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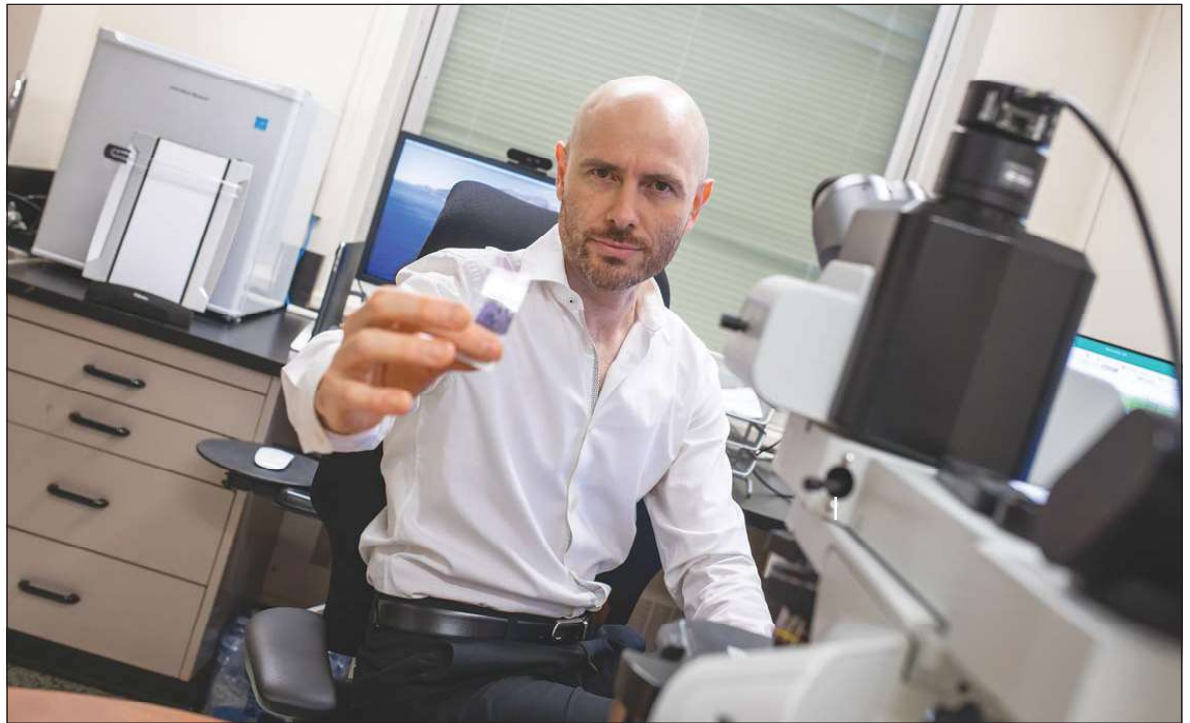


PHOTO: COURTESY OWEN THOMAS, HAMILTON HEALTH SCIENCES

## Hamilton Health Sciences adds AI to pathology

Dr. Clinton Campbell, a pathologist at Hamilton Health Sciences, is leading a one-year-long project to digitize slides and apply machine learning to help doctors better detect tell-tale signs of disease. He and his colleagues are focusing on blood and marrow pathology slides in this test, and applying machine learning technology to blood disorders like leukemia, lymphoma and myeloma. **SEE STORY ON PAGE 4.**

## Mackenzie Health becomes a leader in digital pathology

BY JERRY ZEIDENBERG

**R**ICHMOND HILL, ONT. – Mackenzie Health, a technologically advanced hospital that has already achieved a HIMSS EMRAM Level 7 ranking, the top tier, has taken another step forward in its “smart-hospital” strategy with the launch of a digital platform for pathology.

“We’re one of the earliest adopters of digital pathology in Canada,” said Richard Tam, executive VP and chief administrative officer at Mackenzie Health. “This is going to lead to breakthroughs in timely diagnosis.”

Pathologists typically examine tissue samples in cases of cancer and other serious diseases. The sooner the referring doctors receive a diagnosis of the tissue sample, the faster they can start treating their patients.

Currently, in most hospitals, pathology cases are examined using glass slides and mi-

croscopes, by pathologists inside the hospital. Often, they’re sent to outside pathologists when a second opinion is needed or when an in-house pathologist with the required sub-specialty is not available.

Unfortunately, the process of sending slides by courier and receiving a diagnosis can take days or even weeks. It’s time-con-

**“This is going to lead to breakthroughs in timely diagnosis,” said Richard Tam.**

suming to package up the slides, send them off by taxi or courier, and wait for the pathologists to finish their readings and reports.

However, the practice can be transformed by a digital platform – where the samples are digitized by a special scanner and sent to the experts via online networks. Once online,

the process of sending samples to a specialist – either in-house or at another hospital – and receiving a diagnosis can be reduced to a few hours.

“The digital pathology network is an enabler of faster, more effective diagnosis and treatment,” said Amir Soheili, program director, Clinical Support Services, at Mackenzie Health.

“Glass slides can also get damaged or lost,” explained Soheili. And they can only be sent to one site at a time, where they are examined under a microscope by a single pathologist at a time.

But when the samples are digitized, they can be rapidly sent to several pathologists simultaneously, who could be anywhere in Ontario – or worldwide.

Not only is speed a factor, but so is the accuracy of the diagnosis. On this score, it helps

CONTINUED ON PAGE 2

# Canadian expertise in virtual care now deployed in hospitals across the UK

Ottawa-based Aetonix developed a device and platform keeping ICU patients in touch with their loved ones.

BY DIANNE DANIEL

As ICUs in the U.K. surged to capacity at the height of the COVID-19 pandemic, it quickly became evident that life-saving medical intervention wasn't the only critical care required. Giving families and friends under lockdown a chance to see their loved ones, and in some cases whisper a final good-bye, was equally vital.

Thanks to the rapid response of a unique trans-Atlantic partnership, those face-to-face connections not only happened, they flourished – virtually.

It started with a simple idea. Louise Rose, PhD, a Critical Care Nursing professor at the Florence Nightingale Faculty of Nursing, Midwifery and Palliative Care, King's College London, was observing family members desperate to connect with isolated COVID patients while busy ICU staff had no way to facilitate calls other than through personal smartphones.

Recalling her collaboration with Aetonix Systems Inc., a Canadian virtual care start-up she had been working with prior to moving to the U.K. in January, she immediately thought of the company's aTouchAway communication and information sharing platform as a possible solution.

She took her idea to Dr. Joel Meyer, a critical care consultant at Guy's and Thomas' Hospitals in London. As it happened, Dr. Meyer had already been in-



vestigating secure virtual visits for the ICU and in late March, they reached out to the Ottawa-based company. Within days, the Life Lines ICU project was launched, a philanthropic endeavour to connect families to their loved ones.

"Looking back on it, it was crazy," said Dr. Rose. "We were working 16 hours a day and we were very lucky at that same time that things came together."

Aetonix wasn't set up to do business in the U.K., but when founder and CEO Michel Paquet received the call, he says he knew he needed to help.

The company connected with Amazon Web Ser-

vices to quickly scale-up its cloud-based environment overseas. Its team then configured a simple-to-use ICU communication care pathway, and by April was onboarding hospitals onto aTouchAway at a rate of 10 per week. The goal was to make it extremely simple and efficient for busy ICU staff to connect people, said Paquet.

"It sounds easy, but when you hear Dr. Meyer explain what an ICU looks like in a rush like this, when they're all loaded with PPE and gloves and masks, and panic is hitting the roof, you don't have time to install an app, sign in with an account and press a few buttons," said Paquet. "It has to be go, go, go!"

Life Lines is a unique partnership of clinicians, academics, companies and charities. Backed by King's College London, King's Health Partners, the True Colours Trust, the Gatsby Charitable Foundation, British Telecom (BT), Google, Samsung and MobileIron, the initiative is now providing 4G-enabled tablets to more than 170 ICUs within the UK National Health Service (NHS).

Tablets are pre-loaded with the scaled down version of aTouchAway to enable secure communication between COVID patients and their loved ones, and each NHS organization is provided with

ILLUSTRATION: LINDA WEISS

## Ontario virtual care clinic sees demand 'go through the roof'

Another Ontario-based virtual care service that quickly ramped up in March when COVID-19 cases were peaking is Ontario Telemedicine Network (OTN), now part of the new Ontario Health government agency. An early provider of virtual care services, OTN has provided the opportunity for either direct-to-patient or hosted e-visits for many years.

Almost overnight, direct-to-patient visits surged from 350 concurrent events per day to 2,500 per day, said OTN vice-president Technology and Services Sharon Baker, eventually leveling off at about 2,000 per day.

"We had prepared but we just hadn't estimated how significantly our volumes would increase and how quickly that would happen," said Baker. "We had to do some significant and quick adjustments to add capacity in order to meet demand, but we were able to do that."

According to OTN's COVID update, 22,000 new account requests were made between March 1 and the end of May, with 740,000 virtual visits conducted. When hosted visits – where patients visit a medical site close to them to connect with a remote care provider – dropped off at

the height of the pandemic due to lockdown restrictions, direct-to-patient consults "went through the roof," said Baker, prompting several partners to join together to launch the Ontario Virtual Care Clinic (OVCC).

A collaboration between the Ontario Medical Association, OntarioMD, Ontario Ministry of Health and Ontario Health, with funding provided by Canada Health Infoway, OVCC is staffed by roughly 200 licensed Ontario physicians.

Novari Health of Kingston, Ont., is providing the virtual waiting room capabilities through its eVisit virtual care software system, and quickly created a COVID-19 Emergency Response Team to work with OTN to design, build, test and deploy the virtual clinic.

In a statement, Novari Health president John Sinclair said: "Never in all my years have I witnessed a team come together with such a sense of purpose, drive and determination to improve access to care ... our team accomplished things in a few weeks that I previously would have thought impossible."

OVCC is designed to treat non-urgent health concerns such as colds, cough, flu, allergies, women's

health issues, chronic disease management, pain, urinary tract infections, rash and medication questions. It is not intended to replace regular care, but to allow access to primary care physicians from the comfort of home at a time when everyone is being extremely vigilant about reducing public outings to stop the spread of coronavirus.

Patients who access the service at [www.seethedoctor.ca](http://www.seethedoctor.ca) require an On-

**Almost overnight, virtual visits between doctors and patients surged from 350 to 2,500 per day.**

tario health card, internet access, email address, mobile phone number to receive text notifications, and a device with a camera and microphone. When they sign in, they enter a virtual waiting room and are advised on their estimated wait time to see a physician.

The speed with which the virtual clinic launched is a direct result of ongoing work to advance virtual care in Ontario. OTN had previously conducted five proof of concept pro-

jects across the province to evaluate virtual visits between patients and providers, including how to bill for virtual visits.

In March, the province introduced temporary virtual care billing codes, which apply to both telephone and video visits, and a more permanent policy change is being negotiated.

"It's really about using integrated virtual care as one of the modalities, based on clinical appropriateness," said Baker, adding that the telephone still has a role to play. "We've been saying for years that the future of healthcare is virtual care, but the future arrived on about March 2."

Not all care providers who sign up with OTN are conducting virtual visits. Baker said there's a significant cohort that have embraced it for the majority of their patient visits while others are conducting sporadic video visits, and a small group haven't held any. Meanwhile, OVCC continues to grow.

"COVID was the burning platform to force people to try it, because what else was their option? Their option was not to have care," said Baker, "and now that people have seen the look and feel, I think it will be very hard for us to go back."

a digitally secure dashboard to enrol their patients.

BT centrally manages tablet configuration and performance, tracking the tablets remotely so they can be disabled if they leave the hospital premises. Invited family members sign an end-user licence agreement with Aetonix which states that their contact details will be permanently deleted when the patient is removed from the platform.

In order to make ICU virtual visits as seamless as possible, Aetonix kept functionality to a bare minimum. When an ICU staff member wants to initiate or schedule a call, they simply pick up the next available tablet, search for their patient in the dashboard and click on the family member listed.

Because the tablets were deployed at the height of U.K.'s COVID surge, when entire ICUs were devoted to treating COVID patients and some hospitals were forced to set up multiple ICUs, there was no time for training.

"We literally delivered tablets into the ICU with a set of instructions as to how to use aTouchAway," said Dr. Rose. Now that she has had time to conduct follow up, she added, the overriding message is "it's so easy to use."

Not only do the virtual connections allow for tough good-byes to be said, but for those who recover, there are often virtual parties, pet visits and in one instance, even a successful marriage proposal.

"There's always been a need to enable a way for families to be present in the ICU without being physically there," said Rose. The pandemic was the driving force to quickly ramp up secure ICU virtual visits, but now that they're happening, the goal is to keep the option in place. "COVID has calmed down somewhat in the U.K., but what we're seeing now is that some centres are transitioning to using this as an ongoing family visiting platform," she said.

Moving forward, Life Lines is working with Aetonix to develop a critical care recovery pathway, possibly adding a diary function so notes taken by clinical staff while an unresponsive patient is on a ventilator can be shared with family members.

## Tech allows nurses to make virtual rounds

CONTINUED FROM PAGE 10

any hardware aside from their existing smartphones, although the COVID-19 patients were also provided with an oximeter, which measures oxygen saturation through a non-invasive fingertip device.

Working with the Ontario Telemedicine Network (OTN), the region didn't have to go through a request for proposals (RFP) process, as Plano, Texas-based Vivify Health has been a vendor of record for OTN's remote patient monitoring programs since 2017.

Vivify's Remote Patient Monitoring (RPM) platform boasts more than 90 clinical and engagement pathways. Users can modify the content, or create their own custom pathways.

In its 10-year history, Vivify claims a record of 97 percent patient satisfaction, 65 percent readmission reduction and 8.2x return on investment.

"I'm a big believer that if we want to learn from this crisis, it's that virtual care really needs to offer a complete service," said Paquet. "That's my vision and that's where we're leading our team. How do we enable professionals and patients to be guided for their disease or condition so that in the future if such a thing happens, it's okay, we're all organized?"

In addition to the work it is doing with

Life Lines across the ocean, Aetonix is also providing multiple virtual care pathways to healthcare providers in Canada. Each pathway developed includes assessment material, a workflow to guide the care team, patients and other members of their circle of care on what actions will be taken when, and educational material to further their understanding of the specific condition.

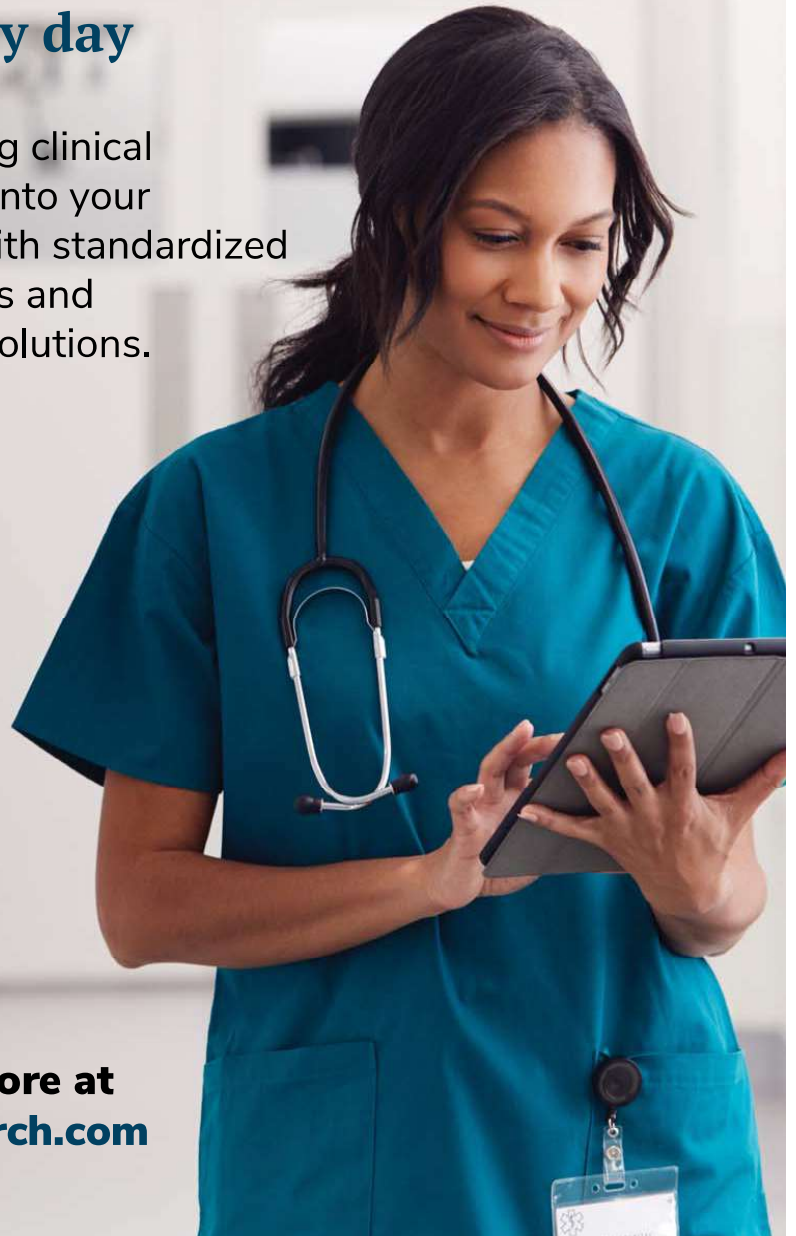
Pathways are currently available for

chronic obstructive pulmonary disease (COPD), diabetes and multiple condition care, as well as for staff screening for COVID-19. A new initiative is also providing a mechanical ventilation care pathway to support patients and parents of young children who need to use ventilation equipment at home. As Paquet explained, pathways can be as simple or as complicated as necessary, depending on the need.



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