kinds of diagnostics.

## AUTOMATED SLIDE PROCESSING

The slides can be processed fully automatically using state-of-the-art instruments. For example, the EUROLabWorkstation IFA enables fully automated and standardised processing of IFA slides at an unmatched throughput of more than 200 samples per hour using ten needles. Further instruments such as the IF Sprinter and Sprinter XL are designed for the incubation of smaller sample numbers. These can be complemented by the fully automated slide washing device MERGITE!, which uses a controlled liquid flow to provide meticulous washing that is gentle on the substrates, ensuring high-quality results.

## FAST AUTOMATED MICROSCOPY

Computer-aided immunofluorescence microscopy enables complete on-screen evaluation of IFA, thus eliminating the need for a dark room. The fully automated microscopy system EUROPattern Suite comprises a microscope with slide magazine accompanied by sophisticated software for image recording, pattern interpretation and result archiving. A novel feature is the slide barcode reader to ensure traceability of results. The high-capacity EUROPattern Microscope 1.5 model can process up to 500 fields containing multiple BIOCHIP substrates in one run. It has an image acquisition speed of 13 seconds per image. The EUROPattern Microscope Live is a compact model which combines state-of-the-art live microscopy with ultrafast image processing. It incorporates novel laser focussing technology, which allows image

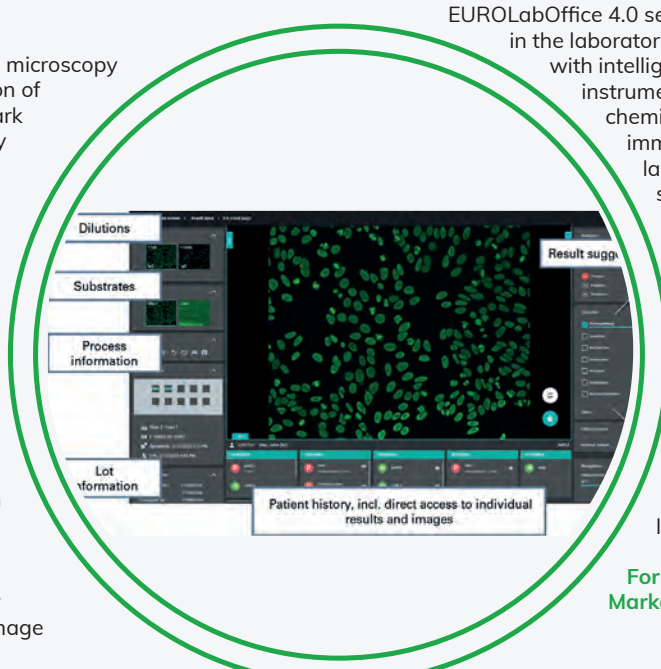
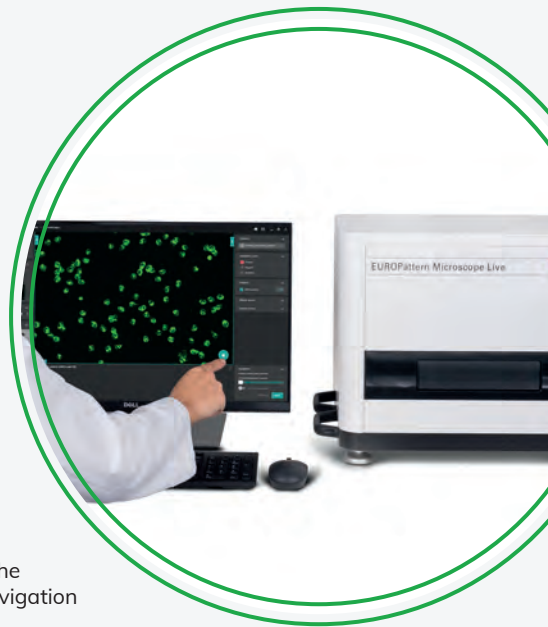
acquisition in a record two seconds per image. It also features an automatic fluorescence calibrator, ensuring standardised light quality between microscopes even at different locations. The multi-touch screen on the monitor allows easy navigation and zooming.

## EVALUATION INCORPORATING AI

The EUROLabOffice 4.0 software uses deep convolutional neural networks for discrimination of positive and negative results and pattern recognition. In the evaluation of anti-nuclear antibodies (ANA) on HEp-2 cells, the AI processes enable recognition of nine different patterns, including DFS 70 and AMA, as well as combinations thereof. The deep learning algorithms provide effective segmentation of the cells, so that counterstaining is no longer necessary. The software also generates titer suggestions from the fluorescence intensities of the incubated dilutions. The ANA pattern classification is compliant with the International Consensus on ANA Patterns (ICAP). The classifier can also be used to evaluate anti-neutrophil granulocyte cytoplasmic antibodies (ANCA), CLIFT, tissues such as liver, kidney and stomach, and recombinant-cell substrates.

## INTELLIGENT CONNECTIVITY

EUROLabOffice 4.0 serves as a flexible central interface in the laboratory, providing digital organisation with intelligent networking of workplaces and instruments, for example for IFA, ELISA, chemiluminescence immunoassays and immunoblots. It can be connected to laboratories' existing information systems, so that data can be exchanged securely and with complete traceability. The software has an intuitive interface, making it easy to use. For instance, the results window displays all findings consolidated into one report per patient, including the patient's history and all images. The system also administers and archives all data, images, results and article information, creating paper-free processes and ensuring a smooth laboratory routine.



For more information please contact:  
[Marketing@EUROIMMUN.ca](mailto:Marketing@EUROIMMUN.ca)

# MENTAL HEALTH SURVEY: TAKING STOCK OF YOUR HEALTH

Increased workload, exacerbated staff shortages, layoffs, a shift to work (or teach) from home — these are all struggles the pandemic has thrown at us. Your unique position in health care can leave you vulnerable to mental health issues, not to mention the stress of living through a pandemic outside of work, too. After enduring and constantly adapting to these changes for nearly two years, getting a sense of the state of your mental health was more important to us than ever.

The pandemic had put our planned 2020 Mental Health Survey on pause, but the CSMLS research team recommenced the study, extracting questions from select health and safety authorities' survey sets to best gauge your state and needs. Thank you to all who took time to respond and participate. Below is a summary of what you told us, what it means, and how your input will shape our next steps.

Biannually, the Canadian Society for Medical Laboratory Science (CSMLS) collects information that examines mental health issues, including stress and burnout, as well as mental illness of medical laboratory assistants (MLAs), technologists (MLTs) and other related professionals. The COVID-19 pandemic paused this study, but it resumed again in May 2021 amid the third wave of the pandemic in Canada. This study was also completed in the past, in 2016 and 2018, providing pre-pandemic baseline data for comparison. It is noteworthy that although stress and burnout are at the forefront of media attention, CSMLS is one of the few organizations who took the initiative to collect data in the past and can now make relevant comparisons to truly gauge the impact the pandemic has had. Thus, our focus is the changes in mental health status observed within CSMLS members since 2018 and seeks to:

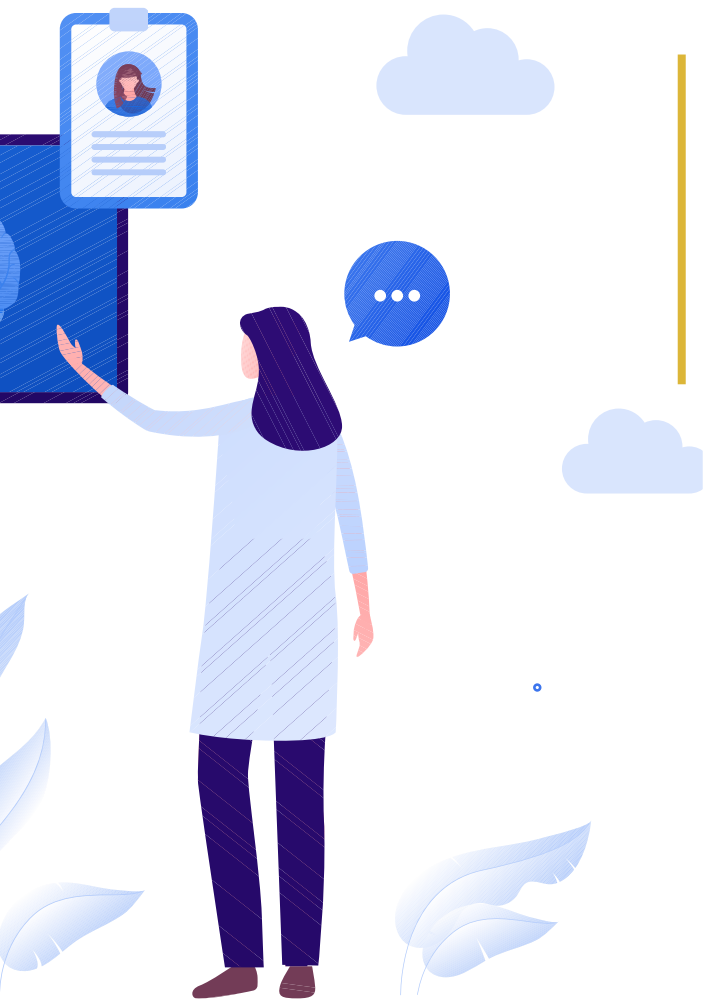
- determine the level of stress, burnout, mental health issues, and psychological distress within the profession (spectrum of mental health) as defined by key questions extracted from the National Institute for Occupational Safety and Health (NIOSH) Quality of Worklife Questionnaire<sup>1</sup>, and complete sets of questions from the Maslach Burnout Inventory (General)<sup>2</sup>, Mental Health Inventory Survey<sup>3</sup> and the Kessler-6 Psychological Distress Scale<sup>4</sup>;

- determine the overall level of job satisfaction and quality of work-life in relation to the specific climate/culture questions as defined within the NIOSH Quality of Worklife Questionnaire associated subsection and;
- identify any relationships between the workplace and mental health indicators.

We know this is a topic that matters to CSMLS members, and this is reflected by the outstanding participation we received in this study. We exceeded our target number of responses to achieve data with a confidence interval of 95% and a 2.5% margin of error. Responses were provided by a number of different professionals, but our key demographic subgroups identified as either MLAs or MLTs with 235 and 955 responses respectively.

## Key Findings

In general, employment has remained steady for CSMLS members with 92% of respondents remaining employed at the time of the study launch. The MLA and MLT demographics maintained 89% and 95% employment rates, respectively. There was also a positive sentiment that feelings of job security improved, and this may not come as a surprise considering the strain on the health care system.



The emotional toll the pandemic has had on our members has been indicated, in part, by the Maslach Burnout Inventory component of the study. Respondent values for emotional exhaustion were relatively consistent between 2016 and 2018, but a +14% increase to 55% was indicated by the 2021 respondents.

The Kessler-6 Psychological Distress component of the study found that 29% of CSMLS members are experiencing incidences of nonspecific serious psychological distress (NSPD). Serious psychological distress includes mental health problems severe enough to cause moderate-to-serious impairment in social, occupational, or school functioning; and to require treatment.<sup>5</sup> Other key findings related to psychological distress include the following:

- Incidences of NSPD have nearly doubled since 2018 (16% in 2018).
- 57% of respondents perceived increases in psychological distress in the month prior to the survey, indicating that negative effects on mental health are still accumulating approximately a year after the COVID-19 pandemic started.
- Respondents reported that feelings associated with psychological distress affected their ability to work four days per month on average. This includes 1.5 days they were totally unable to work, and an additional 2.7 days they spent doing only half or less of what they would normally have been able to do.
- 20% of respondents saw a doctor or other health professional about these feelings with an average of two visits each.

Regarding those who were not employed, mental health issues have contributed to 8% and 14% of the instances of unemployment for MLAs and MLTs respectively. For MLAs, this number is consistent with the results obtained in 2018 since it is within the margin of error of the study. Whereas MLTs have actually seen a slight decline of 5% since that time. These are encouraging results, but they also indicate there are opportunities to provide more help to our members who may need it.

Slight gains in the trust in management were noted since 2018, and the overall job satisfaction actually remained consistent since that time. However, 42% of CSMLS members are expected to make a genuine effort to find a new job with another employer within the next year. This has increased from 34% in 2018.

Other metrics have indicated a decline in the quality of worklife since 2018. In particular, the concept “I have too much work to do everything well”, saw a sharp increase from 9% to 68% in 2021, which certainly raises concerns for both worker and patient safety. Its important to note that feelings that there are not enough people or staff to get all the work done span multiple professions (e.g. MLA, MLT, supervisor).

## Mental Health Resources

Additional information on mental health and specific resources for individuals, students, educators and employers can be found in the CSMLS Mental Health Toolkit.

[mentalhealth.csmls.org](https://mentalhealth.csmls.org)

Wellness Together is a free resource available 24/7 with virtual counselling, guided resources and peer support.

[wellnesstogether.ca/en-CA](https://wellnesstogether.ca/en-CA)

Anxiety Canada has resources geared towards children, youth and adults, including self-help information and community programs.

[anxietycanada.com](https://anxietycanada.com)

Another aspect of the study reveals a concerning trend when comparing the Kessler-6 results with the Quality of Worklife component. What we uncovered was that despite an increased awareness of the stress reduction programs that our members have access to, there was still a measured increase in overall stress levels by +13% since 2018. In 2021, 68% of respondents now feel that their work was stressful ‘often’ or ‘always’.

The emotional toll the pandemic has had on our members has been indicated, in part, by the Maslach Burnout Inventory component of the study. Respondent values for emotional exhaustion were relatively consistent between 2016 and 2018, but a +14% increase to 55% was indicated by the 2021 respondents.

This sentiment of exhaustion can manifest itself at the workplace in a number of ways. Respondents experiencing emotional exhaustion may relate to feeling any of the following:

- I feel emotionally drained by my work.
- Working with people all day requires a great deal of effort.
- I feel like my work is breaking me down.
- I feel frustrated by my work.
- I feel I work too hard at my job.
- It stresses me too much to work with people.
- I feel like I’m at the end of my rope.
- I feel tired when I get up in the morning.
- I have no patience by the end of my work day.

Emotions associated with personal accomplishment are attributes that provide an individual with a sense of pride, and positive aspects of personal accomplishment may manifest themselves at the workplace in any of the following ways:

- I accomplish many worthwhile things in this job.
- I feel full of energy.
- I am easily able to understand what my patients feel.
- I look after my patients’ problems very effectively.
- In my work, I handle emotional problems very effectively.
- I feel that I have a positive influence on people.
- I can easily create a relaxed atmosphere with my patients.
- I feel refreshed when I have been close to my patients at work.

CSMLS members, however, often experience the sent reduced personal accomplishment despite the vital role they play in health care, in particular, when compared to other health care professions. This sentiment increased slightly in 2021 in comparison to previous years. To help with this, our organization is continuing the Indigo Lab Coat campaign;<sup>1</sup> a national awareness campaign created to raise the profile of the contributions our members make each day within Canada’s health care system. Raising public awareness by highlighting the vital role of our medical laboratory professionals is a key effort on our part to contribute to the personal accomplishment of our members.

The part of the study that was based on the Mental Health Inventory produced mixed results. Feelings of ‘anxiety’ and ‘depression’ have increased since 2018, however the scores indicate an overall improvement since 2016 in these fields. Positive correlation with feelings of ‘behavioral control’ and ‘positive effect’ have increased by 10% and 14% respectively since 2018. For reference, feelings of positive effect are attributed to the following sentiments:

- daily life full of things that are interesting to the respondent
- feeling calm, peaceful, cheerful, or light-hearted
- relating to the sentiment of being a generally happy person

### Next Steps

With the participation of other related professions, the report is intended to be followed by an account of mental health status with allied health professionals included in the joint research project. At the same time, we are planning to use the information collected to devise and assess methods to continue to help our members resolve mental health issues, including stress and burnout, and other mental illness. ■

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BRANDON DJUKIC, BSc, PhD  
Researcher, CSMLS



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pH

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PO<sub>2</sub>

SO<sub>2</sub>%

Hct

Hb

MCHC

Na

K

Cl

TCO<sub>2</sub>

iCa

iMg

GLU

Lac

Urea

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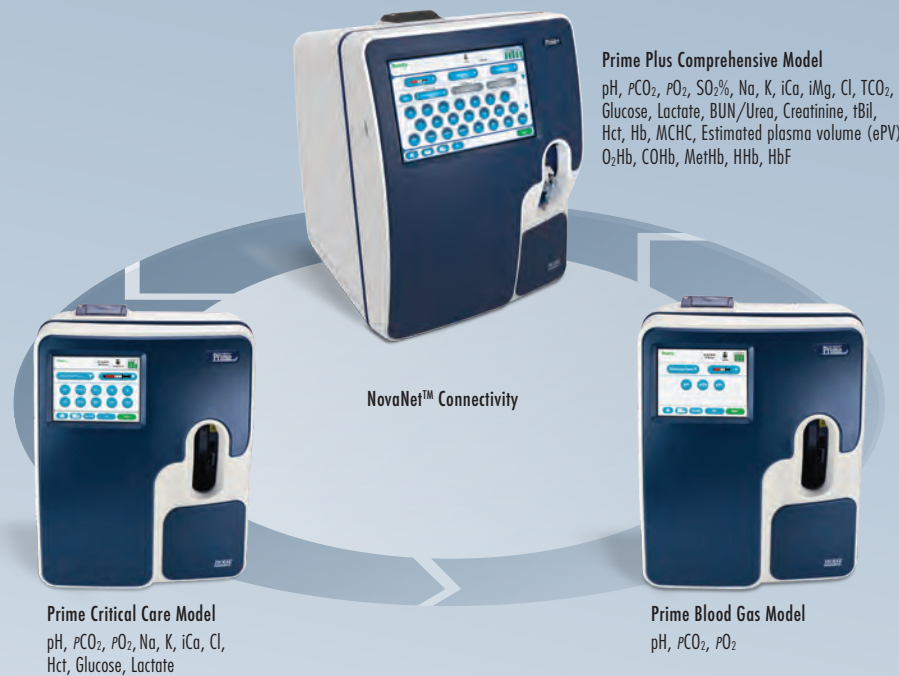
HbF

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# THANK YOU AND FAREWELL

The CSMLS thanks Nancy Bergeron, Kal Randhawa and Krista Urchenko for their dedication and service, as they finish their terms on the board of directors this year. Nancy began her work on the board as Director, Ontario in 2016, being elected to serve as Vice President, President, and now leaving the board as Past President. Nancy steered the society through the first year of the pandemic and brought an educator's perspective to the leadership role. While serving as Director, British Columbia/Yukon, Kal has dedicated hours of her time and effort to her committee and

board duties, always bringing a positive outlook and facilitating collaboration between all. Krista served as Director, Ontario, and lent her communications expertise to society committees and projects, using her skills to forge connections and show her pride in the profession through every action.

We look forward to the many ways in which Nancy, Kal and Krista will continue to support the society and the profession as engaged members and accomplished MLTs. Thank you for all you have done.



**Nancy Bergeron**

As my time on the CSMLS Board of Directors nears its end, I reflect that my six years started and ended with a bang: first, the notice that the Canadian Medical Association would no longer be responsible for the accreditation of educational programs, and now the COVID-19 pandemic — the year and a half of lockdowns, lineups, vaccinations and virtual meetings! Through it all, we never lost sight of our main goal: supporting you, the member.

I ran for the board because I wanted to give back to the organization that meant so much to me through my career. Becoming

President was such an honour, representing the membership of our great nation. It was not the year I expected, with the pandemic changing the way we did things, but it was still memorable and gratifying, thanks to the people I worked with.

The best part was the networking. I have many good memories of meeting peers from across the country through LABCON, Lobby Days and the various educational offerings I attended. It is amazing how fast we become friends when we get together. We're a small world unto ourselves, and I hope the future continues to provide ways for us to meet.



**Kal Randhawa**

It has been an honour to serve as Director, BC/Yukon for the past three years. I have been a medical laboratory technologist for more than 30 years, and it is true that the learning never stops. I have gained a better understanding and appreciation for the CSMLS's role in our profession as well as many invaluable experiences along the way.

A few of my favourite highlights include meeting members at local dinner and dialogue events, attending LABCON conferences (including last year's virtual adaption, LabConnect), contributing to the strategic plan validation, and advocating to various government officials during Lobby Week.

I never imagined my term on the board would run through a global pandemic. I am inspired and proud to see MLPs persevere and adapt to the changing world, even under stressful circumstances. Serving as a director during the pandemic has highlighted the commonalities and differences between provinces and the need for the CSMLS as the national voice for the profession. I encourage all members to volunteer with their provincial societies, and especially with the CSMLS, to learn how the organization works and how they can help.



**Krista Urchenko**

As my term as Director, Ontario comes to an end, I reflect on the last three years with a sense of pride and deep appreciation. It has been an absolute privilege to serve on the board of directors and help charter a path forward during an important phase for the society and its members.

I went into my role intending to not only “make a difference,” but to become a better lab community member by giving, in any and every way that I could, all while further progressing the mission of this vital organization. I thank my fellow board members for their leadership, guidance and

courage to advance important initiatives like remote proctor testing, advocacy efforts, and strategic validation. I look forward to following the growth of the society through the years to come.

This is a transformative time for medical laboratory sciences and health care as a whole. The pandemic has proven that laboratory professionals are the backbone to patient-centred health care and public health. As we move forward, we must continue to use our voices to elevate the profession and advocate for lab professionals and the recognition we deserve. 📌



## Celebrate Lab Week: April 10-16, 2022



National Medical Laboratory Week is just around the corner. It's the perfect time to shine a light on the work done by medical laboratory professionals across the country.

**Let's celebrate your hard work and help Canadians understand your role in health care.**

For ideas on how to celebrate and advocate during Lab Week, visit:

[labweek.csmls.org](http://labweek.csmls.org)



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# ADAPTING THE CERTIFICATION EXAM FOR STUDENT NEEDS

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For yet another year, the CSMLS Certification and Prior Learning Assessment Team constantly adapted to help as many new graduates as possible sit the National Certification Exam.

First piloted for the June 2020 exam due to the impact of the COVID-19 pandemic, remote proctored testing (RPT) has become a mainstay for the benefit of new graduates. Opening virtual exam seats through RPT removes the obstacle of travel and in-person seat limitations due to physical distancing requirements at brick-and-mortar testing centres. Thus, we plan to continue offering RPT for all of our future MLT General and MLA Exam sessions.

To deal with the impact of COVID-19 felt across the country, we also doubled the exam dates between August 2020 and

August 2021, to help as many graduating cohorts as possible. This stabilized the number of available testing seats through the pandemic year.

CSMLS also increased support during COVID-19 for students and exam challengers with virtual student presentations. CSMLS will continue to offer virtual student presentations on a monthly basis, allowing us to connect with even more students and answer questions on certification and membership each month. Students also have more RPT and exam-specific resources available to them. This includes the new CSMLS Exam Demonstration, or Test Drive, for both RPT and in-person testing, and a system requirement check to help RPT exam challengers ensure their devices are compatible ahead of the exam.

Learning from the successes and challenges of the year, we are making even more exam session changes. Beginning in 2022, the exam session dates will be expanded to five days long. Exam challengers will be able to choose one day within the five-day session that best suits their schedule.

Students and educators continue to be affected greatly by the pandemic. The CSMLS Certification and Prior Learning Assessment Team would like to thank and recognize each medical laboratory candidate, student and educator for your incredible work and perseverance. We will keep working to ensure the flow of newly certified professionals continues to fuel the work in labs across Canada.

## CSMLS BOARD OF DIRECTORS NOMINATIONS NOW OPEN

CSMLS is calling all those interested in running for the Board of Directors! It's your chance to take part in the governance of the organization. The next election, held this spring with the results announced at the 2022 Annual General Meeting (AGM), will be naming our incoming 2023 Directors for the following positions:

- Director, MLA
- Director, Alberta and Northwest Territories
- Director, Bilingual
- Director, Atlantic

If you are interested in running, please contact SierraP@csmls.org for more details. All submission requirements are due by February 23, 2022.

## SUPPORTING HEALTH CARE VACCINATION

As the COVID-19 pandemic continues to impact the lives and health of Canadians, vaccination efforts must continue.

CSMLS stands with HEAL, Organizations for Health Action, in calling for the vaccination of all health care workers. We support HEAL in this effort to maximize vaccination rates in the best interest of patient care, as well as health care providers' safety.

We are proud to have collaborated with this coalition of 40 non-partisan national health organizations, all dedicated to improving the health of Canadians.

You can find and read the full statement on HEAL's website, [healthaction.ca](http://healthaction.ca).

**In the interest of ensuring the delivery of safe patient care, HEAL asserts its support to maximize vaccination rates, including evidence-based public education, and encouragement for provincial/territorial governments mandating vaccination of all health care professionals against COVID-19. Mandatory vaccination of all healthcare professionals is an important measure to protect patients, communities, the health workforce and the capacity of the healthcare systems.**

## RESOURCE ON INDIGENOUS HEALTH: REVISED AND EXPANDED

As your national organization, we encourage each of you, our members, to learn more about Indigenous Peoples to drive reconciliation and provide better care. To help you do so, we have revised and expanded our online collection of contemporary resources on Indigenous Peoples.

The Resource on Indigenous Health webpage was revised and launched ahead of September 30, Orange Shirt Day and the inaugural National Day for Truth and Reconciliation. The webpage has been redesigned to include separate sections for easier navigation and to better hold the increased number of resources added to the page. You can now browse the separate sections to find resources on Indigenous history, providing better care to Indigenous patients, free educational courses, and more.



Visit the new webpage at [csmls.org](http://csmls.org)  
**> Professional Development > Expand Your Knowledge > Resource on Indigenous Health.**

# NATIONAL VOICE

As the National Voice of Canada's medical laboratory profession, CSMLS represents the needs and concerns of medical laboratory professionals when working with laboratory and health care-related organizations. The CSMLS Board of Directors, staff and volunteers attend meetings, conferences and events on behalf of CSMLS members and the entire medical laboratory profession.

We continue to take the necessary precautions to keep staff, collaborators and members safe, so many of the meetings we usually attend in person are now virtual or via phone. Not all of those events qualify for the National Voice; however, we have been working with media, policymakers and collaborators each month. Here is where your voice was heard recently.

## AUGUST

Nova Scotia Open Forum — MLAs  
VIRTUAL MEETING

Using Labs Wisely Steering Committee  
with Choosing Wisely Canada  
VIRTUAL MEETING

Based on our historical work and commitment to improving laboratory resource utilization in Canada, CSMLS has been selected by Choosing Wisely Canada (CWC) to be a member of the steering committee, expanding the Lab Wisely project to be part of the CWC family of health care initiatives.

We will be working with other health care organizations to plan and execute actionable strategies that aim to improve laboratory resource utilization in health care delivery centres across Canada, all based on Lab Wisely recommendations, the aggregate database and information. We are excited for the opportunity to contribute to such an important project, especially in the post-pandemic, and often resource strapped, health care realities.

OnTechU — Clinical Project Planning Meeting  
VIRTUAL MEETING

Organizations for Health Action (HEAL) COVID-19 Taskforce  
VIDEO CONFERENCE

International Federation of Biomedical Laboratory Science (IFBLS)  
World Congress, Copenhagen, DK: Pre-recorded Lab Wisely  
Presentation with Choosing Wisely Canada  
VIRTUAL PRESENTATION

August Virtual School Visit: Student Presentation  
VIRTUAL PRESENTATION

## SEPTEMBER

Accreditation Canada and Medical Laboratory Professionals'  
Association of Ontario — Provincial Competencies for MLA  
VIRTUAL MEETING

HEAL COVID-19 Taskforce  
VIDEO CONFERENCE

HEAL Quarterly Meeting  
VIRTUAL MEETING

Using Labs Wisely Steering Committee with Choosing Wisely Canada  
VIRTUAL MEETING

The Michener Institute of Education at UHN Program Advisory  
Committee (MLT General, Cytology) — Presentation on the State of  
Diagnostic Cytology in Canada  
VIRTUAL PRESENTATION

## OCTOBER

Social Media and Your Professional Reputation — Presentation to Nova  
Scotia Community College  
VIRTUAL PRESENTATION

HEAL COVID-19 Taskforce  
VIDEO CONFERENCE

CSMLS/CAMRT/Sonography Canada — Joint Mental Health Presentation  
to Canadian Network of Agencies for Regulation (CNAR)  
VIRTUAL PRESENTATION

Equal Canada: Program Council Meeting  
VIRTUAL MEETING

Communication and Generational Diversity — Presentation to Institutet  
för biomedicinsk laboratorievvetenskap, Stockholm, Sweden  
VIRTUAL PRESENTATION

October Virtual School Visit: Student Presentation  
VIRTUAL PRESENTATION



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