



CANADIAN Healthcare Technology

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Privacy Commissioner

Ontario Privacy Commissioner Patricia Kosseim noted during a conference on healthcare privacy and security that 50 percent of the healthcare complaints to her office involve improper faxing. **Page 4**

Remote X-rays

Patients in remote parts of Canada are often unable to obtain basic medical services like X-rays. Technologist Anne Hixon has been working to bring a new solution to them. **Page 6**

EHR interoperability

Hospitals, long term care centres and their EHR vendors are finally succeeding in creating interoperable systems through the use of collaboratives. "This has been a game changer," observed Tim Pemberton, CIO at Queensway Carleton Hospital. **Page 16**



PHOTO: KEVIN VAN PAASSEN, SUNNYBROOK HEALTH SCIENCES CENTRE

Ottawa to invest \$22.7 million in DI innovation

The federal government announced funding of \$22.7 million for 14 small and mid-sized companies that are innovating in the areas of diagnostic imaging, image-guided surgery and artificial intelligence. The investments will be managed through Sunnybrook-led INOVAIT, and will be further topped up by the partners. Pictured at the announcement is Adam van Koeverden, right, a federal parliamentary secretary. **SEE STORY ON PAGE 6**

NS improves care by deploying Command Centres

BY NORM TOLLINSKY

The Nova Scotia Health Authority is implementing GE Healthcare's Command Centre Software Platform at the Queen Elizabeth II Health Sciences Centre (QEII) and hospitals across the province. The technology will provide healthcare administrators and clinicians with a real-time view of capacity utilization, problem spots, and opportunities for process improvements.

The NSHA is the second healthcare organization in Canada to deploy the GE solution and the first to do so province wide. Humber River Hospital in Toronto was an early adopter, acquiring the software in 2017. Providence Health Care in Vancouver is now beginning its implementation for St. Paul's Hospital, Mount Saint Joseph Hospital and Holy Family Hospital.

Work on the phased deployment in Nova Scotia started in January 2022 and by June, the system was live with the first of six "tiles", the Capacity Expediter, at QEII.

Capacity Expediter is a web-based app that provides automated, real-time visibility to the current and near-term status of beds.

Staff and clinicians can gain a picture of bed capacity and patient flow with just three mouse clicks.

It considers not only patients in beds, but also patients assigned a bed and waiting for them, patients unassigned but needing a bed, outbound transfers, confirmed discharges, and beds blocked for maintenance, staffing, infection control or other reasons.

"We now have an up-to-date, 10,000-foot

view of true bed capacity across the QEII Halifax Infirmary and Victoria General campuses and the ability to drill down into specific facilities, programs or individual patient care unit, with just three mouse clicks, saving staff several hours per day manually gathering this information and preparing reports," said Gord Peckham, who served as Senior Director, C3 Operations during the initial year of the program.

With the foundation in place, three more CCSP components were deployed for QEII: Patient Manager, Boarders Expediter and Inbound Transfers.

These Apps help inpatient unit teams, allied health, medical imaging and C3 expediter staff stay in sync by providing awareness about which patients are where, key dates such as expected discharge date and

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Nova Scotia improves hospital care by deploying Command Centers

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scheduled procedure date that require action to ensure patient readiness, which patient care tasks have been completed and which need attention, and which patients are at elevated risk requiring intervention due to capacity pressures.

In addition to rolling out Patient Manager to additional hospitals in each zone, ED Expediter and Surgical Growth tiles will be implemented at the QEII in the coming months to support access and flow for emergency and surgical patients, and flagging patients at risk for long waits, delays in care, cancelled procedures and excess days.

Future tiles will accelerate the patient transfer process and provide a real-time, 15-day forward-looking view of OR capacity utilization, flagging patients at risk of cancellation, delay or excess inpatient days.

"Previously, patient flow managers put together manual reports for leadership teams across the site so decisions could be made, and actions taken around access and bed allocation," said Peckham. "However, these reports would take hours to produce and by the

time they were released, some of the data was no longer accurate." The real-time data extracted from QEII's STAR software and other systems eliminates this problem.

As an example, Peckham cites the hypothetical case of a delayed CT scan that's holding up a patient's discharge. "Before, staff at the unit level may have tried to expedite the scan on their own. Now, there's a daily huddle at 10 am in the C3 where these delays are highlighted and escalated with staff from diagnostic imaging in attendance."

Over 300 hospitals use GE HealthCare's Command Center software, including 22 health systems in the US, Canada, UK and the Netherlands. Whereas the scope and intent of each program might vary slightly, they all have in common the outcomes of reducing caregiver's stress (keeping care team members in sync with the latest information about each patient, resolving discharge and other barriers, spotting clinical risks before they escalate, etc.)

The platform also saves caregivers' precious time by reducing the time spent searching for information, creating reports, making phone calls, and huddling to report out on completed activities.



The Care Coordination Centre at Queen Elizabeth II Health Sciences Centre in Halifax features a video wall that displays data from the Command Centre software. It monitors patient access and flow. Front (left to right): Jenna Goobie (NSH), Marianna Johnson (GEHC), Belinda Osborne (NSH), Linda Hutchins (NSH), Kim McMahan (NSH). Back (left to right): Kelsey Cuvelier (NSH), Heather Leither (NSH), Diana Henry (NSH), Holly Monk (NSH), Jodi Barkhouse (NSH), Pamela McKinnon (NSH), Kaitlin Berkvens (NSH), Paul Jarvis (GEHC).

Patients are benefitting as a direct result. "Boards Expediter has helped us reduce risk for admitted patients waiting in the Emergency Department and is helping uncover barriers to transition. Similarly, Pa-

tient Manager has shown us ways we can strengthen discharge planning, optimize multidisciplinary rounds, and expedite transfers to social care," said Jonathan Veale, Interim Senior Director, C3 Operations.

Zahava Uddin, managing director, GE HealthCare Command Centers, describes the architectural differences as well as the interconnectedness between EMRs and Command Center software.

"If you consider EMR systems and other workflow systems as Level One applications in which new patient information is either keystroked in by front line staff or generated by the system itself, then GE HealthCare CCSP is a Level Two application that uses data in Level One systems to bring into focus things that need attention now.

"CCSP was built to constantly ingest real-time streaming messages from various systems, process, parse and persist those messages in sub-seconds, organize them into a data model, constantly re-compute algorithms running against that data model, and serve nurses, allied health staff, physicians, flow managers and others," she said.

Today, CCSP is ingesting data from Nova Scotia Health's information systems, including STAR, Meditech, Cerner Millennium, Allscripts Surgical Manager, PHS and others.

In addition to saving caregivers' time and improving patient care, the technology is helping Nova Scotia Health teams connect and communicate better by providing actionable insights that transcend any one role.

It is also reducing the cognitive burden on staff who work hard at searching for basic information, keeping track of sticky notes, or connecting the dots themselves.

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Privacy panel identifies threats from faxes, snooping, cyber-attacks

BY JERRY ZEIDENBERG

Ontario intends to eliminate 80 percent of the faxing done in the healthcare system over the next five years, says Michael Hillmer, ADM, Digital and Analytics Strategy Division, Ministry of Health. That level of faxing is made up of clinicians using the error-prone technology for prescriptions, referrals, lab and diagnostic imaging orders.

"If you can have easy-to-use apps, you can phase out faxes over this period of time," he said, in a panel discussion at the Ontario Information and Privacy Commission's conference titled "Building Trust in Digital Healthcare." The session was held in Toronto at the end of January.

In her preliminary remarks, privacy commissioner Patricia Kosseim observed that 50 percent of the complaints about healthcare privacy breaches made to her organization in 2021 stemmed from misdirected faxes. Her agency recently completed a report which concluded that faxes have no place in Ontario's healthcare system.

At the same time, she acknowledged that faxes are difficult to eradicate from the system because they are so deeply entrenched in everyday use by clinicians. "Aging the fax is not so easy," she said.

Kosseim emphasized that the IPC is ready and willing to work with organizations to get rid of faxes. Faxed documents are often sent to the wrong place; even when they're sent to the right place, they can be read by the wrong people.



Privacy Commissioner Patricia Kosseim said most of the complaints she receives concern improper faxing.

Kosseim said the Ontario IPC is also working to reduce snooping of electronic records that occurs within healthcare centres and cyber-attacks that come from without. Both forms of intrusion prey on the health records of patients and ultimately reduce patient trust in the healthcare system.

"Without trust, patients will not be forthcoming about their conditions," said Kosseim. And of course, if they're not truthful about their problems, caregivers will not be able to treat them effectively.

What's more, if patients don't trust the system, some won't seek help in the first place. And others won't participate in research studies, which undermines the ability to create future therapies.

"Trust takes years to build and seconds to break," she noted.

Wendy Lawrence, chief risk, legal and privacy officer, St. Joseph's Healthcare Hamilton, commented on her organization's efforts to improve the security of patient information and to enhance patient trust.

St. Joe's was reacting to a review by the Information and Privacy Commission, which had noticed an unusually high number of reported incidents in the hospital's 2020 annual statistical report. All health information custodians in Ontario are required by law to submit these reports to the IPC annually.

Statistical reports submitted by St. Joseph's Healthcare Hamilton to the IPC

for the year 2020, showed 1,006 unauthorized disclosures of personal health information (PHI), with 981 of those disclosures due to misdirected faxes.

Given the large number reported, the IPC opened a file to gather more information about these incidents. In response to the IPC's request for additional information regarding the circumstances of the misdirected faxes, the hospital conducted a comprehensive review of all the reported instances of misdirected faxes.

The introduction of a centralized fax incident reporting tool at St. Joe's had resulted in an increase in the number of fax-related mishaps reported and enabled the hospital to identify the cause of misdirected faxes.

As a result of the hospital's review, it explained that the number of misdirected faxes was over-reported to the IPC in 2020. To clarify, it advised that there were 708 incidents in total and that 563 resulted from primary healthcare provider contact information being changed and not updated in its system. Another 124 instances of the misdirected faxes were caused by hospital error.

In response to the review, the hospital made great strides in reducing not only the risk of sending faxes to the wrong individuals, but it also curbed its use of this outdated and insecure communication technology.

It has since put in place an "e-referral first" policy for referrals from primary care providers and is actively working with other health system partners in the region to reduce overall use of faxes in favor of

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Nova Scotia uncovers more than 1,200 privacy breaches in probe

HALIFAX — As part of an ongoing investigation, more than 1,200 privacy breaches were discovered at Nova Scotia Health. The effort began in August 2020, when the organization discovered eight employees snooping into the electronic health records of people associated with the mass casualty events of April 18 and 19, 2020.

Further investigation revealed that the workers had looked into many patients' records over many years, including friends, colleagues and acquaintances, when they were not providing care to these people. "They looked up friends, colleagues, and acquaintances when they were not providing care to these people," a release from the privacy commission said.

In total, the probe uncovered more than 1,200 privacy breaches affecting 270 people, according to a news release from the Nova Scotia privacy commissioner's office.

The eight employees included a booking clerk, a booking and registration clerk, a ward clerk, a nurse navigator, a nurse practitioner, an admitting clerk, a secretary at an outpatient clinic and a secretary at a regional hospital.

The penalties against the employees

ranged from verbal warnings and one-day suspensions to termination.

In some cases Nova Scotia Health did not properly follow up on the breaches or ignored its own policies, Privacy Commissioner Alicia Ralph said in her report on the situation.

The nurse practitioner's access to electronic systems was never suspended and there was no additional auditing of the NP's activities, a contravention of policy.

The admitting clerk had access to health records throughout the NSH investigation. The worker was eventually fired but continued to have access to NSH systems three days after the termination.

The secretary at the outpatient clinic, who was responsible for 612 privacy breaches affecting 146 people, was fired on June 19, 2020, but their access to NHS systems wasn't cut off until July 6, 2020.

The booking clerk, who was responsible for 524 breaches affecting 101 people, was fired on Aug. 4, 2020.

The commissioner did not release locations of the places where the breaches occurred.

Nova Scotians have no choice but to trust NSH with sensitive personal health information if they are to receive healthcare, the release said.

Ralph determined that while NSH does have privacy-relevant policies and protocols, they are at times outdated, unclear and in many cases not followed.

"Robust policies, compliance monitoring, and strong training along with enforcement of penalties for non-compliance are essential to protecting the privacy rights of Nova Scotians," Ralph said in the release.



Alicia Ralph

In 2016, NSH implemented a provincial privacy office with a privacy manager leading a team of four officers, one for each health zone. But Ralph found weaknesses in NSH's response to the breaches. She said policies, training and penalties are not always enough to deter some employees from snooping. NSH should take steps to revamp its electronic information systems so only those who have an active clinical relationship are allowed to view that patient's medical information.

"If you can't access the information, you can't snoop into it."

Ralph made 12 recommendations to NSH that aim to correct weaknesses in its information practices with the goal of preventing future privacy breaches.

The release said NSH is considering the report "and has preliminarily indicated that it intends to accept most of the recommendations. NSH will have 30 days to formally decide whether it will follow Commissioner Ralph's recommendations."

In general, she wants NSH to strengthen its privacy management program.

"Privacy should be a core organizational value baked into day-to-day operations."

In an emailed statement, NSH offered an apology to the patients whose information had been compromised.

"This breach added further unnecessary harm to the families of those who lost loved ones in April 2020. We deeply regret that this breach took place. It is essential that Nova Scotians trust us to protect their personal health information. It is shared with us at a time when you're at your most vulnerable and should never be subject to the curiosity of others."

The snoopers' actions do not reflect its corporate culture or the behaviour of most of its staff and physicians, the statement said.

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Bringing portable X-ray imaging to Canada's remote communities

BY ANNE HIXON

When it comes to accessing healthcare services, Indigenous peoples are considered the most marginalized in Canada, with the poorest health outcomes and the most barriers. One example, a joint study released last year by the First Nations Health and Social Secretariat of Manitoba and the Manitoba Centre for Health Policy, demonstrated that decades of poor health outcomes have resulted in a life expectancy gap of 11 years between status First Nations people and all other Manitobans. Shockingly, the 11-year gap is growing.

This is primarily due to lack of access to healthcare that has been allowed to develop over decades. First Nations reserves are often remote and far from major cities, in which there is better access to healthcare.

However, in my role as a Medical Radiation Technologist specializing in Mammography, I have had a unique perspective. I provided cancer screening in a hospital setting near the Mississauga of the Credit First Nation and Six Nations of the Grand River First Nations Reserves, and I also worked on the Screen for Life Coach, a cancer screening mobile coach bus that provides breast, cervical and colorectal screening services directly on Reserve.

This program uniquely partners with Indigenous community health promotion professionals who encourage and support women to use our services. I recognized that the first few on-site visits were unsuccessful in number of cancer screenings, but many women would stop in for a tour.

In time, our numbers started to rise and over the years our presence on these two Reservations has been extremely positive,



Anne Hixon has been training nurses and care-givers in remote locations on how to use portable X-rays.

with many new clients. In contrast, as a mammography technologist at a nearby hospital, I noticed the ratio of Indigenous patients is very low, considering the geographical proximity of the Reservation. In contrast, most Indigenous women appear frightened and vulnerable.

In reflecting on the contrasting presentations of patients, a few thought-provoking questions were made. The Indigenous women who access cancer screening services on the mobile coach were relaxed and are eager to use the provided services and actually commented to me that they feel supported and safe, whereas the women in

the hospital setting appeared extremely hesitant to use the services.

From my personal experience, bringing technology into these communities does in fact work and I have witnessed the profound effects of providing this type of care into an environment where patients feel safe, valued and respected.

In December 2020, I joined FUJIFILM, where I was introduced to the FDR Xair, an ultra-portable, X-ray unit that weighs only 3.5 kg and is totally battery operated. Its design means it can be easily transported into remote communities that may otherwise not have imaging available, es-

pecially those with limited access to electricity. Using its battery, the portable unit can create 100 images on a full charge.

The FDR Xair is used in combination with FUJIFILM's DEVO III Detectors that incorporates the patented image processing technologies Dynamic Visualization and Virtual Grid. They allow users to create optimum images with very low dose, especially with the low 450-watt output of the FDR Xair.

In addition, by incorporating AI technology, healthcare providers in remote areas can make decisions based on imaging results that are comparative to urban, full-service hospitals.

In reflecting on the Indigenous patients who are unwilling to leave their own communities to access healthcare, the FDR Xair with AI technology becomes a game-changer. It dramatically changes how healthcare is accessed in rural Canada in a variety of clinical settings.

In August 2022, I had the opportunity to participate in an initiative to deploy the FDR Xair into three primary healthcare centres that are part of the Peter Ballantyne Cree Nation Health Services Inc., based in Prince Albert, Saskatchewan.

The team consisted of myself as a FUJIFILM product manager, Medical Imaging, as well as Dr. Deepak Kaura, a radiologist and chief medical officer of start-up company Synthesis Health, and Genevieve St. Denis, preventative health manager – PBCN. It was a true collaboration of the right people at the right time and place.

TB is an infectious disease caused by bacteria that mainly affects the lungs and is preventable and curable. Active TB is a serious infection that can be spread to others by

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INOVAIT announces \$22.7 million for diagnostic imaging innovators

TORONTO – INOVAIT and the Government of Canada have announced a major investment in the field of image-guided therapy, with up to \$22.7 million in contributions committed to 14 commercialization-focused R&D projects under INOVAIT's Focus Fund program.

It's the second round of funding announced by the organization. The first round seeded 46 organizations, all led by small- and medium-sized enterprises (SMEs), with around \$125,000 apiece. The newest investments were given to groups that have met all their milestones and appear to have the greatest chances for success in the marketplace.

The average investment is about \$1.5 million to \$2 million each, for a total of \$22.7 million. This represents one-third of the total project expenditures; the project partners are expected to raise the remaining two-thirds.

"\$22 million is a substantial amount of money, it's not just a drop in the bucket," said Raphael Ronen, co-executive director of INOVAIT, noting that the total economic activity this investment will spark,

when the partners add their share, is over \$68 million. "We feel this investment will really help move the needle when it comes to making an impact in the image-guided surgery and therapy sector."

Established in 2020, INOVAIT is a pan-Canadian network hosted at Sunnybrook Research Institute – supported by the Government of Canada's Strategic Innovation Fund – which aims to advance image-guided therapy to ultimately deliver better healthcare for Canadians. The network currently includes nearly 70 member organizations from across Canada.

The new Focus Fund investment will support three-year projects at the intersection of advanced imaging, minimally invasive surgery and artificial intelligence. These innovations will use advances in data sciences and artificial intelligence to enhance image guidance and corresponding therapies.

The resulting technologies have the potential to greatly improve patient outcomes and reduce the overall cost of healthcare in Canada.

All 14 awarded projects are led by Canadian SMEs and involve 19 SMEs,

three multinational enterprises, nine academic institutions, and four not-for-profit corporations.

These organizations will invest an additional \$45.4 million into these projects over three years, for a total influx of \$68.1 million into the sector.

The Focus Fund contributions will help attract investments into Canadian technology companies, create jobs for

When the partners add their share, the total investment in the DI and surgical projects will rise to over \$68 million.

highly qualified personnel, and transform the country's image-guided therapy sector into a global leader.

INOVAIT encourages a collaborative approach to R&D, with project partners spanning Alberta, British Columbia, Newfoundland and Labrador, Nova Scotia, Ontario, Quebec, and Saskatchewan.

There's a strong Canadian component to the partnerships these companies have formed with larger firms, with

more likelihood of the technologies and intellectual property they've developed staying in Canada.

"At Sunnybrook, we've seen how strong collaboration and partnership can advance image-guided therapy technologies from discovery to the medical marketplace," said Dr. Kullervo Hynynen, INOVAIT co-executive director and vice president of Research and Innovation at Sunnybrook Research Institute. "The Focus Fund support will accelerate that momentum across the country, advancing new medical solutions, encouraging further investment in image-guided therapeutics and elevating Canada's use of artificial intelligence in image-guided therapy sectors."

"Healthcare professionals need the best tools available to give Canadians the best treatments possible," said Adam van Koeverden, parliamentary secretary to the Minister of Health and to the Minister of Sport. "Image guided therapy has led to great progress in the medical field over the recent years. Today's recipients of the Focus Fund will help position Canada and its industries as world leader in this sector."

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AI-powered ultrasound helps rural clinicians in BC make decisions

BY NORM TOLLINSKY

An Intelligent Point-of-Care Ultrasound Network (PoCUS) that went live midway through 2021 is revolutionizing rural medicine in British Columbia. Led by Providence Health Care and the Digital Technology Supercluster in partnership with Change Healthcare, Clarius Mobile Health, the University of British Columbia and the Rural Coordination Centre of B.C., the network consists of 90 point-of-care ultrasound devices in remote, rural and Indigenous communities throughout the province.

Most of the communities served had little to no diagnostic imaging capabilities, requiring clinicians to send patients to a referral centre for an accurate diagnosis if they weren't sure what the problem was. However, transferring a patient by air from northern B.C. to a Level one care centre can cost up to \$20,000, an expense that can be avoided if a Clarius point-of-care ultrasound device indicates a condition that can be treated locally.

Several artificial intelligence algorithms were developed by the University of British Columbia as part of the project to assist with image interpretation, especially for nurses with little to no training. The project also included the development of a Web-based portal by Change Healthcare for remote image sharing and guidance.

An algorithm for cardiac scans rates the quality of the view that a practitioner generates and performs an ejection fraction calculation measuring the volume of blood the heart ejects with each beat. A second algorithm for obstetrics automatically calculates the gestational age of a fetus in the first trimester, avoiding unnecessary travel from rural B.C. communities. During the pandemic, a third algorithm was developed to diagnose COVID infections.



Dr. Oron Frenkel, an emergency physician at Providence Health Care and clinical lead for the PoCUS project, uses the Clarius point-of-care ultrasound device on a patient in British Columbia.

However, "all of the algorithms are pre-commercialization and would require regulatory approval by Health Canada prior to being available for clinical use," said Dr. Oron Frenkel, an emergency physician at Providence Health Care and clinical lead for the PoCUS project. "That's a complex and time-consuming step that's still to be completed, but in the meantime, the technology is there for image sharing and guidance by specialists."

Dr. Virginia Robinson, the rural medical lead for PoCUS and a family doctor serving Fernie, 626 kilometres east of the nearest Level one centre in Kelowna, has sufficient training to use the point-of-care ultrasound device to know "in a minute if a baby is head down or if it's going to be a breach delivery. I'll also know if a trauma patient has blood in his belly from a ruptured spleen," she said.

Sue Paish, president and CEO of the Digital Technology Supercluster, cites the

example of a patient who developed chest pain on Haida Gwaii, an island off the northwest coast of mainland B.C. Dr. Tracy Morton, a family doctor serving the community, wasn't able to diagnose the problem himself, but shared images from the point-of-care ultrasound device with Dr. Rob Moss, a cardiologist at St. Paul's Hospital in Vancouver. The patient was found to have severe inflammation with a lot of fluid around the heart and a seriously leaky valve, requiring an emergency air transfer for Level one care.

"One of the biggest problems that we have in Canada is access to healthcare services, especially for citizens that are in remote, rural and Indigenous communities, who sometimes have to travel hundreds of kilometres at huge expense," said Paish. "That's the problem we posed to some of our members in the cluster and a group came together led by Providence Health Care to come up with a solution."

The PoCUS Network, she noted, is a good example of how the supercluster model can solve problems by bringing together organizations that normally wouldn't talk to each other.

The project budget of \$2.6 million included investments of \$700,000 by the supercluster and \$1.9 million by partnering organizations.

Novice users in more remote communities will require the deployment of the AI algorithms or some basic training before they can take full advantage of the handheld ultrasound devices, but nurses are starting to use them for procedure guidance, including IV starts, said Dr. Frenkel. Even some midwives are using them.

Taylor Alexander, a midwife on Salt Spring Island, for example, received a call during a snowstorm from a visitor to the island who was going into labour. "The mother-to-be had some significant risk factors that could have affected the birth and since she wasn't a client of mine, I was not familiar with her medical history," recalled Alexander. "Fortunately, I was able to use the ultrasound probe to examine the mother and baby before delivery, giving me the necessary information to support a successful and healthy birth without the need for emergency evacuation."

The ultrasound devices were purchased from Clarius Mobile Health of Vancouver, the only Canadian manufacturer of point-of-care ultrasounds, and sold to individual doctors in rural B.C. communities with a subsidy provided by the Rural Coordination Centre of British Columbia. Another 11 devices were funded by St. Paul's Foundation and distributed to rural clinicians.

The Digital Technology Supercluster has a Canada-wide mandate and would like to take the solution across the country. The first step though, said Dr. Robinson, "is to perfect it here in B.C."

Windsor announces MES agreement with GE HealthCare

WINDSOR, ONT. – Windsor Regional Hospital (WRH) and GE HealthCare announced a 15-year Managed Equipment Service (MES) agreement to deliver innovative technology solutions and services to the communities WRH serves. The agreement is designed to help enable better patient outcomes, improve efficiencies for clinicians and staff, and expected significant cost savings to the hospital for years to come.

This collaboration between GE HealthCare and the WRH clinical engineering team will provide system predictability and service resilience to help WRH deliver the future of healthcare.

Through this agreement, GE HealthCare will take responsibility for the ongoing acquisition, installation, maintenance, and staff training for the majority of the medical technology utilized by WRH, including diagnostic imaging, surgical, cardiology and emergency de-

partment equipment, and more.

"This agreement allows Windsor Regional Hospital to provide health services supported by leading edge medical equipment and technology to the residents of Windsor/Essex and all we serve," said Malissa Gauthier, Windsor Regional Hospital chief financial officer and vice president, corporate & laboratory services.

"We are excited to be collaborating with GE HealthCare to support outstanding care for our patients in a way that is financially sustainable, both now and as we plan for the new hospital."

In an interview with CHT, Gauthier said the constantly refreshed equipment, with regular service intervals, should also mean far fewer downtimes and service interruptions for critical equipment, like MRIs, CT scanners and surgical equipment.

Modelled on the success of the GE HealthCare MES collaboration with Humber River Hospital, now in its eighth

year, the benefits for the WRH community are expected to be substantial.

In addition to new and advanced diagnostic equipment, with replacements as technology evolves, patients and healthcare providers can anticipate that this arrangement could help WRH along its journey toward increased ac-

Windsor Regional Hospital will obtain a sizeable price break on the equipment, compared with ad hoc buying.

curacy, speed and stability of diagnostic imaging processes, helping achieve better diagnosis and treatment for patients; shorter planned downtime of equipment with fewer procedure cancellations; specialized training for staff, keeping teams proficient as technology evolves and as new equipment is introduced; predictable annual equipment

costs and on-site service support, reducing the financial impact of unplanned downtime, equipment repairs or crisis replacement.

Under MES agreements, there is usually a percentage of equipment that's supplied by the vendor and a percentage from outside vendors – to ensure that the hospital can obtain the best solutions possible.

Gauthier chose not to elaborate on the formula being used by Windsor and GE, but she did say that Windsor has the final word and the right to choose the equipment it wants.

She said the agreement will give GE a steady, monthly income for managing the equipment, training and service; at the same time, Windsor obtains a sizeable price break on the equipment, compared with if it went out and bought each piece on an ad hoc basis.

"Part of the value for us is not only the cost savings, but the monthly predictability of our costs," said Gauthier.

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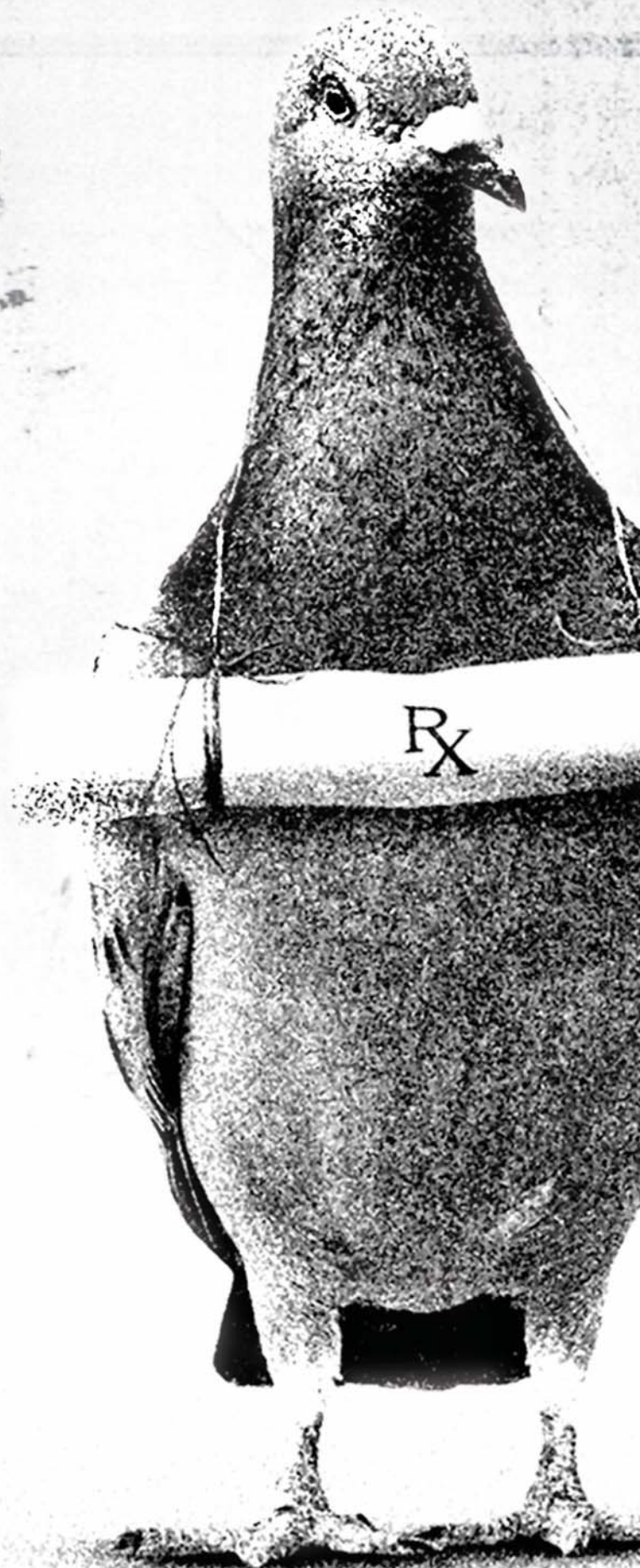
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Project AMPLIFI will integrate hospitals with PointClickCare facilities

HAMILTON, ONT. – There has always been the need for stronger collaboration and communication between healthcare providers, but the COVID-19 pandemic brought to light the vulnerabilities of older adults, in particular those going to and from long-term care and hospital. In the fall of 2020, St. Joseph's Healthcare Hamilton (SJHH) embarked on a first in Canada pilot project to establish a digital connection between an enterprise Long-Term Care electronic health record and a hospital information system.

Canada based PointClickCare's (PCC) cloud-based integration solution, the Post-Acute Care Network Management software, was used to digitally integrate the SJHH hospital information system and St. Joseph's Villa Dundas Long-Term Care Home's electronic health record.

The integration facilitates a bidirectional exchange of patient health information at the point of patient admission and discharge. The data exchange pilot was planned during phase 1 of the COVID-19 pandemic and was implemented during the height of the second wave to better support the transition of care.

The original pilot project was funded in part by the CAN Health Network, which supports the adoption of Canadian technology by Canadian healthcare providers. As part of CAN Health Network's 2022 annual general meeting, PointClickCare and St. Joseph's Healthcare Hamilton received the Network Award (CAN Health Network's highest honour) for their impactful collaboration that continues to advance care for Long-Term Care residents and patients across the province.

"Our experience with PointClickCare's PAC Network Management solution has shown fantastic results and we are hopeful that the increased visibility of patient information and workflow efficiencies will have a positive impact to patient safety, not only for our organizations but for others



Dawn Martin, Nurse Navigator, Margaret's Place Hospice at St Joseph's Villa, demonstrates the organization's integrated electronic health record software to Ontario Health Minister Sylvia Jones.

across Ontario. The PointClickCare team, solution, and results have exceeded our expectations and we look forward to continuing this important work with them in the future," said Tara Coxon, vice president and chief information officer, St. Joseph's Healthcare Hamilton Clinical Lead.

Recognizing the potential value of a clinical data exchange between care institutions, and the impact on the delivery of patient care, the Ministry of Health and Ministry of Long-Term Care provided funding to support the expansion of the PointClickCare product across the province. St. Joseph's Healthcare Hamilton has been tasked as the implementation lead and plans to integrate 114 technically eligible hospitals and health systems with upwards of 530 Long-Term Care Homes.

Branded as Project AMPLIFI, the provincial initiative is aiming to close the clinical data exchange gap between hospital information systems and the Long-Term Care electronic health record. With a target completion date in March of 2024, Project AM-

PLIFI has plans to integrate Epic, Cerner and Meditech hospitals with their network of PointClickCare Long-Term Care facilities within their geographic region.

"The integration we have implemented with PointClickCare addresses some of the key challenges that hospitals and care providers are dealing with, primarily information exchange and provider efficiency. For physicians, being able to easily access up-to-date patient records will save valuable time and improve clinical decision-making for the complex patient population in long-term care facilities. It was an excellent opportunity working with PointClickCare – an organization that recognizes the complexity behind these challenges – to implement a solution that has generated meaningful results for our providers at St. Joseph's Healthcare Hamilton and colleagues in the community," said Dr. Dan Perri, chief medical information officer and staff internist-intensivist, St. Joseph's Healthcare Hamilton.

To date, 90 percent of eligible Epic health

systems are live on the clinical information exchange with active work being completed to onboard Cerner health systems in the Erie St. Clair region and Meditech and Cerner health systems in the greater Ottawa area. Remaining health systems across the province have been identified to participate within one of five (5) phases for Cerner sites, and one of seven (7) phases of Meditech hospitals.

Since April 1, 2022 to present below is the number of patient transfers completed:

- Total Transfers – 2480
- Transfers to Hospital – 1326
- Transfers to Long-Term Care – 1154

"Having the right data at the right time is the foundation for effective decision-making, especially when a person's healthcare is concerned. PAC Network Management by PointClickCare is designed to liberate the data and make it easy for healthcare providers to securely get the information they need when they need it to facilitate improved care coordination," said B.J. Boyle, vice president and general manager of Post-Acute Insights, PointClickCare.

The provincial project intends to evaluate and complete a comprehensive benefits realization plan at the end of the funding period. The original pilot evaluation received high scores from clinicians when evaluating access to information, timeliness of the information available to support patient care delivery, documentation efficiencies and quality of care. Clinicians reported a high likelihood of reduced patient safety risks from sharing clinical information and that the solution enhanced their ability to provide continuity of care.

"From the beginning, the project was driven by a shared commitment to communication, planning and trust. The fact that we were able to achieve a successful deployment, even in the middle of a pandemic, speaks to the strength of that partnership with St. Joseph's Health System," commented Stu Feldman, general manager, Canada, PointClickCare.

PHOTO: ST. JOSEPH'S HEALTHCARE HAMILTON

MEDITECH partners with customers to establish interoperability solution

BY ROBERT MOLLOY

Data sharing is one of the most complex issues healthcare organizations often face. Too often, important health information is not easily accessible – or even available – when patients visit a clinician outside of their regular provider. Basic details like a patient's medical history or prescriptions may not appear if the organization is part of a different network or uses another HIS or digital health platform.

The MEDITECH Collaborative, a group of Ontario hospitals and clusters, is addressing these challenges by creating a more connected and interoperable healthcare system with MEDITECH's Traverse Exchange Canada. This new, first-of-its-kind cloud-based data exchange network will enable the free flow of health information between participating organizations, so providers can

always see the complete patient story.

"Traverse is a transformational step forward toward one of our digital health holy grails: the sharing and viewing of discrete patient data across the care continuum without providers having to leave the EMR to view it," said CARE4 regional CIO Dave Brewin.

"Once fully adopted and integrated with other health information exchanges, we expect the Traverse technology will most definitely help to improve the experiences of our providers and patients."

Traverse Exchange Canada will provide access to hospital data as well as patient information from a variety of sources, including other (non-MEDITECH hospitals), long-term care, and provincial repositories – with the option to consume this data into their local HIS.

"With improved data sharing, our teams will have a more complete patient history at their fingertips," Brewin

added. "This access to discrete data from other facilities should lead to faster, enhanced decision making."

As one of the leaders of the MEDITECH Collaborative, Queensway Carleton Hospital vice president, Mental



Health, Diagnostic Services, chief information officer, and chief privacy officer Tim Pemberton has been instrumental to this initiative.

"We wanted to re-imagine how systems interoperate. It should not matter

what systems are used at what hospital; they all need to talk to each other and exchange information," he said.

"Traverse is helping us to simplify what would normally be a complex spider web of interconnections for each connected site, requiring the management of hundreds of connections and partners."

Traverse Exchange Canada will eliminate the need for providers to use viewers to search for data within each separate organization or provincial repositories. Instead, the information will be brought from multiple sources directly into the patient's chart, significantly reducing the amount of time providers will spend looking for this data.

Pemberton anticipates that Traverse Exchange Canada will also impact the Best Possible Medication History process, which requires extensive outreach to retail pharmacies, hospitals,

CONTINUED ON PAGE 12

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Hospitals should stay vigilant and follow cybersecurity best practices

According to the Canadian Centre for Cyber Security's National Cyber Threat Assessment for 2023-2024, more than 400 healthcare organizations in Canada and the United States have experienced ransomware attacks since March 2020.

Among them were attacks on Toronto's Humber River Hospital in June 2021, Newfoundland and Labrador's Eastern Health in October 2021, Toronto's Hospital for Sick Children in December 2022 and most recently Ross Memorial Hospital in February of 2023.

Hospitals are prime targets, "because ransomware threat actors know that if they can find a way in, hospitals will pay up to \$1 million to get back up and operational," claims Raheel Qureshi, a partner with iSecurity, a Calian company.

In Qureshi's experience, while managing 10 major incidents across the health sector in Canada, 70 percent of hospitals end up paying because, "the first question the CIO and the board ask is 'How long is it going to take to restore the data?' When the answer is, 'We're investigating, but we think it may take a couple of weeks,' they say, 'We can't risk patient safety. We have media interest and our regulators are asking us questions as to how long the Code Grey will last. If we have insurance coverage, let's investigate the option of paying and get our technology restored faster.'"

Often, threat actors research their victims and make demands based on their ability to pay. They might demand \$500,000 from a 30-bed community hospital, and up to \$1.5 million from a larger organization, but according to Qureshi, the final price is subject to negotiations.

While a ransomware group cannot be trusted, they generally don't release the data in the Dark Web and supply a decryption key once a ransom has been paid, explains Qureshi. "They know that if they don't abide by what they said, the next organization they attack will say, 'You know what? I'm not paying you because you didn't purge the data from the last organization you attacked, or you didn't give them the decryption key.'"

Typically, they respond to any communication right away. They may even have a



Raheel Qureshi, a partner with iSecurity, a Calian company, says hospitals are prime targets.

24/7 service line, negotiating and communicating over cryptic channels.

There are a number of threat actors targeting organizations from state sponsored to private groups. Those targeting the health sector are often financially motivated and they leverage countries with very strict privacy laws to hide their identities.

There are several ways a ransomware group can gain access to a hospital's network. They can target a user, or a supply chain connected to digital networks, or external facing digital technology applications and infrastructure. "Once they find a way in," says Qureshi, "they do a lateral propagation with the technology network and access key resources like Active Directory which stores all the passwords."

Ontario has a program in place to support hospital investments in preventative capabilities, but, "it's a multi-year build strategy to get those capabilities up across the board," explains Lyndon Dubeau, Ontario Health's vice-president of innovation and connected health.

While the priority is to get those preventative capabilities in place, hospitals need to also assume they will have to contend with a breach, be able to detect it and respond quickly when something does happen, adds Dubeau.

If backup systems are protected and designed correctly so you're able to restore them quickly, there should be no need to pay a ransom, but, "if you haven't done that, you could be in a position of having to make difficult decisions," he acknowledges.

Hospitals may not be able to afford the very expensive and advanced backup solu-



Lyndon Dubeau

tions, but they are not defenceless. Qureshi lists a number of things hospitals can do to protect themselves.

First and foremost, they should establish a mandatory policy of performing a proper system vulnerability assessment & penetration at least twice a year and reporting the results to the board. "Know your exposure be-

fore the attackers do," advises Qureshi. "Attackers found a vulnerability, right? A hospital can be proactive and find it first. Enforcement of this policy could reduce the probability of an attacker exploiting a weakness."

Qureshi also advises hospitals to enable 24/7 cybersecurity threat detection and response. Unfortunately, "it can take some time to implement all the right controls as there are other priorities. Implementing a robust framework for 24/7 cybersecurity monitoring, along with following the Ontario Health (OH) agenda for cybersecurity defence, will act as a major safeguard."

Often, an attacker will, "knock on your door" and gain access to a hospital's system days or even weeks before data is encrypted and a ransom is demanded. "So, there is often time to identify and remove the bad actor before the hospital is held hostage for ransom," explains Qureshi.

Endpoint detection and response technology, incident response retainers, ransomware simulations and annual cybersecurity program updates are other measures hospitals can take to mitigate risk. He advises hospitals to think about other investments they need to make, whether it be data encryption, data leakage protection or other technology refreshes.

"If a hospital did all these things, it will not only mature the overall cybersecurity program, but also reduce the likelihood of an impact caused by these malicious threat actors," Qureshi says.

The FBI's recent announcement that it hacked the Hive ransomware group in July was a rare victory in the war against cyber criminals. With extraordinary access to the ransomware group's computer networks since July, the FBI was able to supply decryption keys to victims of the group, thwarting \$130 million in ransom demands.

That and the October sentencing of Sebastien Vachon-Desjardins, a Canadian government employee turned ransomware attacker, to a 20-year prison term are cause for celebration, but no reason for hospitals to let down their guard, especially given the financial losses ransomware groups have incurred as a result of the steep devaluation of Bitcoin, which plunged from a high of \$58,827 in March 2022 to a low of \$21,082 in November.

MEDITECH partners

CONTINUED FROM PAGE 10

provincial repositories, and other healthcare organizations to gather a complete list of medications a patient is taking.

"Traverse will connect us to these disparate sources and intelligently bring them together in MEDITECH, automating the collection and eliminating manual data entry," he said. "Clinicians can finally focus on clinical decision making rather than data gathering. That's the power of having one patient, one record, one source of truth."

Pakizah Kozak, chief information officer at Holland Bloorview and MEDITECH Collaborative co-chair identified several initial benefits as an early adopter. "We are pleased to be one

of the first hospitals up and connected on Traverse Exchange Canada as it allows us to share key patient information such as diagnosis, allergies and medications between hospitals, streamlining communications, and improving care for our patients," she said.

"This interoperability is a key enabler to allow information to flow between the MEDITECH hospitals and in the near future all other hospital information systems," she added. "This will help improve health outcomes for all patients including our youngest patients who are transferred from other hospitals to Holland Bloorview and then to the community."

Initially offered to MEDITECH customers within Ontario, MEDITECH will expand Traverse Exchange Canada to include additional jurisdictions, other vendors' EMRs, HIS systems, long-term care

(LTC) systems, and provincial assets. It will also be ready to connect to Ontario Health's prospective record locator service and other jurisdictional systems in the near future.

"Traverse Exchange Canada is an important step towards true, seamless data

Initially offered to MEDITECH customers within Ontario, the Traverse Exchange will expand to other jurisdictions.

exchange," said MEDITECH senior director of Interoperability, Mike Cordeiro. "When the right information is available to the right user at the right time, you know that quality care will follow."

Interoperability efforts such as

Traverse Exchange Canada are a key component of MEDITECH's business strategy in Canada and beyond. To achieve full interoperability, MEDITECH recognizes it must enable providers to access patient data from a wide range of sources inside and outside of an organization and deliver that information directly into a provider's workflow in a meaningful and intuitive way.

Cordeiro added, "True interoperability will reduce gaps in care across all settings as data will not be dependent on the results of queries to multiple organizations or manual inputting. The outcome will be a real game changer for both provider and patient."

Robert Molloy is Director, Canadian Market and Product Strategy, for MEDITECH.

Five critical targets illustrate need for cutting-edge healthcare cyber-security

BY TROY AMENT

Despite the noble missions of fighting illness and saving lives, organizations in today's healthcare sector are frequently under attack by cybercriminals. Why are healthcare sites of all shapes and size under constant threat? The reason is simple: data. Extremely valuable personal, medical, and financial data.

The attackers' goal is to steal data and use it to hack other systems, or to sell it to other criminals, or to hold it for ransom. Healthcare cybersecurity is vital and is becoming more important every day because medical organizations are continuing to be more reliant on hospital information systems like electronic healthcare record (EHR) systems and physician order entry systems.

Data management: Attackers know that any threat to the well-being of patients can make healthcare organizations profoundly uncomfortable and, perhaps, even desperate and more willing to pay ransoms. Additionally, it isn't just "back office" management systems that the healthcare industry relies on that are targeted. There are also Industrial Internet of Things (IIoT) smart systems that run a building's heating, ventilation, and air conditioning (HVAC), and elevators that can be exploited. And nearer to patient care, medical organizations rely more and more on IoMT devices like blood

pressure machines, infusion pumps, and remote monitoring machines that can be hacked and used to gain access to an organization's network.

Top 5 risks in healthcare cybersecurity: To protect patients and their data as well as provide them with the best experience, health networks need holistic, end-to-end cybersecurity in healthcare at every point of care and in every facility. Below is a list of five types of healthcare organization security risks that are frequently targeted by cybercriminals and need to be expertly secured:

- **Email:** Email is still the primary means of communication within healthcare organizations, which makes it an obvious method for launching attacks. The type of attacks cybercriminals launch includes phishing, spear phishing, social engineering, and ransomware attacks.

- **IoT/IoT and IoMT devices:** IoT devices like smart heating systems or remote patient monitoring machines can have a significant effect on patient wellness and are often not very secure. Therefore, they can be attractive targets for cybercriminals looking to gain access to the network.

IoMT devices extend lives, improve the quality of life, improve clinical staff productivity, and make the relationship between the patient and the care team less transactional. In addition, digital technology enables providers in different healthcare organiza-

tions to coordinate care more seamlessly. Like IoTs, they aren't well-protected and can be exploited to gain access into the network.

- **EHR systems:** Medical staff uses electronic healthcare record systems to keep track of patients' information and health history. Obviously, this type of data can be extremely personal and sensitive and if it were to be stolen and made public, much harm could be done with it. This is a perfect scenario for ransomware.



Troy Ament

- **Physical devices:** Laptops, tablets, mobile phones, and other physical devices that are used in healthcare situations can be stolen and hacked or manipulated leading to the loss of credentials or other confidential information falling into the hands of those with criminal intent.

- **Legacy systems:** Old but not yet retired systems that are no longer supported by the manufacturer can be an open invitation to cybercriminals. These legacy systems that are still present and prominent in many healthcare organizations are frequently vulnerable to attack. They must receive constant attention to be kept secure and not exploited.

Three Best Practices for healthcare cybersecurity:

- **Establish a security culture.** Healthcare IT and security professionals can establish a security culture within their organizations by conducting regular risk assessments and providing employee cybersecurity education and training, which must include top management who can easily fall victim to spear phishing attacks.

- **Develop an incident response plan.** CISOs and CSOs need to be prepared and develop solid incident response plans with their IT and cybersecurity teams. It is important for an organization to be proactive and not reactive. It is smart to expect the unexpected and have a plan for it.

- **Deploy security solutions with automation in mind.** Healthcare organizations must have cutting-edge cybersecurity solutions that include next-generation firewalls.

Another requirement for healthcare cybersecurity is the installation and maintenance of antivirus software. However, these are just the basics. Segmentation can reduce breach impact as well as other strategic solutions that enable secure telehealth such as Zero Trust Network Access (ZTNA) and SD-WAN are critical as healthcare continues to evolve.

Troy Ament is Field CISO for Healthcare at Fortinet.

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Care-givers need improved technology to reduce stress in the long-term care sector

Canadian-based Sensora is creating a system that uses sensors to create a safety net around our seniors.

BY DR. SUNNY MALHOTRA

As the population continues to age, an exodus of staff within elderly care during the pandemic has intensified pre-existing problems with retaining and growing the care workforce. By 2030, there will be 1.2 billion seniors over the age of 60 worldwide, making this one of the largest challenges facing our care system.

Home-based care services continue to juggle available resources to provide housebound seniors with the care they require, frequently weighing vital health decisions to prioritize limited staff time and forgoing care to some individuals as a result.

Care Facilities, such as retirement and long-term care homes, face different but equally impactful challenges. Mental burnout caused by shortages is harming the standard of care, and most staff members indicate that they are rarely given enough time to deal with issues that go beyond the immediate.

Governments and organizations are working together to provide more funding to help increase capacity, but the solution for closing the gap in elderly care has to incorporate the right innovation in order to succeed.

That is what Sensora Health has set out to fix. Their Canadian-based technology has been designed to immediately alert caregivers of falls or irregularities in a resident's behaviour.

Although not the first company to focus on remote monitoring, Sensora is taking a data-driven approach to helping care workers and seniors. By using cutting-edge smart sensors combined with their proprietary al-

gorithms in AI, their vision is to provide a "safety net" around our seniors without cameras or wearables, that not only helps prioritize precious staff resources, but can offer more proactive care delivery in the process.

Jordan Caspersz, COO & co-founder, said, "From day one, we've set out to build technology that helps care teams do more with less." He continued, "Yes, Sensora helps with the immediate, to boost response times for falls and emergencies. But we've also found

Sensora is using smart sensors combined with AI algorithms to provide a safety net for seniors -- without the need for cameras or wearables.

ways to understand how seniors are doing over-time, what patterns we can recognize, and articulating that data back to care teams to proactively address concerns before they become symptoms."

"We've spoken to hundreds of PSWs and operators on the struggles to keep staff and having to rely on temporary agencies as a result— as innovators we knew that's where we wanted to help."

Dr Sunny Vikrum Malhotra is a US trained sports cardiologist working in New York. He is the CEO of Cardiac Registry Support.
www.cardiacregistrysupport.com.
Twitter: @drsunnymalhotra



Sensora is helping decrease the need for temporary staff by 15-20 percent by empowering existing care teams to effectively monitor more seniors at once. Not to mention the edge organizations are feeling from families and caregivers from being able to communicate care plans with a level of transparency they couldn't before.

Sensora's Medical Lead, Dr. Jobin Varughese, is a licensed family physician with a special interest in care of the elderly and has spent the last decade in senior care facilities. "I have seen the toll the pandemic has had, and we need to find ways to unburden care teams and lean on new technology if we are going to succeed in supporting our growing number of seniors," said the former medical director of a Canadian long-term care home.

Since 2020, Sensora has been winning interest across Canada and internationally in the U.K. and U.S. The company provides a robust suite of health indicators which include: Fall Detection, Mobility Monitoring, Behavioural Aberration Alerts, and AI-Powered Care Recommendations. Sensora is a proud part of Currant Care Inc., which has also furthered technology in Hand Hygiene Auditing and Remote Academic Learning.

Sensora is now selectively looking for new clients who are eager to implement their solution in care facilities and with home care providers. You can connect with them at www.sensorahealth.com.

Hootsuite and WHO collaborating to counter misinformation

BY EVA TAYLOR AND ANDY PATTISON

It's hard to believe that it has been three years since our world changed. When we first learned of COVID-19, people around the globe experienced a flood of emotions – from anxiousness and sadness to fear and isolation. But perhaps one of the most significant was uncertainty. Regardless of age, location or health status, people were left with many questions about the pandemic: What is COVID-19? How long will we be dealing with this? Am I at risk?

With limited places to turn for this information, many relied on traditional media outlets for answers. But even with the most trusted news outlets reporting on the situation, there soon emerged an entirely new pandemic: that of misinformation.

Conflicting news reports, unclear guidelines on restrictions and uncertainty expressed by medical professionals themselves left people with more questions than answers – and, in

turn, their own assumptions about the situation we collectively faced.

Social media: When the world shut down, digital channels opened up and, in addition to traditional media, many people turned to social as their primary news source. And with more than 4.7 billion social users globally, the reality set in early on that COVID-19 misinformation would emerge into a pandemic of its own.

Social emerged as one of the most powerful drivers of misinformation spread, with many individuals seeing an opportunity to spread their own (often misinformed) thoughts and opinions on the pandemic. In the absence of fact-checking or validating statements, others saw this as the truth. If not combatted in real time, these statements had the potential to run rampant and result in detrimental, if not life-threatening, consequences.

Nonetheless, social media also emerged as one of the true heroes of the pandemic. As the pioneers of the social media management space,

Hootsuite recognized the power it held in distributing critical information in real-time and amplifying factual voices on a global scale. And the World Health Organization (WHO) was one of the first global health agencies to agree and take action.

Using social media for good: When COVID-19 was officially de-

Project Fides' network of over 100 influencers creates content that debunks misinformation.

clared a public health emergency of international concern, WHO recognized that engaging the tech sector would be critical to advance global health innovation during such a critical moment in time. It initiated the Tech Task Force, a collaboration of companies working together to get factual information to audiences globally, combat misinformation and increase vaccine adoption. Hootsuite

joined in 2021, sharing its perspective on the power of social and digital media to support this goal.

With a newfound focus on social, the Task Force saw an opportunity to tap into an audience paving the way for content dissemination: content creators. WHO saw creators in the medical field – including scientists, doctors and frontline workers – speaking about COVID-19 on social media platforms in ways that it couldn't and recognized a powerful partnership opportunity.

From there, Project Fides was born, bringing together a network of over 100 influencers, with a combined reach of over 40 million on TikTok alone, to create content debunking misinformation surrounding COVID-19. Each week, prior to releasing any information publicly, WHO shared talking points with the creators on the latest developments in the pandemic, leaving it up to each creator to decide if they wanted to distribute it to their audience.

With close to three million follow-

Artificial intelligence in healthcare: predictions for 2023 and beyond

BY DR. ANTHONY CHANG

The start of the year is always a good time to pause and for perhaps a few fools to make some predictions in every sector, including artificial intelligence in medicine and healthcare. Given that we are witnessing several fast-moving developments in artificial intelligence, here are my predictions for this coming year and beyond (in no particular order) in artificial intelligence in medicine and healthcare:

Increasing awareness that federated/swarm learning can obviate the need for raw data sharing: No matter how much institutions wish to be collaborative, data sharing is often the biggest obstacle for institutions to work together on a data science project. And yet, most healthcare centers are not yet indoctrinated on the concepts of federated or swarm learning. Along with these strategies that can obviate the need for data sharing, the use of synthetic data will also be more accepted by the medical community as a strategy to not solely rely on data sharing.

The transformer models make an impact in domains other than just natural language processing: While almost all the work thus far using transformer models has focused on natural language processing, it is likely that we will see the powerful “attention” mechanism being deployed for other domains such as image interpretation. The concept of converging, current convolution neural networks with these attention mechanisms may be promulgated this coming year as we explore more sophisticated AI technologies for medical images, including moving images.

Escalating use of large transformer-

type language models (LLM) in healthcare projects: Language models such as GPT-3 and upcoming GPT-4 (to be released this year) as well as ChatGPT will find uses in healthcare. Early use of these language tools to synthesize a medical review has been acceptable (but not impressive). There is already discussion of using a version of MLOps for these LLMs (aptly called LLMOps). These language tools are even more essential as we lose senior clinicians in healthcare, but one issue may be insufficient healthcare data to support these LLMs.

Exponential appreciation and deployment of robotic process automation tools in healthcare: There are huge inefficiencies in healthcare, including high no-show rates. Some of these deficiencies in operational aspects of health systems can be ameliorated by appropriate use of robotic process automation (RPA). Health systems will be pushed to use automated tools to decrease costs, especially now with the COVID pandemic exaggerating these inadequacies.

The educational curriculum in very few medical schools will include artificial intelligence: While very few medical or osteopathic schools from around the world are actively pursuing inclusion of data science and artificial intelligence content in the curriculum, even fewer healthcare professional schools (pharmacy, nursing, dental) are working towards this future-thinking educational strategy. With the exponential rise in artificial intelligence capabilities, the gap between medical school education and real world knowledge is becoming even larger.

Clinical training programs will continue to be relatively slow in adoption of artificial intelligence: With the exception

of a few AI-mature subspecialties (like radiology, cardiology, pathology, critical care medicine, etc.), most subspecialty clinical training programs will not be aggressive enough in educating and training the trainees in concepts and applications of artificial intelligence in their subspecialty. The crux of the slower adoption is probably the lack of sufficient numbers of senior clinicians and leaders who have had experience with AI applications in their subspecialties.

Increasing medical legal discussions to involve aspects of artificial intelligence in healthcare: The dual possibilities in this domain are equally likely to occur in the very near future: failure to deploy an artificial intelligence tool that is widely adopted by health systems and that leads to a patient's poor outcome, or utilization of an artificial intelligence tool that some observers feel may have led to a poor outcome due to some technical issue with the deployment of this artificial intelligence tool (such as a prediction sepsis tool failing to accurately predict as expected).

More deployment of multimodal artificial intelligence in digital health with different data types: This strategy to increase the sophistication of artificial intelligence use in clinical care, especially chronic disease management, is accompanied by use of data outside the hospital setting such as wearable technology and sensor utilization. The real-world data and experience will become increasingly



Dr. Anthony Chang

important as more sources of data will be coming from outside the clinic and hospital settings to become part of the portfolio of data sources for real-world, real-time analysis.

Decreasing the chasm of artificial intelligence in healthcare with innovative tools and models: Just as desktop computing became popular when it no longer required programming, AI in healthcare will accelerate its applications when these tools are much more flexible and user-friendly. Innovations such as MLOps (that renders ML more usable) and foundation models (which uses self-supervised learning and can learn from large amounts of unlabeled data) decrease the chasm.

Incorporating artificial intelligence into all versions of extended reality tools in healthcare: Even with simple algorithms, artificial intelligence can add an important learning dimension to all modalities of extended reality (virtual, augmented, and hybrid). The future of medical education and clinical training will be incorporating more such tools. Most of the medical education and clinical training can be very well covered with “intelligent” reality, potentially with Metaverse as a part of this education and training portfolio.

Exploring appropriate use of text-to-image (and also image-to-text) AI tools in healthcare: In the near future, anyone in healthcare can state “moderate-sized patent ductus arteriosus and echocardiogram with color Doppler” and this description will generate the appropriate image. Conversely, a medical image from radiology or pathology or a video taken during a procedure will have automated written descriptions. This interesting capability will be partly from a convergence of search and generative AI to create a text-to-image continuum.

Deep learning tools for protein structure determination making impact in drug development: DeepMind's AlphaFold has been impressive in bridging the genomic sequence-to-protein structure gap in determination of protein structure with expediency not seen before in this domain. The new knowledge from all the protein structural determinations will most likely lead to a surge of new understanding of mechanisms of disease as well as novel drug discoveries to treat diseases that may not have had adequate therapeutic options.

Overall, most if not all of these predictions are likely to occur if not this coming year, almost certainly by the end of this decade. The expediency that we see these developments will largely depend on investment momentum in technology and artificial intelligence as well as adoption potential of these tools by the medical community.

Anthony Chang, MD, MBA, MPH, MS, is a pediatric cardiologist. He has cared for children with heart disease for the past three decades. In addition, has an educational background in business and finance as well as healthcare administration and global health. This article is courtesy of AiMed, ai-med.io

ers on TikTok, this partnership begs the question: why not distribute the information on WHO's channel?

The answer is simple: the public perception that global healthcare agencies are often driven by financial benefit would get in the way of driving impact. As well, WHO did use its channels, but there remained millions of people that the organization was unable to tap into. By engaging an audience that has built credibility and trust with their audience, and ensuring that the group was not pressured to post and wouldn't be compensated if they did, WHO would be able to reach a new subset of the population.

Power in numbers: While the initial program was a success through the height of COVID-19, WHO struggled in scaling the effort globally and more effectively streamlining the way it delivered content to its creator partners. With a bold vision for combating misinformation for global health crises in the long term, WHO would need to come up with a bolder, better solution.

As part of the Tech Task Force, Hootsuite saw an opportunity to step up and offer support. The company provided its tools to elevate the visibility of factual and research-led information on social

media, help creators measure their impact on social in a more meaningful way, and boost WHO's social reach and engagement. Specifically, Hootsuite and WHO's strategic collaboration consists of access to:

- Hootsuite's Enterprise Plan, improving the ability to automate creator content sharing and reporting workflows, launch campaigns on WHO's channels, and more.
- Social listening services, equipping WHO to better understand online conver-

Hootsuite provided its tools to the World Health Organization to promote factual information on social media.

sations and gain quick insights on trending health topics, as well as monitor social activities related to its business and the broader healthcare industry.

- Amplify, Hootsuite's employee advocacy tool, making it easier for creators to share and engage with WHO's content – and, in turn, deliver critical information to global audiences.
- Hootsuite Academy courses and certifications for the WHO team and creators,

helping them to build their own social media strategy and go from amateurs to social media professionals.

At its core, this collaboration was designed to improve the flow of accurate information and amplify the voices spreading factual, health-critical content worldwide.

And it's only the beginning; through this initiative, Hootsuite and WHO will apply key lessons from the COVID-19 pandemic to manage misinformation surrounding other global health crises and health topics. Globally, there are countless health topics that don't make it to a public forum, but leave millions of people sick or injured every year. Take tobacco for instance: its use causes a myriad of diseases and cancers, and it also has a significant and detrimental impact on health through air pollution and climate.

It's clear that just because something isn't deemed a health emergency, doesn't take away the seriousness of it. Collaborative efforts are needed to continuously combat this – and this partnership is a critical first step in doing just that.

Eva Taylor is Director of Social Impact, Hootsuite. Andy Pattison is Digital Channels Team Lead, World Health Organization.

In Ontario, real steps are being taken to reach EHR interoperability

Collaboratives being built that join the records of major vendors across hospitals and other sites.

BY DIANNE DANIEL

Thanks to a series of innovative collaborations under way in Ontario, health records are starting to follow patients as they transition between hospitals – without the need to fax. It's a lesson in interoperability that requires vendors, users and governments working together at multiple levels. The first goal is to achieve data sharing between hospitals that are using the same electronic health record; the next step is to facilitate widespread data sharing between the three leading vendor platforms – Epic, MEDITECH and Cerner – as well as between each health record and PointClickCare, the long-term care record widely used in the province.

The ultimate prize is expected to be a provincial shared care record that will also include lab systems, patient registries, primary care records and community records.

"The fact that Epic, Cerner and MEDITECH are working so collaboratively with Ontario Health and the hospitals to develop this has been a game changer," said Tim Pemberton, CIO and chief privacy officer at Queensway Carlton Hospital in Ottawa. "Historically you couldn't get the vendors in the same room together. I can tell you, I've been on calls where they're now working collaboratively and that's huge."

Pemberton is co-chair of the MEDITECH collaborative, a group working to facilitate data exchange between the 90 hospitals in Ontario that are using MEDITECH. Similar collaboratives are in place for the roughly 48 hospitals on Cerner and nine instances and 46 sites on Epic, and all three groups are working to achieve the same goal: province-wide record sharing between acute care centres, regardless of the health record in place.

"What I've seen over the last year is a desire to work together to break down the siloes between each other," said Pemberton. "It's the right thing to do now. They're finally getting to this interoperability."

A cluster of six hospitals in the greater Ottawa area called CHAMP – the Champlain Association of MEDITECH Partners – has been sharing a single instance of MEDITECH since 2017. Last year, they took that data integration a step further, working with the Epic collaborative to build a point-to-point connection with the Ottawa Hospital, an Epic user. Leveraging the Epic Care Everywhere HL7 integration engine and the consolidated clinical document architecture (CCDA) model widely used in the U.S., the project went live in the fall.

Now, when a patient registers at Queensway Carlton and provides consent, the hospital's electronic record system automatically queries the Ottawa Hospital and if it finds a match, returns a consolidated record for that patient. The same process occurs for patients registering at Ottawa Hospital, always with patient consent.

A similar point-to-point connection was built between Holland Bloorview Kids Rehabilitation Hospital in Toronto, a MEDITECH site, and The Hospital for Sick Children (SickKids) and Children's Hospital of Eastern Ontario (CHEO), which share an Epic instance.

Prior to the collaboration, the hospitals would print off and fax very long and detailed charts whenever a child transferred between acute care and rehab. Since going live last year, thousands of records have been shared electronically instead.

SickKids CIO and vice-president, Information Management and Technology, Dr. Sarah Muttitt currently facilitates Ontario's Epic collaborative. As interoperability efforts move forward in the province, she said it's important to leverage the experience of others, including health information exchanges that already exist in the U.S. and other parts of the world.

The added benefit for Epic users, explained Dr. Muttitt, is that data sharing between Epic sites is an inherent capability of the platform itself, made possible through Care Everywhere.

"It's really helpful not only for continuity of care, but also so the patient doesn't have to repeat their

diction eligible to access Traverse Exchange Canada, a cloud-based interoperability network that supports information flow between participating organizations. Powered by MEDITECH partner Health Gorilla, the exchange was developed in partnership with the MEDITECH collaborative and is expected to provide access to external records from acute care, primary care, long-term care and other settings once fully deployed as a subscription service to MEDITECH sites.

"Traverse Exchange Canada will be the go-between; it will query Epic rather than our instance of MEDITECH querying Epic," said Pemberton, explaining that while the point-to-point connections

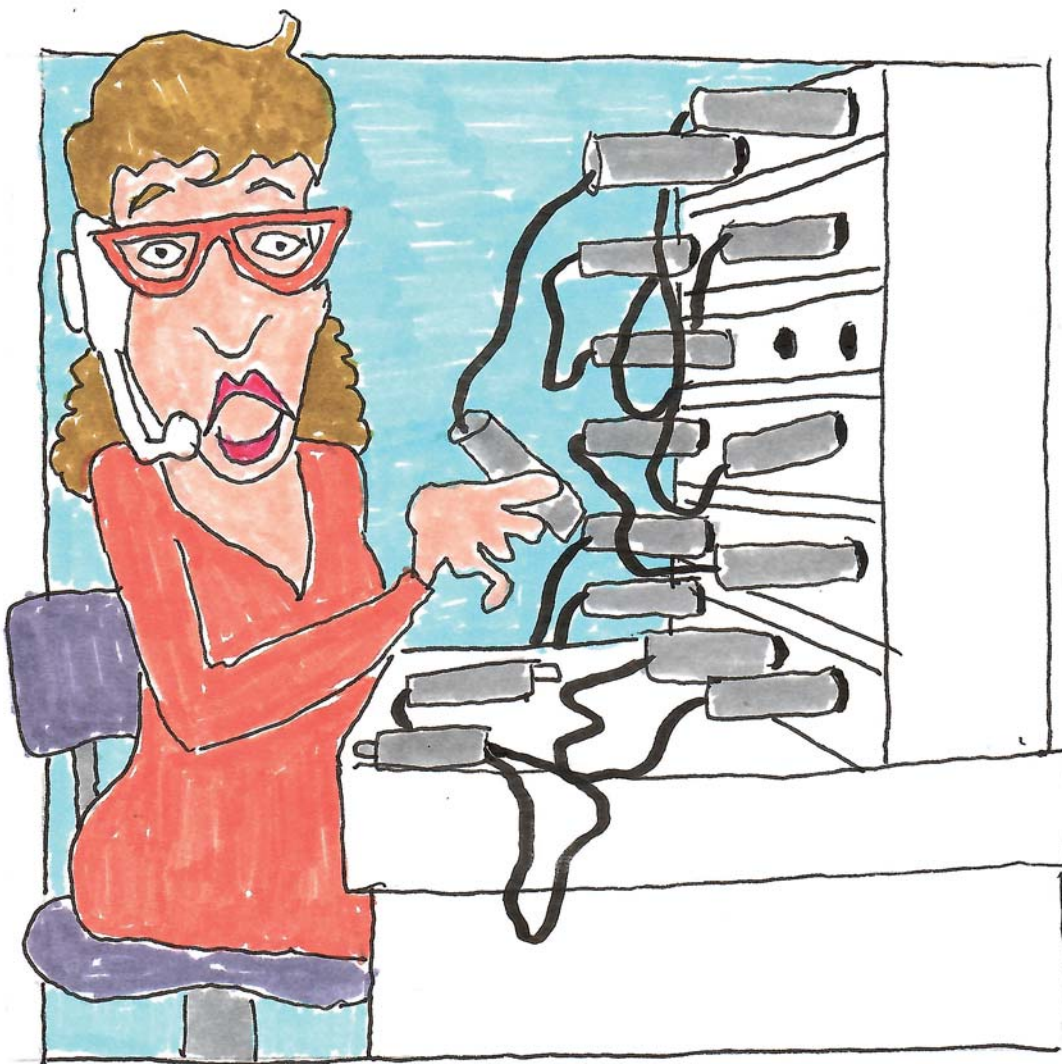


ILLUSTRATION: LINDA WEISS

history every time they arrive on your doorstep," she said, noting that it's possible for Ontario's Epic hospitals to share information about medications, allergies, immunizations, problem lists, upcoming appointments and prior hospital visits.

After working to optimize and standardize the use of Care Everywhere between the Epic sites in Ontario, the collaborative led the development of the point-to-point connections with MEDITECH in Ottawa and Toronto, and is now working with the MEDITECH and Cerner collaboratives on a strategy to expand data sharing even further.

Key to their efforts will be the successful development and rollout of health information exchanges: the Traverse Exchange Canada (TEC) for MEDITECH users and the Oracle Cerner Ontario eHub for Cerner users.

MEDITECH users in Ontario will be the first juris-

work, they aren't scalable. The exchange, on the other hand, can facilitate endless connections.

"...Once we start to build this work, you can see that you very rapidly onboard hospitals. Once I plug into the exchange, I'm connected to everything else that's plugged into Exchange," he explained.

Part of the exercise involves nomenclature mapping to reflect Canadian standards and ensure that 'an apple' in one system is 'an apple' in another. Pemberton also believes that artificial intelligence needs to play an important role to filter and sort the data so that only clinically relevant information is shared.

"I'm worried that once you connect all of these sources, you're going to bombard clinicians with information. They're going from having nothing to getting 50 sources coming at them they may not need," he said.

Among the Cerner collaborative, integration ef-

forts started to ramp up just prior to the COVID-19 pandemic when the province was looking to achieve interoperability between acute care and long-term care systems. Epic sites were starting to create an interface with PointClickCare and the Epic collaborative approached the Cerner collaborative to see if there was a way to connect a Cerner hospital as well.

After meeting with Cerner, the collaborative decided the best course of action would be to put a health information exchange in place first – the Ontario eHub – and then connect to PointClickCare through the exchange. The first hospitals to connect via Ontario eHub are Chatham-Kent Health Alliance, Erie Shores Health-Care, Hôtel-Dieu Grace Healthcare, Windsor Regional Hospital and Cornwall Community Hospital, followed by London Health Sciences Centre, the Centre for Addiction and Mental Health (CAMH), Grand River Hospital and St. Mary's General Hospital. The remaining Cerner hospitals will be connected over the course of 2023 and as new sites go live, they will also join the Ontario eHub.

"What we're going to move forward with and continue to refine is what I would call true interoperability," said Lyn Baluyot, co-chair of the Cerner collaborative and CEO of TransForm Shared Service Organization (SSO), a not-for-profit founded by the five Erie St. Clair hospitals in Ontario to manage their hospital IT and supply chain needs.

"There are all sorts of technical things we're working through, but once we get this right, it will enable really safe transitions of care, from acute to long-term care, acute to home, and vice versa without having to print and fax hundreds of pages of documents," she said, noting that patients will no longer have to tell their story over and over again as they move between care providers.

As the interoperability work marches forward, the heavy lifting will include the effort to harmonize and standardize data. At the same time, all three vendor collaboratives are sitting at the table with Ontario Health each month to ensure their work aligns with the province's vision for interoperability as well. As Dr. Muttitt explained: "When you're starting to exchange data across different platforms, everybody uses tables in a different way and data structures in a different way, so we want to make sure that it's safe and that we're bringing in data we can understand, that's relevant and adds value to the patient record."

Pemberton is hopeful that breaking down health record siloes in the province will facilitate automated workflows. For example, when patients are admitted to hospital from long-term care, one of the first steps is to obtain a best possible medication history or BPMH. Hospital pharmacy staff typically gather information from numerous sources, such as the patient's retail pharmacy and the Connecting Ontario database, and then "manually stitch" a history together.

"What we envision with this is that the electronic stitching will occur for them," he said. "The exchange will query those sources and bring back the information for them to reconcile, making that process digital, more accurate and helping to auto-

mate some of those workflows so they're not so onerous."

Baluyot envisions much of the work ahead involves sorting out technical and contractual relationships, deciphering privacy laws and agreeing on standards. Even something that seems simple – like recording gender and/or sex – can become quite complicated, she explained.

In the Cerner system, for example, sex is

what you're born with and is defined as male, female or X, with X being undefined. Gender is what you self-identify as and can be selected from a list as short as three characters or as long as 25 characters, depending on the list used.

"So, the question becomes, if we're going to standardize across the province, do we all agree that sex is male, female and X, and do we agree that gender as a definition

will be what the person chooses to self-identify as and that we will all use this list," posed Baluyot. "This will work. It's just a matter of time and resources, and ensuring everyone has the right vision."

"The game changer is that hospitals don't need to change their health record. If it's working for you, you can be interoperable without having to adopt the other system," added Pemberton.



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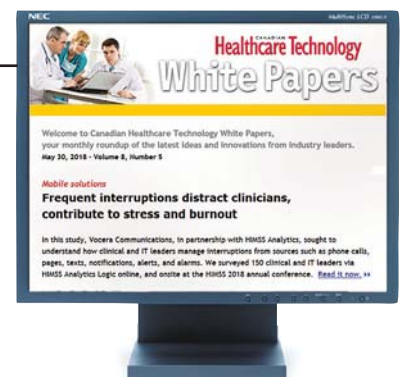


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Opal is connecting patients with hospitals, researchers and doctors

The Quebec SmartCare Consortium (QSCC) is kicking off the second year of its three-year project with plans to introduce more ways to promote and improve access to patient health information. Exciting new features are being added to the award-winning Opal patient portal technology, a mobile phone app developed by patients, clinicians, researchers and students working in the Opal Health Informatics Group at the Research Institute of the McGill University Health Centre (RI-MUHC). The app puts patients' medical data at their fingertips and provides doctors and researchers with digital feedback from patients.

"Opal is a technology that gets data securely from clinicians to patients, and from patients to clinicians," said John Kildea, PhD, the project's principal investigator and co-founder of the Opal Health Informatics Group. Types of data available to patients in English and French include lab results, appointment times and maps, virtual waiting room services, some clinical notes, and personalized educational material.

"When we send patients their lab results via Opal, we send them in a way that is easy for them to understand. We provide links to educational materials that explain what each lab test means in plain language," explains Kildea, who is also a scientist in the Cancer Research Program at the RI-MUHC and an assistant professor of Medical Physics at McGill University. "We also tailor educational materials to the patient. A prostate cancer patient will receive different information than a breast cancer patient, and they will receive it at the time that is most appropriate based on where they are at in their treatment."

In the last year, the number of patients using Opal more than doubled. It is currently being used by over 4,500 patients in four clinics at the MUHC, including the Nephrol-



John Kildea is the project's principal investigator and co-founder of the Opal Health Informatics Group.

ogy unit at the Montreal Children's Hospital. It will soon be used in the Hematology-Oncology department at the CHU Sainte-Justine, the other public partner institution in the QSCC, alongside the MUHC.

"The deployment in a unit at Sainte-Justine is important for the QSCC because it will demonstrate that it is possible, with Opal, to consult data from different hospitals in Quebec at the same time," said Kildea. "It's a big step forward, considering that right now, except for those using Opal at the MUHC, it's not possible for patients in Quebec to access their data from any hospital."

What's next for Opal? As the technology moves into the pediatric sphere at the Montreal Children's Hospital and Ste-Justine, the team is rolling out caregiver functionality to Opal. "The Montreal Children's Hospital Foundation has been instrumental in making the caregiver functionality a reality. We want parents to have their own account so they can log in as themselves and get access to their child's data," Kildea explained. The QSCC is

working closely with the Admissions Departments at both hospitals to determine the best way to proceed on issues of consent and ensure that the proper legal frameworks are in place.

The QSCC also plans to start incorporating wearable devices later this year. The Centre of Genomics and Policy at McGill University is supporting the project by building the data governance framework that will allow data to flow for research. Two Quebec companies are supplying the devices that will transmit the data from the wearables: VitalTracer has developed a smartwatch and iMD Research has created a smart bracelet.

"These devices will allow us to add vital signs such as heart rate and oxygen saturation levels to the data gathered by Opal," said Kildea. "We are still in the developmental phase right now. We have some prototypes that are operational at this stage, but we aren't quite yet at the point where we are able to put them into clinical operation." The exact timeline will depend

on Health Canada approval for the wearable devices. In the meantime, the technology is being tested using Bluetooth-enabled scales.

"With a Bluetooth signal, patients can send their weight to the hospital via Opal. It's a proof of concept in terms of getting data from a device via Bluetooth into Opal and then from Opal securely into the hospital."

Another information tool in use in Opal is questionnaires. Patients receive questions about their symptoms on their mobile devices and can send the answers directly to their doctors and researchers. The QSCC's two pharmaceutical partners, Roche and Novartis, are helping with the development of real-world questions and a framework for a databank that could eventually be linked to a biobank containing specimens for research purposes.

The benefits of real-time data: "The pharmaceutical companies are always supporting research that answers questions about the effectiveness of the drugs that they're providing. Historically, they have relied on real-world data that comes from doctors," explains Dr. Kildea.

"Over the last ten years or so, they have realized that there is a lot of value in getting data directly from the patient without interpretation by the doctor. By integrating research questions into Opal and the ability for patients to consent to participate in research, we will be able to study how patients are doing on particular treatments, which is valuable information in improving drug therapies."

Real-time data and continuous feedback from patients will also benefit their doctors, who would be able to track the condition of high-risk patients more closely. "If they start to deteriorate, they could get called for an earlier appointment, avoiding a visit to our emergency rooms, which are already overloaded," Kildea explains.

Digital Front Doors are the future, and interoperability makes it possible

BY DR. CHRIS HOBSON

Two of the most important things when it comes to successfully delivering healthcare are high-quality information and convenience for the patient. That requires bringing all the critical information and functionality together on one unified platform that supports personalized care and better-informed decision-making.

The ideal mechanism for communication with consumers is a user-friendly Digital Front Door (DFD). This unified approach can be a game-changer, but it is also heavily dependent on interoperability, to make it all possible.

Game-changing Digital Front Door rewires healthcare: Using a DFD, people can interact with the healthcare system as they do with their financial, travel, insurance and retail transactions. It's how life works now and how healthcare should be too – the consumer or patient is a full and equal participant in their care team.

To that end, a DFD should operate as a self-service healthcare adviser or concierge, guiding people to the best action for their health while also avoiding unnecessary visits to the ED.

The DFD encompasses a comprehensive multi-channel strategy that typically starts with providing advice and guidance regarding where and when to seek medical advice and care. It functions as a healthcare navigation service, guiding patients to the best level and location of care for their situation.

This is not hospital-centered care; instead, the aim is to deliver the right care (often online), at the right place (sometimes at home), and at the right time (ideally, before people are truly unwell).

DFD combines new and existing health information, data, solutions, and services into one integrated suite of tools. The platform may integrate with as many technical applications as possible, including from other vendors, and connects with digital health records,

third-party data and any other relevant systems available in the ecosystem.

Interoperability is critical: Without interoperability, clinicians and patients frequently struggle to work together due to the problems of fragmented health information, the wide-



Dr. Chris Hobson

spread use of siloed systems and a lack of standardization, leading to inefficiencies and a lack of care continuity. Therefore, the successful delivery of modern care increasingly relies on digital health tools and devices working together seamlessly, sharing information and allowing for efficient and effective patient care through interoperability.

With the emergence of large-scale DFD solutions, interoperability must be consid-

ered right up front in the solution design using a collaborative process rather than an optional bolt-on afterthought.

Interoperability isn't just a technical issue. It's also about a seamless workflow that supports integrations with the rest of the health system. For instance, consider the example of Online Booking and Scheduling; patients need to be able to see all available appointments at a given clinic or service via data level integration with the completely separate systems of GPs, hospitals, and clinics.

Organizations should adopt a more patient-centered approach, where the needs and priorities of patients and carers are at the center of their care supported by needed interoperability efforts. This means involving clinicians with frontline experience in the design and implementation of systems that feature multiple applications that need to work together.

Dr Chris Hobson is Chief Medical Officer, Orion Health.

Privacy panel

CONTINUED FROM PAGE 4

more secure electronic solutions for transmitting personal health information.

“E-referrals were piloted in two, high-volume areas of the hospital,” said Lawrence. “We now have a policy to use e-referral first, unless it can’t be done for a particular patient.”

She said, “We’re now partnering with two other hospitals for all DI referrals, where e-referrals must be used.”

She added that e-referrals are now being used, as well, for patient transfers with a long-term care partner, and that this project is being expanded to include other long-term care centres.

When it comes to patient privacy breaches, Lawrence said the hospital adapted methods and practices from clinicians who are investigating cases of medical error. “We’re not there to blame, we’re there to learn,” she said.

Moreover, the hospital is not just looking for breaches of privacy, it is also investigating near misses – just as clinicians study near misses in medical procedures.

In this way, she said, reported breaches “turn into a learning experience that provides value for the entire community.”

On the topic of snooping of electronic patient records by people inside a medical organization, Hillmer noted that Ontario has created what’s called an Administrative Monetary Penalty or AMP. It enables an independent arbitrator to adjudicate and set a fine.

It’s in response to the danger that unauthorized access to records has for the healthcare system at large. “What will happen if people are maliciously snooping,” asked Hillmer? “It reduces trust and the flow of information.”

He added, “We believe Ontario is the first [jurisdiction in Canada] to put it into privacy legislation. Now we have to enact it.”

Hillmer says the AMP can be used to deal with intrusions more quickly than the courts – which can take years to act. However, he noted that care must be taken to avoid an information “chill,” where people are afraid to handle files at all, lest they make a mistake.

“Things can happen because we’re human, like leaving a chart in a stairwell,” he said. If there appears to be an unforgiving legal system at work, “people will retrench and stop sharing information,” which can be just as bad as the snooping.

“There has to be a balance,” said Hillmer, “where we acknowledge that sometimes mistakes are made.”

For her part, Nyranne Martin, general counsel and chief privacy officer, The Ottawa Hospital, commented on an AI-based tool that’s being used at the hospital to detect misuse of patient records. She emphasized, however, that the “overwhelming majority of healthcare providers earn and keep the public’s trust.”

There are rare occasions where unauthorized intrusions occur.

She said that AI is being piloted at the hospital to detect instances of these intrusions without having to rely on random audits. Instead, the AI system is continually monitoring the electronic record system and detects use of the system that appears to be unwarranted.

“Instead of finding a needle in a haystack, the needle pops out at you,” she said.

So for example, when your records are

being opened in the hospital, and the person opening them appears to be your neighbour and not your attending physician or nurse, the system will flag it.

“If you’re not in the person’s circle of care, you might get a message from the privacy commissioner,” said Martin. And you might then have to justify why you were opening the records.

However, Martin said that a new way of looking at intrusions has evolved at The Ottawa Hospital, one that has been championed by the Quality side.

“We avoid targeting individuals when whole teams are involved,” she said. “You want to have a systems view of how people operate in an imperfect environment.”

She compared this to a highway in which everyone appears to be speeding. “Who do you chase?” Is just one person culpable when a whole group is breaking the rules?

And unless a transgression is severe and malicious, she said, it’s better to “coach and console” that person. “We want to punish

only in extreme cases.” That approach tends to build trust with healthcare providers as well as with patients.

Finally, the panel dealt with the issue of cyber-attacks. “The threats are becoming more complex, it’s not getting any easier,”

The Ottawa Hospital isn’t just looking for breaches of privacy, it’s also searching for near misses.

said Eric Ward, assistant privacy commissioner and moderator.

Arianne Siegal, general counsel and chief privacy officer, Ontario MD, observed that protecting oneself from hacks is an issue for Ontario’s 25,000 community physicians – who are essentially operating as small businesses. These doctors are focused on providing care for their patients, but in a world where they’re required to

Bringing portable X-ray to Canada’s remote communities

CONTINUED FROM PAGE 6

coughing or sneezing. Unfortunately, the rate of TB among First Nations living on reserve is over 40 times higher than Canadian-born non-Indigenous population.

This is mainly due to the overcrowded and poorly ventilated homes on the reserve, as well as the number of Indigenous people living with untreated Latent TB Infection. There may not be symptoms, but the latent disease can eventually develop into Active TB.

Thus, monitoring TB by chest imaging is vital in the control of TB on reserve and the FDR Xair turned out to be an excellent solution. Not only is it ultraportable, but it is also very simple to use.

There is a human health resource crisis in Canada, with limited numbers of Medical Radiation Technologists who are licensed and qualified to apply radiation to patients and create images. Part of this initiative was to train Advanced Practice Nurses how to acquire chest images.

As a former professor in the Medical Radiation Sciences program at Mohawk College and McMaster in Hamilton, Ontario, I was able to transfer my years of teaching radiography skills to develop accessible learning modules and train nurses how to correctly acquire chest images.

Focus was placed on personnel and patient radiation safety, and on the critique of images to ensure optimum quality imaging procedures were attained. These quality images would then be transferred to the Synthesis Health platform to have AI applied and to a radiologist for a formal report.

Our first deployment was the Arthur Morin Memorial Health Centre in the community of Southend, approximately 500 kilometers north of Prince Albert. It’s mostly accessible by secondary gravel roads and designated as a type II semi-isolated area with a population of 1,734. After an 8-hour day of driving from Prince Albert, the team settled into the nurse’s dormitory for the evening.

An early morning start was made to unpack the three boxes of equipment and assemble the FDR Xair unit, the detector with a stand and to connect the Console Advance, a user interface, to the internet. Within an hour we acquired the first test

image and sent it to the Synthesis Health platform.

With a three-hour, hands-on X-ray positioning session, the advanced practice nurses were able to acquire their images on an Indigenous patient. To support their new skillset, Quick User Guides to aid the equipment workflow were used, as well as Positioning Guides and Charts to ensure correct and optimum patient X-ray positioning.

After acquiring and assessing their images, the nurses sent their images to Synthesis Health. Within 90 seconds, Artificial Intelligence software can be applied and the detection of common radiological findings can be found with a very high level of accuracy – including the identification of TB.

Finding active TB at an early stage is vital in controlling community spread, as close contact with someone with untreated

Unfortunately, the rate of TB among First Nations is 40 times higher than in the Canadian-born, non-Indigenous population.

TB is the number one factor in increasing your chance of developing TB.

Our patients were asked, “What does this mean to you?” And often, the response was, “I get to stay home. I don’t have to travel 2.5 hours especially in the winter. I am safe.”

The second deployment was in the community of Deschambault Lake, located 328 kilometers northeast of Prince Albert and a seven-hour drive from Southend on primary and secondary gravel highways. The Jonah Sewap Memorial Nursing Station supports the healthcare needs of 1,632 people.

A third deployment of this initiative was in the community of Pelican Narrows. With a population of 3,759, it is located approximately 355 kilometers northeast of Prince Albert. The Angelique Canada Health Centre is a primary Healthcare center servicing a fairly large community with 24-hour ambulance services.

However, until now, it had no X-ray service. In reflecting on this gap in accessing basic X-ray imaging at a primary healthcare centre with ambulance service, one can assume patient outcomes have been

use electronic medical records, they’re also acting as I.T. professionals and privacy officers, as well as managing their offices.

In response, OntarioMD worked with Ontario Health to create a set of free, on-line tools that are available 24/7. The resources are available to physicians and allied professionals and provide training in best practices based on real-world cases. They teach clinicians how to protect themselves and their practices from hacks and intrusions.

Hillmer noted the difficult situation for doctor’s offices and small hospitals that the growing number of cyber incidents creates. “Small centres will never have the resources to mount a strong defence. But we can’t let them not have them.” Pointing to a step in the right direction, Sylvie Gaskin, chief privacy officer at Ontario Health, described a recent partnership between Ontario Health and the Ministry of Health to develop operational centres that can assist the smaller players build their cyber resiliency.

directly affected. This initiative is a definite game changer for this community.

The ultimate goal of this initiative is to broaden the skillset of the designated Advance Care Nurses so they are fully trained to image many areas of the body, including extremities, so they are able to rule out common injuries. In turn, this will help to alleviate patient transfers and thus conserve nursing resources when accompanying patients to primary hospitals that could be over 200 kilometers away.

The development of this initiative has been ongoing to ensure it is successful. We have been implementing training and conducting competency-based assessments of all users. The trainees receive ongoing support and make use of two comprehensive learning modules: Radiation Safety and Workflow, Patient Positioning and Image Critique. They are available in a Learning Portal that all new users must complete.

As the Product Manager of the FDR Xair, my vision of the future is bright. The FDR Xair unit is changing how healthcare is accessed in Canada and it is only the beginning.

In time, I would like to see the FDR Xair used to help alleviate backlogs in emergency rooms by creating health professional teams to bring this technology into people’s homes where a diagnosis can be made and care plans implemented virtually. I would like it to be used routinely in long-term healthcare centers where images can be taken by micro-credentialed healthcare professionals to reduce the need to transport patients to the emergency departments. The possibilities are endless.

At FUJIFILM Canada, we are proud to contribute to closing the gap in healthcare outcomes for our Indigenous communities by bringing our most advanced imaging technologies into their communities. No Canadian should die a decade sooner because of their cultural identity. Together we can help First Nations Health Authorities build a new future founded in true partnership.

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