



# CANADIAN Healthcare Technology

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PHOTO: VÉRONIQUE BEAUDET, GROUPE LE POINT

## Teams win award for surgical-data transfer solution

The McGill University Health Centre thoracic surgery teams and the Centre intégré de santé et de services sociaux de l'Outaouais (CISSSO) were winners of the 2021 Innovative Clinical Team category at the Gala des Prix TI en santé et services sociaux. The teams created a fast and secure electronic solution for sending surgical information between sites, improving productivity and patient safety. **SEE STORY ON PAGE 4.**

## Quebec ramps up health data interoperability

BY NORM TOLLINSKY

**M**ONTREAL — The Opal Health Informatics Group at the Research Institute of the McGill University Health Centre (MUHC) in Montreal is taking its award-winning Opal Patient Portal to the next level. Currently in use by hundreds of patients at the MUHC's Cedars Cancer Centre and scheduled to be deployed in the nephrology department at the Montreal Children's Hospital next month, the smartphone-based app provides patients with access to their blood test results, clinical notes

and scheduled appointments, along with educational material related to their specific medical condition.

In December, the Opal Health Informat-

**Ultimately, patients will have access to their medical data, no matter where the encounter occurred.**

ics Group announced the launch of the Quebec Smart Care Consortium and a three-year project to also deploy the patient portal at the Centre hospitalier universitaire

de Sainte Justine's Hemato-Oncology department. A second phase of the project will enable remote monitoring of patients using wearable technologies and artificial intelligence (AI) research.

Consortium partners include MUHC, Sainte Justine, McGill University, Roche, Novartis Pharmaceuticals, the McGill University Health Centre Foundation, the Cedars Cancer Foundation and several Quebec-based technology companies. VitalTracer and iMD Research will share their expertise in wearable technologies while

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# Quebec ramps up health data interoperability with Opal Patient Portal

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My Intelligent Machines and Imagia specialize in AI.

The consortium has \$5 million in funding from the Quebec Ministry of Enterprise and Innovation's Health Collaborations Accelerator Fund and another \$5 million from consortium partners.

"If we are able to show that it works well and has benefits in two different hospitals, that will be proof that we can scale it up to every hospital in Quebec, provided there's the money and the political will to go forward," said Dr. Tarek Hijal, a radiation oncologist at MUHC and co-founder of the Opal Health Informatics Group.

The vision to empower patients with access to their own medical information is also a priority for the Quebec government, which introduced Bill 19 in December to provide the legal framework for the protection and sharing of health information with patients.

The Opal Patient Portal was inspired and co-developed by Laurie Hendren, a breast cancer patient and McGill University computer science professor, who saw a

need for patients to access their data and play an informed role in their medical care. Hendren passed away in May 2019, but "was an equal member of our team of three and brought a very important perspective as both a patient and a computer scientist to the project," said Dr. John Kildea, a medical physicist at MUHC and, along with Dr. Hijal, a co-founder of the Opal Health Informatics Group.

"We really learned the value of having the end users – both patients and clinicians – around the table to design the product," said Dr. Kildea. The same stakeholder co-design model incorporating patients is being used for the further development of the portal through the Quebec Smart Care Consortium.

"Patients don't usually have access to their blood test results and other data that could empower them in their care," said Dr. Hijal. "The Opal Patient Portal allows them to be more involved in their care. That's the main problem we're trying to solve because data is knowledge and knowledge is power."

For example, Opal addresses the frustration of showing up for a 9 am appoint-



Dr. Tarek Hijal



Dr. John Kildea

ment and having to wait hours to be seen. The app allows patients to check in by waving their smartphones in front of a sensor and go for a coffee or to a park to await a notification telling them they will be seen in 15 minutes.

"We don't just dump data to patients," said Dr. Kildea. "We make sure the data is curated and explained. We provide information about what the blood test results mean in layman's terms. And when we send appointment information to the patient, we contextualize it with a map of the

hospital showing them which clinic they're going to. We include an explanation of what to expect, who they will see, what they should bring with them and how to prepare for the appointment – information that makes it much richer."

During the COVID-19 pandemic, the MUHC infectious disease unit adapted Opal to monitor COVID patients at home. They were given pulse oximeters to measure their oxygen levels and received a questionnaire every day on their smartphones to report their symptoms.

Nurses at the hospital reviewed the data and intervened as required. Out of 50 patients participating in the trial, two had to be admitted to hospital for further treatment because their condition deteriorated, said Dr. Hijal.

Further development of the Opal Patient Portal through the Quebec Smart Care Consortium will employ wearable devices that will automatically transmit oxygen saturation levels and other vital signs.

My Intelligent Machines and Imagia, said Dr. Kildea, joined the consortium "to recognize patterns in the data to help us determine outcomes for patients – whether it's in images that would be indicative of a prognosis of cancer or a better treatment for a tumor. Diagnostic images won't be available through the portal initially," he added, "but our ultimate goal is to have all medical data available. That's our vision."

Data will be accessed from hospital electronic medical records, an exercise that will have to be repeated for each participating hospital should the Quebec Smart Care Consortium get the green light to expand province-wide. Data could be sourced from the Dossier Santé Québec, a centralized database that includes medical imaging, medication and lab result data from the entire province, said Dr. Hijal.

The Smart Care vision also includes the capture of information from electronic medical records in primary care.

In 2019, the Opal Patient Portal solution won the eHealth Solution of the Year Award, the prestigious Prix d'Excellence Award from the Ministère de la santé et des services sociaux and the Trottier-Webster Award for Innovation. In 2020, it won the Prix Banque Nationale Innovation and Community Support Award from the Quebec Breast Cancer Foundation.

Dr. Kildea acknowledges that other efforts to connect patients with their medical information have been deployed across the country, but claims the smartphone-based Opal Patient Portal is a unique end-to-end solution that encompasses remote monitoring through the use of wearable devices and research using AI.

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# INOVAIT aims to promote Canada's image-guided therapy innovators

BY JERRY ZEIDENBERG

**T**ORONTO – INOVAIT, a pan-Canadian network led by the Sunnybrook Research Institute (SRI) and supported by the Government of Canada, has announced an investment of \$2.1 million in 28 companies and organizations that are devising new technologies for image-guided therapy. INOVAIT is awarding the teams grants of up to \$125,000, for short-term projects with potentially high value.

The organizations must put up matching funds, and many of the smaller entities have partnered with larger companies.

"All of the projects have at least two partners, and some have up to four partners," commented Raphael Ronen, director of business development at SRI and director of INOVAIT.

Ronen noted that the goal of the INOVAIT network is to foster image-guided therapies that can dramatically improve patient care in Canada and around the world. He observed that there are many small and innovative medical-imaging companies across Canada, but as usual with small firms, they're underfunded and need a push to get their products to the next level.

While \$125,000 isn't a lot in the scheme of things, he said most of the companies that are successful in this pilot will likely apply for the next round, which will provide more funding.

Indeed, INOVAIT has itself been funded with \$49 million from the federal government. It was originally called the Industry Consortium for Image-Guided Therapy but changed its name to the easier to pronounce and remember INOVAIT.

When the funding was originally announced by then Minister of Innovation, Science and Economic Development Navdeep Bains, in 2019 the idea was for a network of 70 private and public sector partners to invest more than an additional \$76 million, for a total of \$126 million.

The project has a five-year duration, and new investments will be coming up soon, said Ronen.

A list of organizations partnering with



INOVAIT can be found on its website at [inovait.ca](http://inovait.ca). They include start-ups like Luxsonic Technologies of Saskatchewan and Perimeter Medical Imaging AI, Inc., as well as 16 Bit, a company led by two radiologists that won the 2017 RSNA Machine Learning challenge. Their solution was the best at training a neural network to determine pediatric bone age from X-ray images.

16 Bit has launched other projects since then, including initiatives related to COVID, osteoporosis and breast cancer screening.

For its part, Luxsonic Technologies, has partnered with physicians from the Saskatchewan Health Authority, and machine learning (ML) researchers at the University of Saskatchewan. Together, this team will develop a ML pipeline in Luxsonic's SieVRt virtual reality (VR) radiology software. The integrated solution will allow researchers to train new ML models more quickly.

Physicians will then put them to use, improving image-guided procedures and therapeutic interventions. This combination of artificial intelligence, VR, and image

guided therapy (IGT) is expected to lead to dramatic improvements in patient care.

Perimeter Medical Imaging AI will be using its INOVAIT funding to develop a solution for improved, image-guided breast cancer biopsies.

Breast cancer became the most com-



Raphael Ronen

mon cancer globally as of 2021, accounting for 12% of all new annual cancer cases worldwide. Image-guided biopsy is often used to help with difficult breast cancer diagnoses. Based on the same technology as the commercially available Perimeter S-Series OCT platform, Perimeter Medical is developing a device that could help produce accurate, real-time sampling during an image-guided biopsy.

In partnership with Mount Sinai Health System Toronto, this INOVAIT funded project is aimed at demonstrating how Perimeter's OCT combined with artificial intelligence (AI) technology may potentially improve cancer detection, provide better patient care, and represents a game-changer in breast cancer diagnosis.

Ronen noted the growing importance of artificial intelligence in imaging and said that most of the projects are incorporating some form of AI, such as machine learning, into their technologies.

He stressed that INOVAIT is not an incubator or accelerator. "We don't want to duplicate what others are already doing."

However, he pointed out that in addition to providing funding, INOVAIT is acting as a matchmaker and is connecting companies with other organizations that could help them – such as AI specialists, for example, or clinical partners that could provide testbeds.

"We want to promote networking," said Ronen. And not just locally, but on a national scale. "People don't know what's going on across the country. We're going to be holding virtual meetings that will allow people to network across Canada."

Training is also part of INOVAIT's mandate, and the team recently launched a virtual seminar series focused on topics like AI and advances in image-guided therapy, as well as intellectual property and the regulatory framework for medical devices.

Ronen observed that the measure of success for INOVAIT will consist of whether its investments have made an impact on Canadian healthcare and on the world stage. "These are all projects that are all technologically sound and have the potential to generate benefits for Canada – medically and economically," he said.

## Quebec thoracic surgery teams win award for use of telehealth

**M**ONTREAL – The McGill University Health Centre thoracic surgery teams and the Centre intégré de santé et de services sociaux de l'Outaouais (CISSSO) are proud to be selected as the 2021 winner in the Innovative Clinical Team category at the Gala des Prix TI en santé et services sociaux. The award recognizes unique and creative projects aimed at improving the patient and clinician experience, as well as increasing productivity and efficiency in the healthcare network.

"This is a first in the history of such an award. The success of our collaboration and the efforts of all involved have been rewarded," said Carole Lapierre, associate director with the MUHC Part-

nerships Office who is responsible for the project to improve the thoracic surgery care pathway between the MUHC and the CISSSO.

Dr. Lorenzo Ferri is the director of Thoracic Surgery at the Montreal General Hospital. He agrees that the project is a success. "The Atlas Telemed project has really improved and clarified the trajectory of patients from the Outaouais region requiring the services of the MUHC Division of Thoracic Surgery. Through this remarkable collaboration, we have been able to streamline and optimize the management of patients suffering from lung and esophagus cancer."

More than 200 thoracic surgeries are performed annually at the MUHC on patients from the Outaouais region and

the number is growing. In 2018, clinicians from the regional health centre and MUHC surgeons concluded that the information flow between the two institutions was problematic and had the po-

**More than 200 thoracic surgeries are performed annually at the MUHC on patients from Outaouais.**

tential for errors. They embarked on a mission to ensure that all vital clinical documentation, such as consent forms, operative reports and clinical notes, are transmitted securely and quickly.

The technological solution was offi-

cially launched in January of 2021. "The implementation of Atlas Telemed (web platform), well known in the world of telehealth, supports information sharing and facilitates the coordination of care and services between the MUHC and the CISSSO," says project coordinator, Elodie Cornier. "Patients also benefit from significant gains, such as improved continuity of care and a better overall experience."

The support for this project has been extensive, involving healthcare workers, administrative staff, as well as the Telehealth Coordination Centre, information security and computer services, making the realization of this project a team effort. The team is hopeful that other institutions will be inspired by their work and adopt similar telehealth tools.





# Integration of XERO® with Teams enables clinicians and specialists to share images

## **New solution streamlines communication among radiologists and other providers, improving clinical collaboration**

The integration of Agfa HealthCare's XERO® diagnostic imaging viewer with Microsoft Teams allows for easy sharing of images among groups of healthcare professionals. Save time tracking down colleagues in the hospital when a review of images is needed—instead, images can be sent quickly and securely in a way that is already used by many physicians and allied professionals.

Physicians requesting a consult can tag specific members of the channel to review an image. If they fail to respond, the request can be escalated via email and repeated notifications.

Physicians participating in a consult can view the images and communicate with each other using audio, video and chat. Also available is a markup tool allowing clinicians to interact with the images using their cursor and to share the markups in real-time.

The solution can be customized to meet the needs of specific hospitals or clinicians. For example, a COVID button can be added to the navigation bar in the XERO viewer and programmed to transmit images to a 'channel' of predetermined specialists, including pulmonologists and infectious disease experts. Channels can be added for critical care and cardiology specialists, ophthalmology, dermatology, and others.

The XERO/Microsoft Teams app can save valuable time over the course of a week, month or year. Agfa HealthCare estimates that with a time saving of 10 minutes per consult, an average hospital could save 75



days of productive time per year. The app can also be life-saving, if a patient has COVID-19 and needs to be placed in quarantine before infecting someone else.

Installation is via a simple plug-in with no downtime or interruption to viewer use. Following successful implementations in the UK, the companies are now offering the solution to North American customers.



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# Home care delivery start-up raises \$1.2 million to expand operations

BY NEIL ZEIDENBERG

**T**ORONTO – Gotcare (<https://gotcare.ca>), a start-up home care delivery platform, has raised \$1.2M in funding to improve accessibility and affordability of home care services while expanding its operations into other regions of the country.

The three-year old company aims to modernize the home care industry using technology and artificial intelligence (AI) to match every client with the right home care worker; provide real-time reporting and pay every care aide a living wage.

“At Gotcare, our model is based on relationships, keeping care in the community, and giving families the ability to choose (virtually) the right match for them – in advance,” said company co-founder and CEO, Chenny Xia. “Recently, we received a referral from an Indigenous client, and we were able to locate a suitable case worker who lived close by, and who herself was Indigenous – all by 2 p.m. that same day. This is true personalized care.”

Gotcare receives patient referrals from occupational therapists and nurse case managers and connects patients to the

most ideal care aide using advanced software. This patent-pending computer algorithm uses AI to pair the right home care worker with the right patient, based on the type of care required, proximity, language, and other culturally relevant factors.

Moreover, Gotcare streamlines administrative tasks for care workers and families by taking care of all paperwork and reporting.

The company currently operates in Ontario, BC, Alberta, and Newfoundland and Labrador, and is powered by a network of more than 15,000 care workers. That number is expected to rise as they expand to other regions and rural areas of Canada. For the home care industry that’s well-served news.

According to the Ontario Science Table, pre-COVID, home care organizations could fill 9.5 out of every 10 requested visits. But as of August 21, 2021, that number plummeted to just four out of every 10 requested visits.

Some of the reasons for staff leaving the industry include poor compensation, stress due to COVID and feeling undervalued for the work they do. Xia explained that home care workers face very high physical and mental demands on the job.

Additionally, their current rate-of-pay



Chenny Xia, Gotcare's co-founder and CEO

is not enough to earn a living – it’s why many are forced to work multiple jobs to make ends meet.

“Taking care of our elderly and disabled citizens should not be a minimum-wage paying job,” said Xia. “Care work is deeply

undervalued and underdeveloped from a technological lens and our team is supporting the much-needed shift from ‘survive’ to ‘thrive’ by building a home care experience that we’d seek for our own loved ones – one that is modern, personalized, and equitable.”

The home care industry pays an average of \$18 to \$20 per hour. However, using technology to lower the cost of care by up to 30%, Gotcare is using that savings to pay its workforce between \$23 to \$28 per hour.

By collaborating with investment companies, Gotcare is able to secure funding as well as support all aspects of building a successful business. Working with the TELUS Pollinator Fund for Good, Red Thread Ventures and SheEO, Gotcare is receiving the collaboration, initiative, and network to increase access to care for patients, as well as advisory support for government relations as they grow.

“As we move from institutional setting to home care setting, Gotcare will help extend the role and importance of home care workers,” said Xia. “Our approach is to leverage technology to pay care workers more while making care more accessible and affordable.”

## Innovation and improvement across the enterprise are the goals at CHUM

BY CAMILLE BLANCKAERT

**I**nnovation and artificial intelligence (AI) are widely regarded as the keys to the transformation of healthcare, but they represent significant challenges for organizations that want them to play a central role.

The Centre hospitalier de l’Université de Montréal (CHUM), which was ranked 56th in the world and 1st in Canada on Newsweek Magazine’s list of the World’s Best Smart Hospitals, has made innovation and AI two of its priorities as it strives for organizational improvement.

In the article below, Kathy Malas, the architect of the Pole of Innovation & Artificial Intelligence in Health, Executive Office discusses the CHUM’s approach.

**A transversal innovation hub rather than an office:** Hospital centres are facing increasing challenges that put pressure on their healthcare activities and teaching and research missions. Whether it’s a labour shortage, the aging of the population or the impacts of the pandemic, innovation has become a must for the survival of organizations.

In 2018, the CHUM developed a corporate and global vision of innovation, a true driver of value creation and tangible benefits for patients, teams, the organization and its ecosystem. While companies fight for chief innovation officers and dedicated innovation offices are being created at many businesses, the university hospital centre took a creative approach by creating a transversal hub incorporating all its directorates and departments.

“Innovation isn’t only digital – it’s human, organizational and social. Our vision is to be a global leader in the respon-

sible integration of innovation and artificial intelligence for the benefit of our society. We aren’t innovating for the sake of innovation – we do it first and foremost with the aim of improving the health of the population,” said Kathy Malas, chief executive officer of the Pole of Innovation & Artificial Intelligence in Health.

**The luxury of time to innovate:** Beyond this mission, one question remains. How do we innovate, and where should we start? According to Malas, the key is having a strong culture of innovation supported by leadership and operating at all levels of the organization, from the CEO down to front-line managers, who, in turn, support and guide their teams.

To support innovation, an organization must be agile and adaptive, but also structured. A process, in the form of the innovation cycle, should be implemented. For each stage, from needs identification to the sustainability or commercialization of the innovation, approaches and tools have been designed to help people move their project forward and measure its impact.

But how do healthcare professionals find ways to innovate when their tasks are primarily focused on patient care or services?

“It takes incentives such as spaces for reflection and experimentation. That’s why we dedicate 15 percent of the team’s time for innovation. To support them in their process, the CHUM’s management teams provide more than 40 services and offer different types of support. If we really take the time to think, explore, test solutions and measure the value behind each innovation, we’ll accelerate projects and ensure their longevity and scaling-up,” asserted Malas.

**Artificial intelligence, a bottom-up approach:** AI provides unprecedented possibilities, from analysis of big data to better understand, detect and treat diseases, to the optimization and automation of tasks and activities. It will bring a fast and profound transformation of healthcare, teaching, research and the management of health systems.

“Although our innovation strategy follows standard management principles, it’s a bottom-up strategy that was implemented for AI,” explained Malas. Inspired by Andrew Ng, a leading expert from Stanford University, the hub’s team advocates a project-based approach. “Ar-

**To support innovation, an organization must be agile and adaptive, but also structured.**

tificial intelligence can be scary and disruptive. It is preferable to start with pilot projects, create an in-house team of AI experts, train our professionals, and then think about an overall strategy and communicate it,” she said.

With its own School of Artificial Intelligence in Healthcare and a centre of expertise treating and analyzing clinical-administrative and research data (CITADEL), the CHUM prioritizes the creation of a high level of internal expertise and the continuous training of its innovators. With a hundred projects to its credit, the hospital centre is working on projects concerning logistics, procurement, healthcare and services for the prevention, detection, diagnosis and

treatment of diseases, as well as resource optimization.

**AI benefitting oncology:** While the first COVID-19 wave was in full swing and cancer patient management was more complex, the need to have a tool that would allow staff to anticipate needs and better plan resources became pressing.

For several months, after receiving funding from Scale AI and the Fonds de soutien à l’innovation en santé et services sociaux (funding to support innovation in health and social services), teams from the CHUM and Gray Oncology Solutions got together in co-developing a platform with promising impact.

The goal of this project was to use artificial intelligence to ensure informed decision-making in oncology and to improve appointment scheduling, mainly to optimize and increase the availability of radiation oncology and medical oncology treatments for new patients. Phase 2 will involve validating different value hypotheses and modelling the arrival of patients at the oncology department to plan resources to meet these anticipated needs.

**From challenge to opportunity:** Although the possibilities seem infinite, significant challenges remain, especially in measuring the value, sustainability and scaling-up of these innovations. Beyond issues of funding and regulatory roadblocks to innovation, Malas has identified training talent and digital health literacy as crucial elements to its accelerated deployment.

*Camille Blanckaert is a senior advisor for the Innovation & AI Hub at the Centre hospitalier de l’Université de Montréal (CHUM).*

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# Virtual-care system coaches patients before and after cardiac surgery

BY ERIKA MACPHEE, RN, MHSn,  
BONNIE QUINLAN, RN, MScN,  
AMY CHARLEBOIS, RN, MScN,  
AND RUTH COULTON, RN BNSc

**O**TTAWA – The increasing complexity and comorbidity of patients undergoing cardiac surgery, coupled with the current COVID-19 pandemic, have necessitated an innovative technological approach to our cardiac surgery healthcare delivery model. Since February 2021, the University of Ottawa Heart Institute (UOHI) has successfully implemented two innovative virtual programs.

The Cardiac Surgery Prehab Automated Follow-Up (AFU) Program follows all elective surgical patients and focuses on pre-operative optimization. The Post-Operative Telemonitoring Program focuses on high-risk patients post discharge.

Together, these two surgical pre- and post-operative remote monitoring programs aim to reduce the risk of adverse health outcomes in cardiac surgery patients by identifying and optimizing risk factors, decreasing healthcare costs, and increasing patient quality of care.

These programs promote patient and family engagement by echoing patient education and counselling prior to surgery as they reduce fear, fatigue, discomfort, hence recovery and thus early discharge post-operatively.

**Preoperative monitoring:** The goal of the Cardiac Surgery Prehab AFU Program is to screen all elective pre-operative pa-

tients using best practice guidelines, including Enhanced Recovery After Surgery, and to identify those patients at risk requiring optimization prior to surgery. This program aims to improve several patient outcomes including decreased post-op infection rates, improved glycemic management, increased smoking cessation, improved nutritional status, and screening for increasing cardiac symptoms.

Once the patient has consented to cardiac surgery with their healthcare team, patients receive a pre-operative package that includes a website link to an educational webinar with a multidisciplinary healthcare team. The webinar is set up like a Netflix series so that patients and their caregivers can review specific parts of the video promptly after acceptance for surgery and thus as often as they desire.

Patients are then enrolled in the Cardiac Surgery Prehab AFU Program, a Canadian-based computer software system that automatically contacts patients via phone call or email and screens the patients for risk factors based on best practice guidelines.

Patients who are automatically flagged by the AFU system as being pre-operatively high risk are then systematically referred to appropriate outpatient cardiac rehabilitation multidisciplinary specialists for preoperative optimization, including a dietician, physiotherapist, cardiac rehabilitation registered nurse, diabetes

advanced practice nurse, and smoking cessation nurse specialist.

Did you know patients who stop smoking four weeks prior to cardiac surgery have much less risk of post-operative infection, lung and metabolic complications and decreased length of stay post-operative?

All patients with pre-diabetes and diabetes are also referred to community programs for education, support, and preoperative on-going diabetes glycemic man-

length of stay, improve long-term patient outcomes and success, both having an impact of decreased morbidity and mortality and increased quality of patient care.

**Virtual telemonitoring:** The Virtual Telemonitoring Program for High-Risk Readmission Post Cardiac Surgery targets patients who are ready for discharge to home and are deemed high risk for complications post cardiac surgery, including readmission. A multidisciplinary healthcare team identifies these patients and refers them to the UOHI Telemonitoring Program for setup prior to discharge.

Preferably this takes place a day or two prior to discharge to ensure teaching both patient and key learner. Based on historical readmission data, clinical indications for referral to post-op virtual care follow-up include post-op patient with: weight gain of 2 kilograms or above pre-operative weight prior to

discharge; new onset of arrhythmia (primarily atrial fibrillation) who reverted to normal rhythm prior to discharge and are not anticoagulated; Class III or IV NYHA LV dysfunction or an EF less than or equal to 35%; and/or a patient deemed high risk surgical wound infection (ex-draining wound on discharge).

The Canadian-based Telemonitoring Program device and equipment provided to each patient include a tablet that already contains cellphone network access. The patient can also be provided with a Blue-

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Erika MacPhee



Bonnie Quinlan



Amy Charlebois

agement. Patient in/out data from the AFU system is regularly reviewed by a registered nurse who returns calls to patients who have indicated a request for call-back, including those flagged as needing more educational support.

Multidisciplinary specialists use a variety of tools by identifying risk factors, arranging appropriate specialist referral, and optimizing patients for cardiac surgery. Since program initiation in February 2021, over 600 patients have been enrolled and completed the Cardiac Surgery AFU Program. This program can decrease hospital

## Clinicians launch Canada's first virtual care service for kids

BY DR. HARLEY EISMAN

**C**anada's first digital pediatric healthcare platform, KixCare (www.kixcare.com), is working towards providing families across the country with online pediatric care from experts through virtual consultations.

To address rising issues in the accessibility of specialized healthcare services in Canada, KixCare was founded by a group of pediatricians and family doctors that saw an opportunity to better serve children and teens. Digital healthcare has seen rapid 25 percent year-over-year growth in Canada and the US, led by strong performance of virtual healthcare that was accelerated by shutdowns during the COVID-19 pandemic.

In 2021, utilization of virtual care reached levels 38 times higher than pre-pandemic with nearly one in five medical visits now being conducted online (McKinsey). With its mass adoption, virtual care has gained favor among patients and providers – exceeding 90 percent ratings in accessibility and preferred to in-person visits for a majority of patients, according to the Cleveland Clinic.

However, few virtual care solutions have emerged to meet the needs of unique issues facing healthcare for chil-

dren and teens. Access to expert healthcare services can be a challenge – only 30 to 40 percent of primary care visits were seen by a pediatrician pre-pandemic. As a result, many parents default to the emergency department, including Toronto's SickKids ED, which saw wait times up to 10 hours long in 2021 exacerbated by rules around physical distancing.

KixCare was designed to connect parents in need of care for their little ones to vetted expert pediatricians and kid-focused family doctors with visits that are 100 percent free with provincial insurance and available same-day seven-days per week.

The need could not be more apparent. Since launching in August 2021, KixCare physicians have conducted over 4,000 virtual visits – and families love it according to nearly 100 perfect ratings on Facebook and Google. KixCare first launched in Ontario, expanded to serve families in Quebec in November, and is eager to continue expanding to increase access to pediatric healthcare across Canada.

While comprehensive solutions have expanded access to virtual care across Canada, few have focused so holistically on servicing the needs of a specific patient population. Compared to competing platforms where parents cannot be sure they will speak to a kid's health ex-

pert or are faced with up to one week wait times to speak to a specialist, KixCare delivers on fast direct access to expert Pediatricians and kids-focused GPs without the need for a referral.

Kids are not small adults, and they and their caregivers deserve a digital offering that has them at top of mind, always.

Beyond hosting a group of nearly 40 pediatrics-focused healthcare providers, KixCare's platform is designed to serve the needs of kids. Doctors are equipped with growth charts and tools for calculating prescription dosages by age.



Dr. Harley Eisman

Patient care coordinators provide live support for all visits and handle full navigation for referrals, follow-ups, lab requisitions, prescriptions, and more, so that parents finish every visit with the answers they need about their kid's health. The technology is designed to be as seamless as possible – booking a visit and seeing a doctor could not be easier.

In addition to virtual primary and urgent care, KixCare is proud to host

nearly a dozen pediatric allied health providers – professionals that can address issues surrounding mental health, sleep, lactation, language, concussion, and diet concerns, available without referral and at fair cost that is covered by many private healthcare plans.

More than half of Canadian parents have expressed frustration accessing mental health services in Canada – citing long wait times and uncertainty navigating services. KixCare is designed to reduce these barriers by providing specialized services, all in one place.

While telemedicine in Canada gained rapid adoption upon the opening of virtual care billing codes in March 2020, companies like KixCare are betting big that it will be here to stay.

When one looks at how people will go back to office work, it will likely be a hybrid model – home and office. The same will apply to the field of telemedicine. Indeed, KixCare's focus will be growing their provider base with physicians who want to supplement in-clinic practice with a flexible work-when-you-want-to virtual care model. They are also focused on ensuring that families can successfully navigate their children's healthcare journey.

*Dr. Harley Eisman is the Chief Medical Officer and Co-Founder of KixCare.*



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# What will it take to really bring AI into the radiology department?

BY JERRY ZEIDENBERG

Scores of North American radiology departments – especially at academic centres – are experimenting with artificial intelligence and many have set up pilot projects. The impact on healthcare delivery and workflow, however, has been modest.

Still, many in the healthcare sector believe AI is capable of revolutionizing the delivery of care.

So, what would it take to really start using AI, with extensive usage throughout organizations?

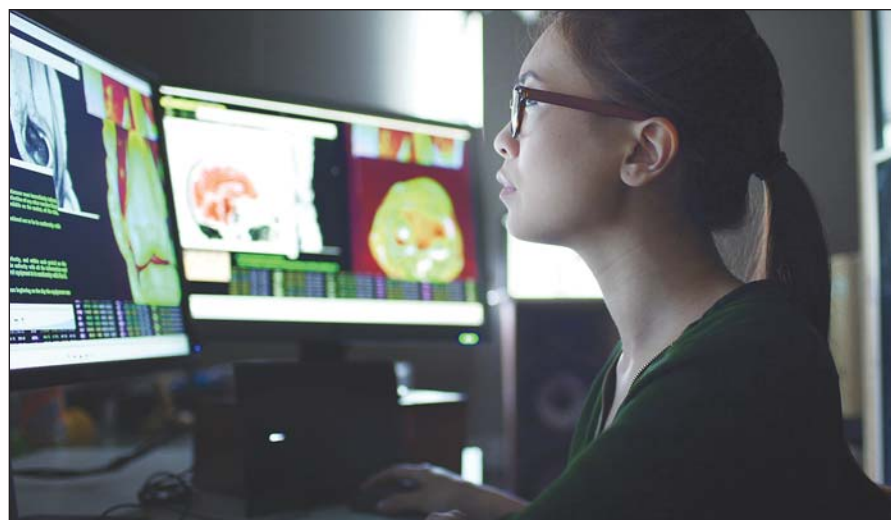
Put another way, what would be the “killer app” that makes everyone want to have AI in their diagnostic imaging department?

This topic was discussed by a panel of DI experts during the recent RSNA conference. Sponsored by Canon Medical, it was hosted by Dr. Eliot Siegel, professor and vice-chair of radiology at the University of Maryland.

Participants included Dr. Peter Chang, a radiologist, computer scientist and entrepreneur at the University of California Irvine School of Medicine; Dr. Patrik Rogalla, professor of radiology at the University of Toronto and site director at the Toronto General Hospital; Cindy Siegel, corporate director of imaging operations at UHS, Philadelphia, Penn; and Tom Szostak, director of healthcare economics at Canon Medical.

For Dr. Peter Chang, the killer app that would spark widespread adoption of AI would be an algorithm that could tell the difference between normal and abnormal exams. That would save radiologists an incredible amount of time and allow them to focus on patients with actual problems and issues.

“If this is done, it would have a real impact on workflow,” said Dr. Chang. “It



would also demonstrate to the average hospital the value of implementing AI, whereas with other algorithms, the benefits may be hard to show and adoption becomes much slower.”

Dr. Eliot Siegel agreed: “If mammo AI is able to identify even 80 percent of exams with 97 percent confidence, it would be valuable.” He noted that a level of accuracy of 97 percent “is better than most radiologists.”

However, he pointed out some complicating factors.

To get to a 97 percent accuracy rate may take some time. Training today’s AI systems – namely Deep Learning solutions that learn from their mistakes – requires huge datasets that are not yet available.

In particular, these datasets must account for all kinds of possibilities and variables.

“There are different populations, and there are patients with rare diseases who are not fairly included in many of these datasets,” asserted Dr. Siegel. “This becomes a challenge when creating algorithms.”

Dr. Patrik Rogalla concurred that “sorting out disease from no disease would be the best application you could have.”

He commented that AI will not replace radiologists – at least not in the near- or medium term, as demand for imaging has been soaring.

However, he said that radiologists wouldn’t mind giving up some forms of reading to machines. “Maybe it’s time to get rid of X-ray [readings], such as chest X-rays. I can’t think of a trainee in the past 20 years who got excited about interpreting X-rays. It never happened.”

Better this less challenging job be done by algorithms, said Dr. Rogalla. “If AI could take over X-ray interpretation, it would be a killer app,” he commented.

For her part, Cindy Siegel said there are several areas where AI could provide incredible value to an organization.

For example, when reading many exams, radiologists are focused on the issue at hand. “But it would be valuable to be able to screen patients and pick up inci-

dental findings that point to near-term or future problems,” she said.

“When you interpret a CT or an MR, you’re looking really at the acute findings. You’re not focused on the chronic diseases, and that’s where population health really comes into play. If you’re able to find something early, then you’re better able to treat it.”

Dr. Siegel commented, as an example, that a radiologist might be reading a lung exam. But if an algorithm, acting as an intelligent assistant, observes that the patient has experienced bone loss and has reduced height, you can treat the patient for this, as well. “In this way, you can reduce mortality and morbidity rates.”

On a related front, Dr. Chang stressed that AI could be invaluable in addressing the inefficiencies of the healthcare system.

“The majority of that inefficiency comes from things that should be automated but haven’t yet been automated.

“In other words, the tedious parts of the workday that require little in the way of sophisticated thinking. These little

**The “killer app” for AI would be one that tells the difference between normal and abnormal exams, says Dr. Peter Chang.**

things fill up our days, not allowing us to think about other things that are critically important.”

Dr. Siegel commented there are many tedious tasks he could think of that are ripe for automation. “Finding rib fractures on a CT of the chest, looking for lung nodules, and in ultrasound, trying to track and count thyroid nodules.”

He said, “There are many things we do that end up becoming really repetitive.”

How far away from solving this problem is AI?

“I’d like to say that most of the technical challenges of building an algorithm have been done,” said Dr. Chang. “If you give us enough data, we can build a tool that does what you want.”

At the same time, he cautioned that this doesn’t account for everything. “Once we have a good tool, do we have good integration that leads to good workflow? That’s what we don’t have, and that’s where work needs to be done,” he said.

Dr. Chang is confident, however, that “it’s just a matter of time before we iron out some of these important details.”

Even if machine learning and other forms of AI can take over some or many of the functions of a radiologist, the panelists agreed that these technologies will never replace radiologists – at least in the short-term or medium-term. “Fifty or 100 years from now, who knows,” opined Dr. Rogalla.

He observed that with the greater automation of radiology, with solutions like PACS and time-saving tools, there has been a reduction in the cost of imaging. And when costs go down, he averred, demand goes up – which has been the case in diagnostic imaging departments.

“In the short-term and medium term, we will need more radiologists,” he said.

## Deep Resolve AI transforms low-res into high resolution

OKVILLE, ONT. – Siemens Healthineers announced that Deep Resolve is now available in Canada. Deep Resolve is an AI-powered image reconstruction technology that takes advantage of intelligent de-noising and convolutional neural networks to generate high resolution images from low resolution input.

Scans can be faster, boosting workflow efficiency while improving patient comfort. Deep Resolve offers an open interface that encourages collaboration and co-creation in a secure digital environment. Mobilizing the power of collective wisdom and experience enables extending the benefits of state-of-the-art MRI to new patient populations.

AI-based image reconstruction is the next chapter in the digital future of magnetic resonance imaging. With Deep Resolve technologies, Siemens Healthi-

neers applies AI to image acquisition and uses deep learning for accelerated image reconstruction.

With a convolutional neural network at its core, it can radically shorten acquisition time without compromising



image resolution. We have a solid foundation of state-of-the-art med-tech and curated data from an international network and continue to drive the digitalization of healthcare and improve the patient experience by securely developing AI-powered solutions in MRI.

Targeted de-noising and deep learning methods power Deep Resolve Gain and Deep Resolve Sharp technologies for sharper images acquired in faster scans. Deep Resolve Sharp generates a high-resolution image from low-resolution input. By including raw data in the reconstruction process, clinically robust results are achieved that, in combination with Deep Resolve Gain targeted denoising, outperform classical denoising and interpolation. Digital innovation in healthcare requires open minds and an open space for fresh approaches to challenges. Standardized communica-

tion protocols make it easy to collaborate and cooperate for innovation and translation into clinical practice. As a trusted technology leader, Siemens Healthineers drives the digitalization of MR imaging by providing a future-proof, secure platform for innovation.



# Curiosity is driving innovation in industries, but it's lagging in healthcare

BY JERRY ZEIDENBERG

**S**AS, a company known for its expertise in analytics and AI software, recently sponsored a survey about curiosity in the workplace. It may seem odd for this 'hard data' company to have probed into a 'soft' topic like curiosity, but there's a good reason for it. We're realizing more and more that curiosity is linked to innovation and progress in the workplace, and without it, there's little improvement or progress.

"Curiosity has led to innovations in our business, in analytics at SAS, and it's driving innovation in every other industry, from pharmaceuticals to space exploration," said Greg Horne, Global Principal, Health Care, for SAS.

For this reason, it's important to be able to measure and promote curiosity in managers and employees, as a way of solving problems and improving industry and society, in general.

The SAS Curiosity@Work Report surveyed nearly 2,000 managers globally in 2021 and analyzed data from LinkedIn.

The document "defines curiosity as the impulse to seek new information and experiences and explore new possibilities, highlighting the importance of this trait no matter an employee's role or level within their organization.

The research found that nearly three quarters (72%) of managers – across all industries – believe curiosity is a very valuable trait in employees, with more than half strongly agreeing that curiosity drives real business impact (59%) and that employees who have more curiosity are higher performers (51%)."

However, the survey also found that managers in the healthcare/life sciences sector believe that employees and job applicants have too much curiosity – 42% versus 35% across all industries.

Moreover, the survey found that only 2 out of every 5 healthcare/life sciences managers can themselves be characterized as 'highly curious'.

This puts the healthcare sector into a bit of a conundrum. If curiosity drives innovation and improvement, how can hospitals and other organizations make advancements if management is on the low-end of curiosity spectrum? How can they foster innovation if they're suspicious of individuals with curious minds?

Horne agrees that this will be a challenge. He himself started as an X-ray technologist in the U.K., and having an inquiring mind, created a spreadsheet showing the volume of people arriving each day for various kinds of tests. He thought his work would be welcomed with open arms by upper management, as it would help match resources to demand.

But his algorithm wasn't met with enthusiasm.

"It got a poor reception, and I was told that I shouldn't be doing this kind of work, that it wasn't my job," Horne said. "They also said, 'We don't do it this way.'"

That attitude of resistance to change and an unwillingness to welcome the ideas of employees is part of what led Horne to leave the U.K. and move to Canada.

He noted, however, that resistance to change and curiosity can be found in Canadian and U.S. healthcare organizations, as well. He lamented that many staff members – including nurses and technologists – are highly qualified people in sophisticated roles. Yet, they're not being encouraged to flex their imaginations and produce new ideas.

That's a pity, since front-line workers are the ones who stand the best chances of coming up with improved methods of working or deploying equipment in new ways.

As well, an environment that's open to

new ideas and innovation could help with the fatigue and burnout that many healthcare workers are experiencing. A more lively and less repetitive workplace could lessen this sense of fatigue.

"Fostering curiosity should become a



Greg Horne, Global Principal, Health Care, SAS.

front and centre strategy in healthcare," said Horne.

Often, there is a corporate culture in hospitals and other organizations that mitigates against curiosity-driven individuals.

Horne suggested that managers tend to hire people who are much like themselves. In this case, if they are averse to innovation and change, they will tend to hire people who share this trait, thereby shoring up the conservative corporate culture.

"If they feel they've been successful, they tend to hire people like themselves," said Horne.

He noted that diversification in the

workforce is a possible solution. "We have to diversify the workforce so we're not just hiring people like ourselves." This is a way of bringing new ideas and methods into the organization.

It's also important to convince top executives to foster creativity in the organization. Unless the top managers are open to new ideas, and encourage them, the rest of the organization won't even try.

The SAS report notes that innovation and curiosity coaching can help change the thinking of both executives and employees. Events like workshops, meetings and online training can all help turn the tide.

At the same time, Horne observed the political issues that accompany activities of this sort. Unions are sometimes afraid of change, fearing their members may lose their jobs. Moreover, some employees and members of the public may balk at money being spent on workshops that could be invested in nurses and bedside care.

Still, advances in healthcare will depend on new ideas, and it will be important to foster a culture that produces them. Recognizing the people who devise new products or technique, or who implement new systems efficiently, is also a great way of raising morale and nurturing a culture of innovation.

"For many people, just seeing your idea being put into practice is a reward," said Horne.

*Greg Horne, principal industry consultant in health and life sciences for SAS, is the host of The Health Pulse podcast. This series explores the impact AI and advanced analytics has on healthcare. Horne engages with thought-provoking guests with diverse backgrounds. You can download The Health Pulse wherever you get your podcasts from or catch them on YouTube!*

## \$32 million gift for biomed innovation at McMaster University

**H**AMILTON, ONT. – A donation of more than \$32 million from Marnix Heersink, an Alabama physician and entrepreneur, will boost McMaster University's role as a hub for biomedical innovation, entrepreneurship and global health.

The gift will create the Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship to educate the next generation of entrepreneurial health innovators.

"I think McMaster is the perfect place to make this donation because of its well-earned reputation in innovative healthcare learning and research," said Heersink, who was born in the Netherlands and grew up in Burlington, Ont. After graduating as a physician, he moved to Alabama where he has a successful career as an ophthalmologist and business leader.

"Healthcare, innovation and entrepreneurship go hand-in-hand. We've seen how McMaster encourages this trend and I was inspired. The possibility

of amplifying healthcare innovation beyond McMaster is what motivates me to make this donation, which I consider an investment in the creation of more opportunities for others."

A portion of the gift will create the Mary Heersink Centre for Global Health, named for his wife, to create new solutions addressing emerging trends and threats to global health, such as pandemics and the climate crisis.

Mary Heersink, a food security author and advocate, is a founding member of the international advisory board for McMaster's Global Health Graduate Program, which includes a consortium of universities in the Netherlands, India, Thailand, Norway, Colombia and Sudan.

"The problem-based learning model that came out of McMaster University's pioneering work is now embraced across the world, and it is a proven entity that has already transformed medical education," she said.

"The COVID-19 pandemic has underscored we need a new way of teach-

ing healthcare workers and new approaches to public health in the global arena. The pandemic stretches beyond the physical and medical to the economic, psychosocial and educational disruptions that cut across all societies and boundaries," she added.

This holistic approach to the pandemic mirrors the university's expertise

**A priority is Canada's Global Nexus for Pandemics and Biological Threats, operating from Hamilton.**

in infectious disease and Canada's Global Nexus for Pandemics and Biological Threats established at McMaster in 2020.

The Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship will be based at the Michael G. DeGroote Centre for Learning and Discovery on McMaster's main campus, and in the future, it will be housed in a new

purpose-built building, as McMaster develops Canada's Global Nexus for Pandemics and Biological Threats.

The gift totals \$25 million US, or more than \$32 million Cdn. These funds will support the creation of the school; the establishment of two endowed professorial chairs in biomedical innovation and in biomedical entrepreneurship; a development fund for innovation and commercialization as well as \$5 million funding for the new Global Nexus building, a contribution being matched by the university. It also includes the funding for the Mary Heersink Centre for Global Health.

In September 2021, the University of Alabama at Birmingham (UAB) received \$95 million US from Marnix and Mary Heersink. Subsequently the University of Alabama School of Medicine announced its name would become the Marnix E. Heersink School of Medicine.

The UAB is now in the process of creating the Marnix E. Heersink Institute of Biomedical Innovation and the Mary Heersink Institute for Global Health.

# Not business as usual in the new world of procurement

There's much to know about trade agreements, as well as procurement laws and unwritten protocols.

BY DENIS CHAMBERLAND

In earlier days, before the pandemic, Doug Ford, the Premier of Ontario, often said he would make Ontario "open for business". His avowal included hospital procurement, which is currently being reviewed within the context of Supply Ontario's mandate to transform the Province's supply chain.

It is too early to know what exactly will be transformed, but one thing we do know is that high on the agenda is close collaboration with the private sector.

Being "open for business" is glad tidings for the private sector, but does it mean that doing business with hospitals will get easier? Not necessarily. It may, for those who have a nuanced understanding of the laws, conventions and protocols that apply in public sector procurement. For others, winning hospital business may get tougher.

**What are the written rules?** Healthcare procurement has become an increasingly complex web of laws and policies in the last decade, all across Canada. While some provinces have opted to legislate (as did Ontario in 2011 with the Broader Sector Procurement Directive through the Broader Public Sector Accountability Act, 2010), several trade agreements have come into force in the last few years.

These include the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) and, domestically between the Federal Government and the Provinces and Territories, the Canadian Free Trade Agreement (CFTA), which replaced the long-standing Agreement on Internal Trade (AIT). All of these include extensive chapters on public procurement, which apply to hospitals.

As if the trade agreements were not complex enough, there is the vast library of court decisions on procurement which hospitals must contend with since the seminal 1981 Supreme Court of Canada decision of *R. v. Ron Engineering and Construction (Eastern)*.

Ltd. Finally, there are the hospitals' very own procurement policies they must legally comply with.

**What is the Purpose?** That public procurement has become so regulated in Canada, as well as internationally, is not surprising given the amount of public spend at all levels of government and the intimate correlation between public procurement and corruption. In fact, the lion's share of commercial corruption globally stems directly for wrongdoing in the pursuit of public contracts.

There is also the fact that the business of the public sector is complex and spending public dollars

**Be proactive and develop a deep understanding of the whole procurement environment, not just the written rules, advises Denis Chamberland.**

wisely is not always as easy as it may sound, which is why robust rules are in place to guide those who implement and those who must follow the rules.

Competition is the basic rule in public procurement in Canada, but it must be competition which is subject to the well-defined principles of 'open, fair and transparent', the motto of Canadian procurement. The goal is to ensure that all potential suppliers to the public sector are treated fairly and have an equal opportunity to win business.

**Why comply strictly?** Some sup-

**Denis Chamberland is a lawyer with extensive procurement experience working with hospitals in Canada and Europe. He is also the CEO of MES Group, a provider of Managed Equipment Services solutions. He can be reached at [dac@chamberlandlawcorp.com](mailto:dac@chamberlandlawcorp.com).**



pliers understand the rules well, some understand some of the rules, and most are challenged to understand most of the rules. Understanding and complying with the rules strictly ensures the most direct path to success, but even suppliers who enjoy a deep grasp of the rules sometimes fail to appreciate that their instinct to sell (endlessly) can often be self-destructive.

Take, for example, the executive on the bidder side who contacts its counterpart within the hospital during the procurement process. This type of behavior is usually expressly prohibited in the bid call document (hospitals are often hesitant to disqualify a 'good' bidder for what they perceive to be minor misconduct).

Aside from being a breach of the rules, consider the impact on the members of the evaluation team, who often spend a great deal of time and effort evaluating multiple bids. They will not be thrilled to hear that a senior executive on the bidder's team tried to bypass their role.

Right away, the bidder has committed an enforced error that could turn out to be a costly one, even if none of the hospital evaluators make a conscious decision to 'penalize' the bidder. Human nature sometimes works in subtle ways.

**What to do?** Be proactive and develop a deep understanding of the whole procurement environment (not just the written rules). Importantly, don't assume that continuously selling is your best strategy.

Indeed, healthcare procurement has become more regulated across Canada, a trend that will not end anytime soon.

Bidding on contracts in a jurisdiction that is "open for business" is a positive factor, but truly understanding how the system works – the laws, the unwritten conventions and protocols – and how to put your best foot forward in the procurement environment is the key to winning hospital business.

## It's time for Canada to embrace the CNIO role

BY GILLIAN STRUDWICK,  
HELEN EDWARDS, PEGGY WHITE,  
LYNN NAGLE, BRIAN LO  
AND SONIA PAGLIAROLI

Canadian healthcare environments have experienced significant technological shifts over the last several years. The COVID-19 pandemic has accelerated these changes, ushering in a new era of virtual care, which has become more common than in-person care in some cases.

Additionally, electronic health record systems with an increasing number of functions and features are either being implemented, replaced or optimized in every Canadian jurisdiction.

With all of these transformations in clinical care, the role of the Chief Medical Informatics Officer (or a similar title) has grown significantly across the country, and for good reason. The work that physicians do is impacted a great deal by these technological systems, and physicians therefore need to be at key decision-making tables to ensure that the right path is forged to support the delivery of excellent clinical care.

The need to be present at these decision-making tables is also true for other health disciplines, particularly nursing, yet in Canada there are barely more than a handful of organizations with a complementary Chief Nursing Informatics Officer or CNIO role in place.

Given the significant role that nurses play in the health of Canadians, and the 400,000+ regulated nurses currently practicing in these technologically evolving environ-

**In Canada, there are barely more than handful of organizations with a Chief Nursing Informatics Officer.**

ments, it's time for Canada to embrace the CNIO role.

**What is the CNIO role?**

According to a 2015 article on how nursing informatics leaders can help make a digital National Health Service (NHS) a reality: "The Chief Nursing

Information Officer (CNIO) provides a crucial role in bridging the gap between IT professionals, clinicians and hospital management, ensuring that new technologies meet the needs of nurses in practice on the ward. The CNIO is the voice of calm and reason, with the experience and appetite to lead care transformation by restructuring an organization's culture and workflows and having a deep understanding and appreciation of the barriers and pressures involved" ([https://www.buildingbetterhealthcare.com/news/article\\_page/How\\_nursing\\_informatics\\_leaders\\_can\\_help\\_make\\_a\\_digital\\_NHS\\_a\\_reality/109823](https://www.buildingbetterhealthcare.com/news/article_page/How_nursing_informatics_leaders_can_help_make_a_digital_NHS_a_reality/109823)).

The CNIO role is about engaging

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# CHIC intending to drive innovation by bringing partners together

BY MARIO VOLTOLINA

There has been tremendous innovation in Canadian healthcare since the COVID-19 pandemic was declared almost two years ago. Out of necessity, clinicians and patients turned to virtual care to keep everyone safe, and the demand for e-mental health apps and services skyrocketed as Canadians tried to cope with the pandemic. In partnership with clinicians, patients and funders, innovators stepped up to create or enhance technological solutions, as well as digital tools to help patients manage their health.

This is a great example of how innovation in healthcare can work – when all of the players collaborate to achieve common goals. Outside the context of the pandemic, a lot of Canadian organizations are meaningfully engaged in healthcare innovation. The challenge is how to harness and coordinate all of this activity to achieve the outcomes everyone is seeking.



Mario Voltolina

Canada Health Infoway's Innovative Technologies team is focusing on accelerating the adoption

of innovative technologies to bring value to Canadians under healthcare's Quadruple Aim – improved patient experience, improved clinical experience, improved population health and lower costs.

In 2021, we commissioned a landscape scan (available on our website at [www.infoway-inforoute.ca](http://www.infoway-inforoute.ca)) to gain insights about innovation strategies, frameworks for monitoring and evaluating outcomes, and trends and enablers of innovation across Canada. These insights helped us develop a Continuous Innovation Framework that will allow for collaboration and assisted coordination among the Canadian healthcare innovation community to identify, forecast and advance the most impactful innovations for Canadians.

The Framework is also based on approaches from Gartner Consulting, thoughtworks, the Cloud Native Computing Foundation and the Good Judgment Project, and it has three phases: Continuous Foresight, Innovation Convening and Innovation Measurement.

The Continuous Foresight process involves identifying technological and process innovations and trends, understanding how meaningful they are, forecasting their impact, and accurately forecasting time horizons for implementation. This will help sharpen everyone's focus.

Innovation Convening brings groups together to discuss the areas of focus, and share knowledge and experiences. Innovation Measurement will measure what we're achieving and feed it back into the loop to improve our forecasting, identification, planning and execution.

Infoway is an experienced collaborator, and we have long-standing relationships with healthcare stakeholders across the country. We also bring a national view to our work. But we can't drive innovation in

Canadian healthcare on our own. We are collaborating with existing partners including clinicians, patients, administrators, funders and regulators, and developing new relationships with researchers, scientists and technology experts, among others. We are referring to everyone in this

broad group as the Canadian Healthcare Innovation Community, or CHIC.

By acting together, we can help innovators succeed and make real, impactful differences in our healthcare system. Acting together means listening to diverse points of view from people in diverse roles.

It also means ensuring that everyone is aware of the pockets of innovation that exist throughout the country, so we can share knowledge and decide to execute on some things as a community. If you would like to be part of the CHIC and

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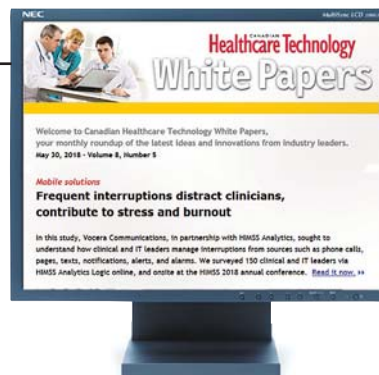


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# Alberta system shares patient data with hospitals and healthcare providers

Information also flows back to the primary care clinicians about their patients' hospital visits.

BY DIANNE DANIEL

A family physician in Whitecourt is calling it the best thing that has happened to primary care in Alberta. A cardiologist at the Healthy Heart Institute in Red Deer says he's "delighted" to see the information gap addressed by having patient information in one central repository. And a Calgary-based family doctor says she's finally able to properly do her job and quarterback her patients' care.

That's a snippet of the feedback four years after Alberta Health's Community Information Integration (CII) program went live in September 2017, improving continuity of care for Albertans through better sharing of patient information.

What set out as an initiative to provide a more complete longitudinal record in Netcare, the province's electronic health record, is beginning to fill a "big hole" in visibility, said Government of Alberta project director Michael McDermott, project director for CII.

"There's been a lot of attention paid to continuity of care in Alberta in general ... and the problem everybody recognized right away was we were getting a lot of information flowing from hospitals into our provincial system so people could see it; what we weren't getting was a lot of information from primary care," said McDermott.

Alberta Health's CII program aims to fill that hole by getting select patient information to flow from primary care electronic medical records (EMRs) to the rest of the healthcare system through Alberta Netcare, Alberta's provincial electronic health record. A companion system, called the Central Patient Attachment Registry (CPAR), captures the confirmed relationship of a primary caregiver and their paneled patients.

"When we started off, we wanted to understand about patient visits, and we also wanted to get a good picture of what's happening in the specialist world," added McDermott, noting that specialist consult reports are also uploaded as part of the program.

Representing the province's first private cloud implementation, the program is hosted as a software-as-a-service (SaaS) model in Orion Health's Managed Private Cloud Service. By choosing SaaS, Alberta Health was able to leverage the integration expertise of the Orion Health team and at the same time benefit from the agility of a hyperconverged infrastructure without having to worry about managing the underlying technology pieces. The costs associated with developing and maintaining the service are paid by Alberta Health and there is no cost to participating primary care providers.

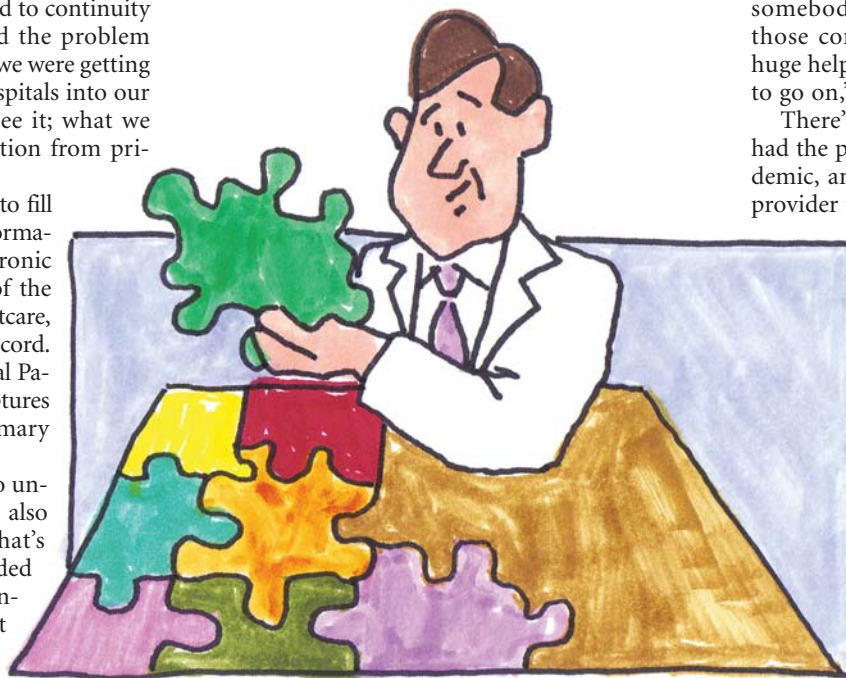
From the outset, the collaborative effort sought to engage multiple stakeholders, including EMR vendors, the Alberta Medical Association, Alberta Health Services and primary care networks. When the vendors identified XML as the best connector to allow their varying data formats to access the same system, Alberta Health and Orion Health went along.

"Getting together and finding a way forward that we could all agree with was pivotal to this," said Mike Craig, Orion Health vice-president, National Solutions, adding that using XML versus a standard like

HL7 made it possible to get up and running sooner. "We are dependent on the other vendor partners to make this happen so we need to make it as easy as we possibly can to get started," he said.

Equally important to the project's success was the need to present a clear value proposition to primary care clinicians. Once the initial flow of information from the EMRs to Alberta Netcare was established – including patient data, provider data, observations, immunizations and referrals – the project team decided to move towards a bidirectional model where data also flows back out to community providers, including e-notifications about patients who visit the hospital.

"The biggest thing that gets physicians on board is the fact that we report back your hospital admits and discharges on your patients. You provide us with information on what patients you see ... and we report back to you what your patients are doing when they hit the hospital system," explained McDermott. "We can use carrots or sticks, and Alberta has chosen not to use any sticks on any of these pieces – it's all car-



rots. It's about increasing that value proposition and making sure they get on board."

Several resources and supports are in place to help community physicians participate in the integration project, including a readiness checklist. Before going live, a clinic's privacy impact assessment must be up to date, they must be live on Alberta Netcare, their patient panel must be ready and they must be using the latest version of their EMR.

EMRs currently supported by CII include Microquest Healthquest, Telus Wolf, Telus Med-Access, Telus PS Suite and QHR Accuro. AHS-operated community clinics will be connecting to Alberta Netcare through Epic, the hospital software system currently being implemented across AHS.

To date, roughly 20 percent of the province's primary care providers are live on CII and CPAR, comprised of 1,175 physicians, 275 clinics and 254 specialists. More than 3.2 million patient encounters and upwards of 295,000 consult reports have been submitted to the provincial EHR, and just under a quarter of a million patients have been attached to a CPAR panel.

Some data, such as patient visit information, is automatically updated nightly, whereas consult reports are managed by community specialists who select what information is appropriate to share on a case-by-case basis.

Response from early adopters is positive. According to a 2019 report of survey data that polled those already onboarded in the system, 93 percent said they were comfortable sharing information with other healthcare providers, as well as sharing information with Alberta Health for the purposes of planning and quality improvement, and either agreed or strongly agreed that the sharing of information through CII/CPAR will lead to better patient care.

McDermott said the team has also received anecdotal evidence from providers pointing to the utility of receiving e-notifications to keep them abreast of what's happening with their patients in the hospital system. On the flip side, ER doctors are reporting they're quite happy to see more information in Netcare about the acute patients who come through their doors.

"Being able to know that ER patients are seeing somebody else for certain conditions, or what those conditions are out in the community, is a huge help when you don't have a lot of information to go on," he said.

There's even widespread acknowledgement that had the project been further along prior to the pandemic, and the province already knew the primary provider for every patient, it would have been much easier to report back individual COVID-19 test results.

"The idea here is we want to know where your patient 'medical home' is," said McDermott. "What that allows us to do from an electronic services standpoint is deliver information back to the primary provider even though they weren't on the original recipient list."

As it continues to onboard primary care providers into the CII program, the province is also working to expand the information shared from Alberta Netcare back to primary care providers, such as hospital discharge reports. It is also exploring the addition of patient summaries, in collaboration with Canada

Health Infoway's working group, which will present a curated set of important patient medical information to any healthcare professional caring for that patient.

"One of the key drivers for Alberta Health right now is to get as much information as possible about the patient to the patient so that's a key integration focus for us," said McDermott. "The advice we got from the clinical working group is actually that the patient summary should be written in a way that is accessible by both providers and by patients – to find the middle ground."

Alberta Health made a conscious decision not to attain the ideal integration model at the start when it launched CII, but as it evolves its SaaS relationship with Orion Health, there are several opportunities to add advanced functionality ahead, he added.

"We've got all of the foundational pieces in place to transfer patient information back and forth. The pattern we're in now is more about what additional information should flow over the pipelines," said McDermott.

Soon, Alberta Health will be expanding its inte-

CONTINUED ON PAGE 19

ILLUSTRATION: LINDA WEISS





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CANADIAN  
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# An integrated data system improves community healthcare in Ontario

BY BRIAN SANKARSINGH

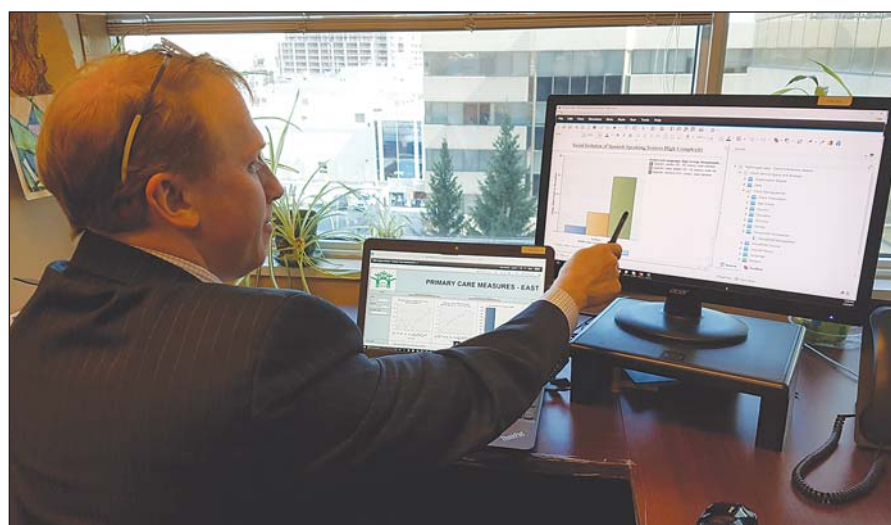
**T**ORONTO – The challenge of meaningfully integrating client health data has been present since providers began using an electronic medical record (EMR). When systems aren't compatible, data becomes siloed; providers and clients can't see the whole picture, and good decision-making is hampered. For members of the Alliance for Healthier Communities, data-sharing and integration are empowered by an innovative, award-winning Business Intelligence Reporting Tool (BIRT).

The Alliance and its members began developing BIRT in 2010 to help primary healthcare teams integrate their clinical, interprofessional, and community health data. This in turn facilitates reporting, planning, research, and clinical decision-making.

The Alliance for Healthier Communities is the voice of a vibrant network of community-governed primary health care organizations. Alliance members serve diverse communities across the province, and they are rooted in the communities they serve. They share a commitment to advancing health equity through the delivery of comprehensive primary health care.

Built on an Oracle database and using IBM COGNOS Business Intelligence, BIRT enables each organization's data to be aggregated and shared across the sector, generating large datasets that can empower sector-wide research and learning. Because the EMR data in BIRT is refreshed nightly, these functions are done with near-real-time data.

BIRT supports quality improvement, research, and evaluation at individual organizations and across the Alliance membership. Alliance members have been collecting data for an exceptionally long time – some



for over 30 years – using a common Evaluation Framework grounded in the Alliance's Model of Health and Wellbeing (MHWB).

This model, which outlines the Alliance and its members' commitment to equitable, accessible, anti-oppressive, and accountable care informs research questions and methods.

The knowledge generated by Alliance research helps the Alliance and its members understand the populations they serve, and it provides insights into how best to operationalize the MHWB and adapt it to local contexts. It helps in recognizing emerging health challenges, such as loneliness and isolation, in identifying barriers to health and wellbeings that affect certain populations, in evaluating new and ongoing programs and services.

Over the past few years, the Alliance and its members have been evolving into a Learning Health System (LHS). A key characteristic of an effective LHS is that it can capture and use clinical data to ad-

vance knowledge and improve care.

BIRT gives providers actionable insights and tools to help them identify the most appropriate performance and client-care metrics. An essential part of the Alliance LHS is the Equity, Performance, Improvement and Change, Practice-Based Learning Network (EPIC PBLN).

This PBLN consists mostly of providers who work in Alliance-member organizations. It exists alongside seven regionally-based PBLNs, each of which is affiliated with academic institutions around the province. The EPIC PBLN is built on the foundation of a common EMR, shared data standards, and data aggregation through BIRT.

This means it can generate a robust body of consistent, comparable, and combinable data. Such data can be used to look for patterns and evaluate the effectiveness of interventions through large-scale, real-world clinical trials.

The Alliance research team works in partnership with provincial and national

research institutions, such as the Institute for Clinical Evaluative Sciences (ICES) and the Canadian Institute for Health Information (CIHI).

Both are independent, not-for-profit organizations which use population-based health, administrative, and social data to produce knowledge about Ontario's and Canada's health systems and the health of Canadians.

Sharing BIRT data with these research institutes ensures that the health journeys of Alliance members' clients and the care provided by Alliance members are understood within the context of the broader health system.

BIRT has also advanced performance accountability. In 2017 Ontario's Auditor General (OAG) recognized a deficiency in the ministry's data holdings: Unlike other primary care providers, Alliance member clinicians do not bill for their services through the Ontario Health Insurance Program (OHIP), being instead paid by salary.

In response, the OAG recommended the Ministry of Health access BIRT for better oversight of the Community Health Centre Program. This has ensured that as their funder, the Ministry understands the care Alliance members provide to their clients and communities and is assured that they are delivering good value for money.

Accurate, timely data is crucial to shared decision-making and integrated healthcare. Most health journeys involve multiple organizations, each generating different information, recorded in a different system. The emergence of Ontario Health Teams means that primary care, interprofessional, and community health providers need to collaborate in new ways with hospitals, home care, and other sectors to build integrated, local systems of care.

## SHREWD solution obtains region-wide view of patient flow, performance

BY NIELS TOFTING

**S**uccessful interoperability in the complex environment of healthcare is and continues to be a difficult challenge that has hampered the achievement of an integrated model of care that puts patients first, something many governments globally have prioritized.

A smooth flow of patients is important for improved health outcomes and efficient delivery of healthcare services. The challenge of achieving smooth patient flow is amplified by the number of providers, the complexity of their information systems, and the care coordination required to measurably improve quality and achieve the Quadruple Aim.

**Whole-system visibility project at Ontario Health West:** A recent project initiated during the COVID response in the Ontario Health West region and led by hospitals in the Erie St. Clair area underlines the need for system-wide patient flow visibility and addresses those interoperability challenges in clear and concise ways.

Windsor Regional Hospital, Hotel-Dieu Grace Healthcare, Bluewater Health, Erie Shores HealthCare, and Chatham-Kent Health Alliance implemented VitalHub's SHREWD solution to improve resource utilization via the visibility of network-wide hospital and community performance indicators.

The investment in SHREWD is being made to maximize the clinical value of providing a standardized and transparent way of seeing the pressures each organization faces so they can collaborate and more readily integrate, coordinate and level-load to optimize delivery of local health services.

SHREWD provides real-time access to patient flow metrics by integrating live data feeds from the respective hospital information systems. SHREWD presents operational metrics on COVID-19 infections, ED Capacities, Admissions and Discharges, and other metrics, visible across the entire region.

"Despite the many challenges, managing through the COVID-19 pandemic also illustrated even more clearly the

value of partnership and collaboration in a regional health system. By implementing SHREWD in the Erie St. Clair region, we have yet another tool in our arsenal that we can use not only to predict capacity and impact, but also how we can come together as a health system to support one another through acute or more

**SHREWD provides real-time access to patient flow metrics by integrating live data feeds from various hospital systems.**

long-term healthcare issues," said Lauren Wieringa, MBA, director, Digital Systems and Project Management, Chatham Kent Healthcare Alliance.

The SHREWD whole system visibility platform builds upon the foundation established through the Hospital Information System (HIS) Renewal project that led to the implementation of Cerner regionally in all but one of the partner hospitals. "Regional integration is a core func-

tion of enhancing the services we provide to our communities and something that the hospitals within our region have been working on for years. This project is an important milestone toward realizing the potential that transparency and information sharing across the network can have on patient outcomes," said Kristin Kennedy, president and chief executive officer, Erie Shores HealthCare.

SHREWD integrates information from Cerner and other hospital and community-based information systems to provide a view of demand, capacity, and utilization of health services across the network of providers in the region. The programs in scope include the emergency department, EMS/ambulatory services, medical and surgical units, complex care, critical care, rehabilitation, women's health, and mental health.

"The SHREWD platform gives all of the hospitals in the region a real time look at regional pressures and will allow us to take a more proactive approach to system wide flow. One thing we know is that when a bottleneck exists in one part



# SickKids automates collection of data, links data to AI-enabled engine

BY NORM TOLLINSKY

**T**oronto's Hospital for Sick Children (SickKids) is engaged in an ambitious artificial intelligence (AI) research project to mine physiological data from biomedical devices and to better understand what insights can be gathered from the physiologic data.

"I see it as a really unique methodology for integrating the vast amount of data that we're collecting and potentially transferring it into actionable information or insight to help guide a doctor's thought process," explained Robert Greer, computer scientist in the Department of Critical Care Medicine at SickKids.

**Getting access to inaccessible data:** SickKids collects and stores high-frequency data from multiple biomedical devices, but one data source, the hospital's anesthesia devices, was inaccessible. Determined to collect and store the high-frequency waveform data for research studies, SickKids turned to Enovacom Canada, an Orange Business Services subsidiary specializing in biomedical interoperability, for assistance in developing a solution for research purposes.

"We will be adding this additional information to our existing waveform program that has been running since 2016 in our intensive care unit (ICU)," said Greer. "The goal is to get us one step closer to establishing a continuous, highly accurate, physiological record across the hospital."

"As part of this initiative, we are starting to collect waveform data from operating rooms (ORs), imaging suites, catheterization suites and recovery rooms. This will add to our existing ICU capture system and is part of a larger institutional plan to extend the initiative to our neonatal inten-



sive care unit (NICU) and emergency department (ED)."

The ENOVACOM Patient Connect (EPC) product collects data from biomedical devices in proprietary format and converts it to formats required for hospital electronic medical records and data repositories.

"We have communication drivers for most of the biomedical device manufacturers," said Alain Larochelle, Enovacom Canada country manager. "If the device can communicate, we can capture it. For the ones we don't currently have, our R&D data analysts can supply them in four to eight weeks. The only constraint is that the device needs to be able to communicate."

Aside from anesthesia devices, EPC can collect data from ventilators, respirators, electrocardiogram (ECGs), infusion systems, and many more devices.

With EPC, data can be collected and transferred to a database every four hours,

for example, but data can also be sent 200 Hz (samples per second) to a data lake or repository if it's to be used to develop and study machine learning algorithms, as SickKids is doing.

"We can configure EPC so all destinations get their data at the required frequency and in the format required," said Larochelle.

The solution isn't limited to deployments in ORs and ICUs. According to Larochelle, it can also be deployed in EDs, and any number of other departments with biomedical devices, including Maternity, Cardiology and Neurology.

Well over 1,500 sites have deployed Enovacom solutions, including EPC, ENOVACOM Data Repository (a FHIR-compliant solution) and ENOVACOM Integration Engine. The company entered the Canadian market in 2017 and won a major contract to equip a large number of Quebec healthcare institutions with its interoperability platform.

"A growing number of hospitals in

Quebec have deployed our platform, while some of them have started to layer on EPC," noted Larochelle. SickKids, a prestigious teaching hospital, is Enovacom's first customer in Ontario.

EPC is unique, claims Larochelle, because it's a 100 percent software-based solution and therefore easier to deploy.

**Going beyond clinical opportunities:** Data collection from biomedical devices also presents a research opportunity. "Our intention is to conduct research projects to understand what insights we can gather from high resolution physiological data and support the future development of algorithms for decision support," said Dr. Asad Siddiqui, Paediatric Anaesthesiologist at SickKids.

Clinicians currently make decisions based on available metrics from medical devices, but cognitive limitations can limit the optimization of these decisions because patients can be connected to 15 or more devices generating thousands of data points per minute.

In the future, decisions could potentially be enhanced by basing the decisions on a larger number of data points and metrics which may result in a reduction of biases.

Dr. Siddiqui underlines the quality improvement benefit of having the data stored and retrievable, because "it allows us to go back, look at certain events that we need to review retrospectively and assess how we can improve or how we could have changed what happened in the OR."

"You can also go back in time and look at the waveform data from an ECG leading up to the time a patient had a cardiac arrest," added Greer.

"That's not something you can do today, so we want to assess the viability of providing this capability."

of the system, it doesn't take long for that bottleneck to start to impact other areas causing patient flow to slow or stop. SHREWD gives us that real time early warning that one piece of our system is experiencing increased pressure so that we can plan, flex and adapt to keep the system moving," said Kim Kraeft RN, PMP, project manager, Bluewater Health Project Office.

Ontario Health West will have the opportunity to expand the scope of their SHREWD deployment to include long-term care and additional community services, like current SHREWD deployments at NHS England's Integrated Care Systems. These NHSE ICSs are partnerships between healthcare providers that were formed to meet health care needs across an area. For several years, they have been using SHREWD to support interoperability and integration of information residing in various disconnected information systems.

**More About SHREWD:** SHREWD is designed to integrate data from a variety of sources to tell a single, easy-to-understand story of resource pressures in real-time, allowing operations, clinical, and regional teams to make decisions and

address stresses within the system.

From a technical perspective, SHREWD aggregates information in secure data lakes. These data are then accessed by SHREWD modules to further transform data into meaningful information. Data can be collected by SHREWD in virtually any format from comma-separated files to spreadsheets, APIs, and other standard formats and protocols. SHREWD's open API also allows third-party connections to the information stored in the data lakes.

The way SHREWD displays information means that providers can see where the pressure is building in and across the system and quickly:

- Predict and prepare for what's coming;
- Provide alerts and active monitoring of system pressures;
- Review historical performance trends;
- React and respond as soon as it happens; and
- Load balance pressure across a wider network

Niels Tofting is Executive VP, Business Development & Marketing, at VitalHub. <https://www.vitalhub.com/patient-flow-operational-visibility>

## CHIC intending to drive innovation

CONTINUED FROM PAGE 13

participate in the Continuous Innovation Framework, we hope you will reach out to us by email at [innovation@infoway-inforoute.ca](mailto:innovation@infoway-inforoute.ca). We have two very exciting activities in progress.

As part of the Continuous Foresight process, we will be publishing the Infoway Radar on our website. It's a graphical representation of the innovations and trends to watch, including their forecasted impacts on healthcare. The CHIC will help identify and forecast opportunities that should be on the Radar.

You can also participate in our Innovation Convening activities. We recently developed and published a toolkit for the implementation of artificial intelligence (AI) in healthcare. The toolkit is intended to serve as a "nuts and bolts" primer for healthcare delivery organizations that are beginning their journey with AI, and can be helpful for other organizations.

You can download the toolkit from our website, and participate in a series of free webinars throughout the winter to

explore the toolkit's six modules. AI implementers can also make suggestions to help us refine future editions of the toolkit, and contribute case studies and use cases.

It's an exciting time for healthcare innovation in Canada, with a lot of fantastic work underway and a lot of opportu-

**We will be publishing the Infoway Radar on our website, a graphical representation of innovations to watch.**

nities. It will be essential to work together as a community to pick the right ones that will have the greatest impact for Canadians, and to act on them. The pandemic changed Canadians' expectations about healthcare, and it's up to us to drive innovation forward to meet or exceed those expectations.

Mario Voltolina is Chief Technology Officer and Executive Vice President, Innovative Technologies at Canada Health Infoway.

# Quebec harnessing a new platform to improve access to primary care

BY ELLIOT DESILETS

Access to care remains a major challenge across Canada, where factors including aging technologies and labour shortages are barriers to adequately meeting demand. For instance, in Quebec alone, tens of thousands of citizens are on a waiting list for a family doctor and those without one are currently forced to turn to hospital emergency rooms, even for non-urgent needs.

From 2018 to 2019, nearly three quarters (71%) of outpatient hospital visits in the province were for mild cases. As more citizens utilize emergency rooms for their primary source of care, the healthcare system becomes strained due to an overflow of patients, creating a cascade of effects including significant delays and staff burnout, which has increased due to the COVID-19 pandemic.

To improve access to primary care at the provincial level, the Ministère de la Santé et des Services sociaux/Ministry of Health and Social Services (MSSS), recognized the urgent need to advance its technologies. By improving patient access to appointments in medical clinics, citizens



can get the care they deserve, while creating better solutions and assistance for care providers.

To address these pressing challenges, the MSSS turned to Petal, a Canadian leader in digital health. Since its initial launch 11 years ago, Petal has grown to serve over 60,000 professional users in more than 250 healthcare facilities across Canada and Europe, enabling healthcare teams to deliver the right care at the right

time by optimizing and matching the supply of care with patient demand.

The MSSS leveraged Petal's digital expertise to deploy a provincial orchestrator platform to harmonize and manage all of the appointments from the 7,000 primary care physicians in the province.

**The pressing challenges in healthcare:** Across the country, healthcare systems are experiencing backlogs, labour shortages and additional added burdens due to the

COVID-19 pandemic. Many healthcare organizations aren't equipped with the necessary technological tools and interoperable systems with centralized, instant access to data. The pandemic has since forced healthcare organizations and governments to rethink their ways of working and understand the need to expedite technology in order to ease the current strains on the system.

Through this project, the Quebec government and Petal aim to improve access to primary care by adopting a new approach that ensures patients are seen at the right time, in the right place, with the right care.

Even prior to the COVID-19 pandemic, however, the needs of an aging population has also been increasingly straining the province's healthcare system. The total number of people aged 65 and over in Quebec has more than tripled since 1961 to approximately 20 percent in 2021 – and is estimated to reach nearly 30 percent in 2061.

In addition, missed appointments in medical clinics and other care services are an issue. These “no-shows” have the effect of cluttering appointment schedules and increasing wait times, filling up vacant time slots that could benefit another person

## Louisiana hospital fights health misinformation with Canadian solution

BY NEIL ZEIDENBERG

During the spring of 2020, fake news about COVID – among other things – thrived on major social networks like Twitter, Instagram, and Facebook. Conspiracy theorists were able to spread false claims about the coronavirus, the safety of vaccines and how pharma companies rushed to develop them.

Determined to be a source of truth for the online community, Ochsner Health in Louisiana, the U.S. state's largest non-profit, academic healthcare system, turned to a made-in-Canada solution called Hootsuite (www.hootsuite.com), utilizing – among other strategies – social listening.

“Through our platforms’ robust listening capabilities, Ochsner got a holistic view of what the people of Louisiana were saying on social media when it came to monitoring and responding to their audiences,” said Maggie Lower, chief marketing officer, Hootsuite. “Leveraging Hootsuite Amplify – an employee advocacy tool – Ochsner activated doctors and nurses to play a part in quelling fears on social media through transparent and sound messaging from recognized professionals.”

Ochsner also made use of Analytics and Impact tools to track and optimize its social media activity, launch a brand ambassador program, and monitor and respond to negative sentiment.

“One of the tools we made ample use of throughout the pandemic is the Amplify app, a platform that enlists the support of our “Brand Ambassadors” and

“Thought Leaders” to help (us) disseminate sound medical advice on COVID-19 (and other medical topics) from Ochsner experts,” said Melinda Daffin, digital content supervisor.

“Brand Ambassadors are our most engaged employees who enjoy social media. Thought Leaders are our executives and physician leaders who enjoy social media, particularly Twitter and LinkedIn. By using Amplify, we provide posts and suggested captions for Brand Ambassadors and Thought Leaders to share on their personal social feeds.

“Research shows that people trust other people on social media even more than brands, so using our doctors, nurses and other trusted members of the community – to share blogs, videos and other sources of reliable, trustworthy information regarding COVID-19 and the vaccine is an essential part of our social media strategy,” said Daffin.

Another useful tool, called Talkwalker, is a social media listening tool that monitors social conversations. “Talkwalker helps us jump on troubling comments and posts more quickly than if we were searching for the platforms natively,” Daffin explained. “Talkwalker can be customized to send team members trigger reports based on keywords of your choosing. It catches mentions not just on the social platforms where Ochsner has an active presence, but also on other channels where it doesn't have an account. We use these reports to take actions, including responding, escalating and active monitoring.”

Hootsuite is described as a social media management tool that among other capabilities, helps users manage all their

social media accounts from one dashboard. It also enables trusted organizations to identify and respond to concerns, fears, and misinformation posted by others, with consistent and reliable answers across all their social accounts.

Hootsuite offers a 30-day free trial to anyone wanting to try the platform. Paid options include Hootsuite Professional (USD\$49/month); Hootsuite Team (USD\$129/month); Hootsuite Business (USD\$599/month) and Hootsuite Enterprise; an option that includes different features depending on a team's size and complexity of needs. More about Hoot-

**Ochsner used impact tools to track and optimize its social media activity and respond to negative sentiment.**

suite's available plans can be found at [signup.hootsuite.com](https://signup.hootsuite.com)

Other unique features include:

- Hootsuite Analytics, that provides users with a 360-degree view of results on all social networks from a single place, to set performance benchmarks and monitor improvements over time. Customizable reports make it easy to distribute and digest facts and figures that are most meaningful to an organization.
- Hootsuite Impact, that calculates the return on a clients' social media investment, demonstrating how social media channels and campaigns drive leads, conversions, and sales. Customizable dashboards feature easy-to-read graphs, tables, and KPI summaries – perfect for results-oriented stakeholders.

Despite assurances from medical experts, Dr. Katherine Baumgarten, an infectious disease specialist at Ochsner, said even today, there are still concerns about the development of COVID vaccines, and its potential long-term effects.

“Decades of research went into building the foundation for the available COVID-19 vaccines,” said Dr. Baumgarten. “Although the perception is that the vaccines were created quickly, the technology and science behind these has been many years in the making.

“There's so much information widely circulated, it can be difficult to decipher what is and isn't a reputable source. We continue to see people show more trust in their friends, family, and social media than in medical professionals. Misinformation is something we work to tackle every day.”

Ochsner has been a Hootsuite customer for many years and would happily recommend its use to other organizations. “Hootsuite integrates so many things we need into one package,” said Daffin. “We appreciate their customer support and regular check-ins with our Hootsuite representatives. They are responsive to our questions and needs. We also enjoy Hootsuite's success webinars, social media reports and tips.”

*Hootsuite is a cloud-based social media management platform founded in 2009 by Ryan Holmes, in Toronto. At the time, he envisioned a single dashboard from which to manage all his company's social media accounts. Since nothing like it existed, he and his team developed it themselves. Hootsuite is now a global company with 14 offices around the world including Canada, USA and most recently, Belgium.*



waiting to be treated. To ensure a better future in healthcare, absenteeism must be kept to a minimum and quick access to primary care needs to remain a top priority.

**Digital transformation in healthcare:** Currently, medical clinics, healthcare professionals and patients face challenges with existing technology that no longer meet today's needs. Aging technological systems in health establishments make it difficult to get a centralized overview of data, complicating the management of appointment slots, particularly in primary care.

With what are often 'bandaid' solutions, these systems are difficult to replace because several parts depend on them and require significant time and budget to update. Digital transformation projects have become so numerous and complex that managers face challenges on how to even approach them.

To combat this problem in Quebec, Petal's easy-to-use appointment orchestrator platform allows clinics to keep their existing technological tools, as all of them are equipped to connect to Petal's appointment orchestrator. The result is an interoperable ecosystem, with existing products, that allows each tool to communicate with the other and make data accessible to primary care providers.

**A province's leadership in revolutionizing access to care:** Petal's appointment orchestrator platform addresses patient needs and preferences by connecting them to frontline healthcare professionals across the province, providing the available appointment time slots, within 36 hours.

These appointments are made in real time with just a few clicks, even during the evenings and on weekends, creating an overall better patient experience. Through the platform, the use of geolocation allows patients to find the closest appointment, reduces patient wait times and provides management of clinical capacity to reduce administrative costs.

The solution developed by Petal makes it possible to integrate existing systems, such as EMR and patient portal, into a global approach that facilitates access to local healthcare and social services, and additionally increases the satisfaction of citizens in the management of their health service path.

More than 1,300 medical clinics in Quebec are involved in this innovative project and this is only the first step to providing better access to care across the entire country, with Quebec leading as the prime example of how these technological changes benefit all.

This provincial project is currently being deployed in the first clinics.

*Elliot Desilets, Market Development and Partnerships at Petal. For more information, visit [www.petal-health.com](http://www.petal-health.com). Petal is a Canadian leader in digital health, with over 60,000 professional healthcare users in more than 250 healthcare facilities across Canada and Europe. Petal provides real-time visibility and data-driven insight through a one-cloud orchestrator platform to better allocate resources, optimize operational efficiency, and deliver improved healthcare in a region or health organization. As a result, health delivery organizations increase their capacity management and patient throughput in an efficient manner and improve their quality and access to care. Founded in 2010, Petal's head office is based in Québec City with national and global branch offices located in Montréal, Regina, Boston and Paris.*

# System coaches patients before and after cardiac surgery

CONTINUED FROM PAGE 8

tooth connected weight scale, blood pressure monitor, oxygen saturation plus heart rate monitor, and/or a thermometer.

The patient program needs can be tailored based on patient risk needs and can accommodate to language preference. Every morning, the tablet prompts the patient to respond to best practice assessment questions.

The program also encapsulates an embedded post-operative surgical monitoring pathway that prompts patients to answer preset risk factor questions based on best practice guidelines to capture important clinical assessment data relevant to the cardiac surgery patient.

The virtual care registered nurse assesses the automatic remote transmission; can call the patient for further assessment; and can coordinate further interventions such as virtual or clinic assessment as needed.

To help with triage, the embedded cardiac surgery pathway is organized to automatically flag the virtual care nurse with which patient transmissions via the patient dashboard are out of range/needs assessment. The virtual care nurse communicates the patient virtual journey with the healthcare team via the Epic patient electronic medical records.

Patients can remain enrolled in the program for one to two months, depending on patient's specific needs. As Engelman et al note in a 2019 paper, Guidelines for Perioperative Care in Cardiac Surgery, "Data are emerging that software applications can engage patients, promote compliance, and capture patient-reported outcome measures. They are designed to increase preventive care and encourage patients to perform physical exercise. These platforms have the potential to increase patient knowledge, decrease anxiety, improve health outcomes, and reduce variation in care."

Since June 2021, this program has successfully enrolled over 60 patients. A pa-

tient and their caregiver commented that "this was a very reassuring daily check-in knowing that recovery was right on track." The Post-Operative Virtual Telemonitoring Program aims to support the high-risk post-op patient with on-going care that has the potential to decrease readmission;

**The virtual care nurse communicates the patient journey with the healthcare team via the Epic EMR.**

increase patient quality of care especially with the COVID pandemic; decrease avoidable clinic visits; offer remote care for isolated patients or patients with transportation barriers; and decrease HF exacerbations or sternal wound infection.

These two UOHI virtual cardiac surgery monitoring programs align with the Ontario Health Team goals and objectives in

ensuring that within our region, regardless of geographic location, language, and socioeconomic status, every patient has access to comprehensive pre- and post-operative surgical care, while improving patient experience and clinical outcomes.

This program's unique features combine webinars, AFU, virtual telephone monitoring and other forms of technology to support patients and caregivers throughout their individualized, patient-centered, cardiac surgery journey.

The Canadian-created combined solutions have optimized patients pre-operatively and can significantly decrease post-operative re-admission rates and patient quality of care. A patient recently commented, "UOHI has really fine-tuned the cardiac surgery pathway: the Prehab calls to prepare me for surgery and now the Tele-monitoring program guarantee that I will be closely monitored for complications when I go home. You've thought of all the technology solutions to help me succeed!"

## Alberta system shares patient data

CONTINUED FROM PAGE 14

gration work to target workflow automation, closing the loop on lab and diagnostic imaging reports, order entry and e-referrals. For example, as Alberta brings on surge capacity to help deal with a surgical backlog due to COVID-19, the project team will be looking at supporting central access and triage for referrals to specialists and strengthening the e-referral process to make the process more efficient.

"We have most of the major wrinkles worked out for how you do information exchange and now it's time to start tackling some of the harder problems," said McDermott.

Now that a platform for communicating between community and the provin-

cial EHR is established, the concept of a longitudinal health record can provide a much richer source of information going forward, added Craig. In fact, much of the work Orion Health has done in Alberta could easily be transplanted into other Canadian provinces without the need to start from scratch, he said.

"I think it's sometimes forgotten that a lot of healthcare actually happens out in the community which a hospital system knows nothing about," he said. "The really exciting part is now that we've got the platform in place, we can start to include a lot more of the community providers and the sharing of information, and ultimately you're going to get a more comprehensive picture of what's happening to the patient."

## Embrace CNIO role

CONTINUED FROM PAGE 12

with nurses and other health disciplines to understand their clinical support needs, workflows and pain points, and creating both a vision and structure for how to work through these issues. Solutions may include the creation of a governance structure to support key technology decision-making, including the identification of needs for new systems and changes to existing systems.

It may also include linking and situating clinical practice within all key decisions related to technological systems in healthcare environments. For example, CNIOs provide leadership to building systems in ways that nursing data is collected and reported on – supporting the work of nursing leaders to improve practice and clinical operations.

Moreover, the CNIO can be strategically positioned to drive the gathering of clinical and administrative data that informs ongoing quality improvements, ultimately supporting the quadruple aim of healthcare. (Improving the pa-

tient experience; improving outcomes and the health of populations; reducing the cost of healthcare; improving the work life of providers.)

While the CNIO role isn't new, its existence in Canada seems to be. While roles such as Director or Manager of Clinical/Nursing Informatics have been

**The CNIO can drive the gathering of clinical and administrative data that informs quality improvement.**

common across Canada, there is currently only a handful of CNIOs with executive decision-making authority.

To the authors' knowledge, the first individuals with this title in a healthcare delivery type role were from Vancouver Coastal Health, and the Children's Hospital of Eastern Ontario (CHEO) in Ottawa and began in their roles in 2015 and 2017 respectively.

Many organizations had nurses in leadership roles like director or manager of informatics, but these leaders did not necessarily sit at the higher-level tables

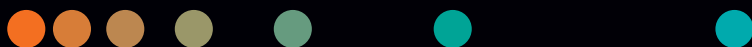
in the organization. In addition, responsibilities for informatics might be incorporated into other roles – e.g., VP Clinical, Chief Nursing Executive – but these leaders often had little experience with informatics and they did not have the ability to focus on it given their expansive role.

In the United States, findings of the HIMSS Nursing Informatics Workforce Survey indicated that 41% of respondents reported this role existing in their organization, with an overall upward trend from previous surveys. In 2016, an American Medical Informatics Association task force published a report on the knowledge, education and skills to be considered for this type of role, drawing on the expertise of those in similar roles for several years.

Similarly, in 2015 the United Kingdom NHS vocalized the need for strong nursing informatics leadership to support and lead the digitization of healthcare in the country, and subsequently hired CNIOs for most of the Trusts in the ensuing years. With only a few CNIOs in Canada, we seem to be far behind other health systems undergoing similar technological transformations.

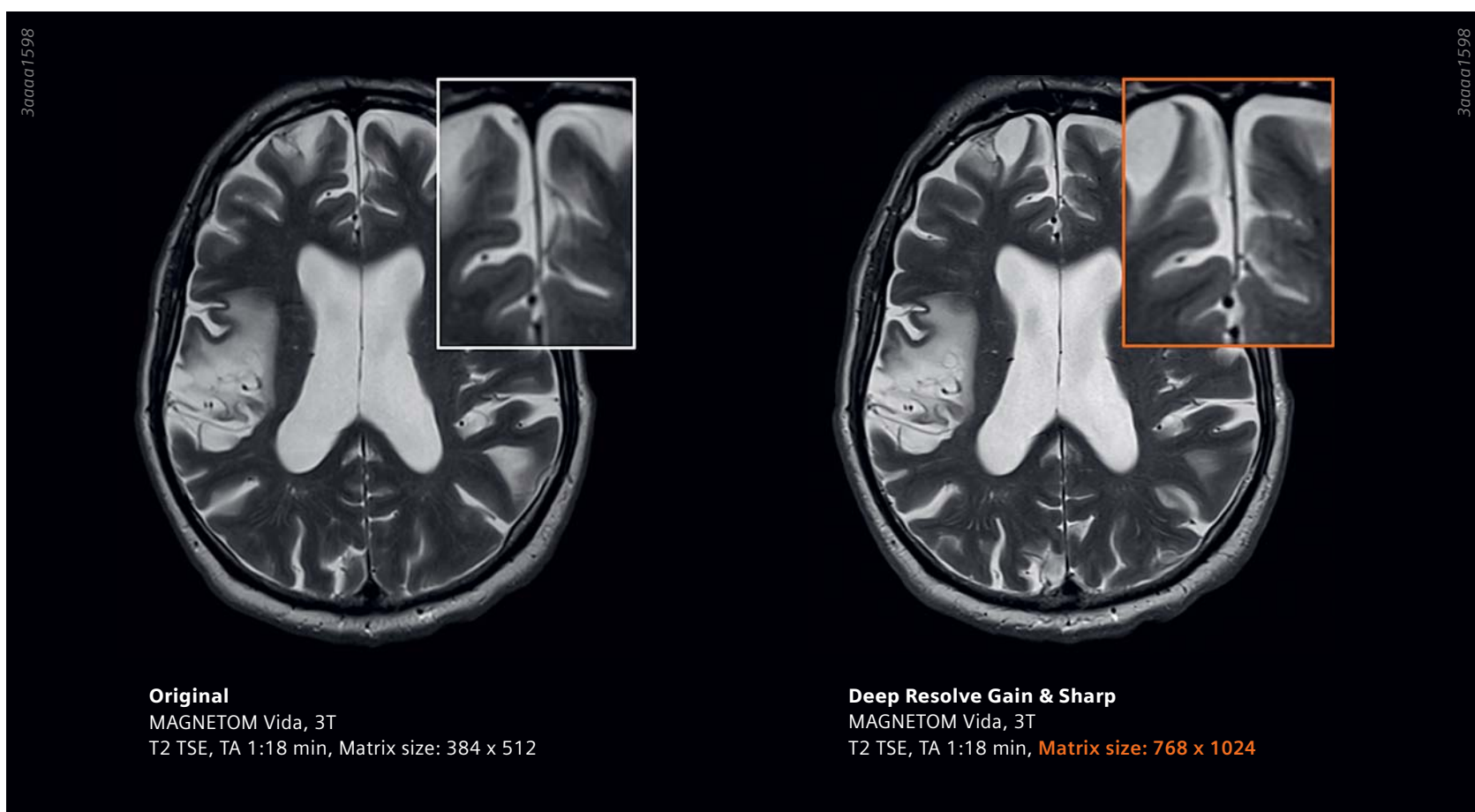
# Mobilizing the power of networks with Deep Resolve

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