Healthcare Technology

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AWS allows customers to experiment online with several large-language models, to see what best fits their needs. They also have a system that fasttracks further development. Page 4

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Taking it to the streets

Technology is assisting the growing specialty of street medicine, enabling doctors and allied professionals to treat patients wherever they may be. Experts from Los Angeles and Nashville spoke on their experiences at HIMSS. Page 11



Huge changes coming with ChatGPT, experts say

ChatGPT and the latest form of artificial intelligence, generative AI, were the talk of the HIMSS Conference, in Chicago. Keynote panellist Andrew Moore (left), former director of Google Cloud AI, urged hospital managers to move ahead quickly with the technology, to learn how to apply it. Microsoft's chief healthcare scientist, Peter Lee (right), was also enthusiastic but said some bugs still need to be worked out. **SEE STORY ON PAGE 4**

Hospitals speed-up time-to-table for heart attacks

BY JERRY ZEIDENBERG

ONTREAL – The McGill University Health Centre, along with the Royal Victoria Hospital, have deployed a real-time care coordination platform called Stenoa (https://stenoa.com) that quickly pulls together the team members needed in the cardiac catheterization laboratory when a patient presents with a heart attack.

"The diagnosis can be confirmed and the entire team can be alerted almost instantly," said Dr. Jeremy Levett, the founder and chief executive officer of Stenoa and a cardiac surgery resident at the MUHC. "Before, the process of confirming the diagnosis of an acute myocardial infarction and activating the team could take anywhere between 10-25 minutes."

And in critical-care situations like an acute myocardial infarction, every second counts.

"Some patients do pass away on the table," said Dr. Marco Spaziano, Stenoa's

In critical-care situations like an acute myocardial infarction, every second counts.

chief medical officer and an interventional cardiologist at the MUHC. "There are cases each year where we say, 'If only the patient had been here five minutes earlier, we may have been able to save them.' This is a lifeor-death issue for many patients." Using the Stenoa platform, a paramedic on the way to the hospital or an Emergency Department physician can activate the system within the ambulance or from a shared device in the Emergency Department. That consults the interventional cardiologist on call and gets the whole team in motion, ready for the arrival of the patient.

That also contrasts with the outdated and manual process in many hospitals in Quebec and across Canada. Traditionally, they have gone through a back-and-forth process using locating personnel and text messages whereby information was shared non-securely, and activations were subject to human error and lots of manual intervention. For its part, Stenoa sends out its "om-CONTINUED ON PAGE 2

Montreal hospitals speed-up time-to-table for heart attack patients

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nichannel" alerts sequentially, ensuring that all team members receive the message. These channels include critical alert push-notification technology, SMS, phone calls, and pagers for those who still wish to use them.

Cath lab teams typically consist of an interventional cardiologist, nurses and X-ray technologists. Additionally, there are downstream professionals who must be alerted, as well, including nurse resource managers, bed flow managers, and the coronary care unit who arrange the care for patients after the procedure is completed, as well as cardiology residents and fellows.

Dr. Spaziano stressed that, "We optimize for a 90-minute window to get the heart attack patient from the Emergency Department to the cath lab table with the artery unblocked."

In a blog, he writes, "For patients in whom the culprit artery is opened within 90 minutes, the risk of death is as low as 4 percent. However, in those for whom it takes over 90 minutes to unblock the culprit artery, the risk of death increases to over 12 percent. And in those with a delay of over 150 minutes, the risk of death is as high as 20 percent. That's one in five patients.

Stenoa has been deployed at the MUHC and Royal Victoria Hospital for about a year-and-a-half and has been used with more than 500 heart attack patients. It's been so successful in speeding up the process of getting coronary patients into the cath lab that plans are in the works to roll it out to other Quebec hospitals.

Dr. Levett founded Stenoa as a medical student. He and his colleagues, including Dr. Spaziano, realized that an electronic, real-time system could dramatically reduce the time needed to assemble highly skilled teams.

"It was built to meet the needs that we see every day in the hospital," said Dr. Levett.

They started development in 2021 and it was first used at MUHC in September of 2021. It runs in the cloud, using AWS, and has unique features built into the platform.

First, it has ECG integration capabilities, so when a patient's ECG is read by the Stenoa system, it automatically extracts patient demographics and relevant time components. This data can be transmitted



Dr. Levett, Dr. Spaziano, and Tomer Moran.

to the cath lab, enabling the staff there to have the information ready at hand.

Moreover, the company has obtained from both Apple and Google (for Android systems) access to the emergency alerting system on smartphones.

Its omnichannel alert capabilities help to ensure that team members will still get the message, even if a telecommunications carrier goes down -- like the Rogers network did, a year ago.

INFO

"We have access to emergency technologies," said Dr. Levett. "It's built to a mission-critical standard, with 99.5 percent guaranteed uptime."

"To date, we're proud to have maintained a 100 percent uptime," he added.

Tomer Moran, chief technology officer at Stenoa, noted that Stenoa's integration with ECG systems enables them to parse ECGs, meaning that it provides real-time statistics that can be used by hospitals to improve their internal processes.

Traditionally, hospitals keep track of the time from ED to cath lab table using paper or spreadsheets, and often only compile this data yearly. Quality improvements are slow to happen, if at all. By contrast, highquality data is available immediately with Stenoa's web app through its data platform, and trends and problems can be analyzed instantly.

"It allows you to spot the bottlenecks in real-time," said Dr. Levett.

In this way, logjams and delays can be quickly corrected. For example, Stenoa can be used to inform staff in the ED when the cath lab is ready, so the patient can be immediately wheeled in for a procedure to unblock an artery.

Even earlier in the process, paramedics can use Stenoa to check on which hospital to bring the patient to. "You want to bring the right patient to the right hospital at the right time," said Dr. Spaziano.

That avoids pit-stops for the patient and prevents time-delays.

Stenoa is currently being used to connect physicians and staff at the MUHC's hospitals. In the future, it could be used to connect multiple hospitals, across regions, so patients can be directed to the centre that can provide the fastest care.

"It can detect which site to go to, so that we don't overload certain sites," said Dr. Spaziano. "Some teams are already stretched to their limit."

And while it's being used now for cardiac emergencies, Stenoa can be adapted for any type of emergency care - such as strokes, traumas or other emergency surgical procedures.

According to a news release from the McGill University Health Centre, medical staff have been highly positive about the use of Stenoa. "This is the best thing that has happened to the Cath Lab in the last 17 years I've been a nurse here," said Johanne Haley, a nurse in interventional cardiology and critical care at the MUHC.

Dr. Levett said the team at Stenoa also takes pride in its focus on design, striving for a seamless, elegant, user experience. It takes minutes to onboard - simply through accepting an email invite – and less than five minutes to learn how to use, he said.

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Address all correspondence to Canadian Healthcare Technology, 1118 Centre Street, Suite 204, Thornhill ON L4J 7R9 Canada. Telephone: (905) 709-2330. Fax: (905) 709-2258. Internet: www.canhealth.com. E-mail: info2@canhealth.com. Canadian Healthcare Technology will publish eight issues in 2023. Feature schedule and advertising kits available upon request. Canadian Healthcare Technology is sent free of charge to physicians and managers in hospitals, clinics and nursing homes. All others: \$67.80 per year (\$60 + \$7.80 HST). Registration number 899059430 RT. ©2023 by Canadian Healthcare Technology. The content of Canadian Healthcare Technology is subject to copyright. Reproduction in whole or in part without prior written permission is strictly prohibited.

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Publisher & Editor Jerry Zeidenberg jerryz@canhealth.com

Office Manager Neil Zeidenberg neilz@canhealth.com

Contributing Editors Dianne Craig dcraigcreative@yahoo.ca

Dianne Daniel dianne.l.daniel@gmail.com

Dr. Sunny Malhotra Twitter: @drsunnymalhotra

Norm Tollinsky tollinskyn@gmail.com

joanne@canhealth.com

Art Director

Art Assistant

Joanne Jubas

Walter Caniparoli art@canhealth.com





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Devil or angel? Experts debate merits, dangers of ChatGPT at HIMSS

BY JERRY ZEIDENBERG

HICAGO – The keynote panel discussion about ChatGPT at HIMSS in April could easily have been titled, "Generative AI, the Good, the Bad and the Ugly."

The four panelists – and speakers at HIMSS, in general – agreed that ChatGPT amounts to a kind of sea-change in technology. As one speaker ventured, it's a once in a generation kind of technology, perhaps as significant as the iPhone, which appeared in 2007.

ChatGPT and other forms of generative AI – that is, artificial intelligence that can produce new knowledge by cobbling together data from multiple sources – has been able to pass medical and law exams, write essays and songs, and can even diagnose rare diseases that may escape the notice of a physician.

It's these powers that have amazed people around the world, from Harvard data scientists to high school students. And it's what makes ChatGPT not just good, but potentially great.

Andrew Moore, a former director of Google Cloud AI and a one-time dean of Carnegie Mellon University's School of Computer Science, urged a capacity audience at HIMSS to move ahead quickly with ChatGPT and genAI to learn how to use it and to take advantage of its intelligence.

"Don't worry about what's coming next, start now, to make sure you've got people with expertise."

He added, "Don't wait for Carnegie Mellon to do it for you, because it won't happen." Moore is currently founder and CEO of a start-up company called Lovelace AI,



which provides AI support to national security agencies.

Moore alluded to the monumental intelligence of ChatGPT and its abilities to solve problems. In particular, he said the new technology will be able to solve problems that have stymied the experts, from diagnosing and treating diseases to fixing supply chain issues.

He described an incident that occurred a few years ago when an earthquake in the Western U.S. disrupted some nuclear materials buried underground in Colorado. National security officials called him at Carnegie Mellon and asked for help. In response, Moore put together a team of instructors, post-docs and students. Using advanced AI technology, they constructed a robot that could trudge underground and determine the scope of the nuclear problem.

Similarly, he believes that genAI will be used to solve problems in the healthcare sector, but hospital technologists will have to take the lead in devising their own innovations.

"In your hospitals," he said, "you should have a group that's looking at new technologies, to be able to develop solutions for patients and local needs as soon as they become available."

Peter Lee, chief healthcare scientist for Microsoft and also a former head of computer science at Carnegie Mellon University, also touted the advantages that Chat-GPT may bestow on the healthcare sector. But he pointed out some of the "bad" characteristics of the system, the bugs that still need to be ironed out.

He observed the software scored 93 percent on its U.S. medical exams, which is quite an achievement. But he also acknowledged that the missing 7 percent is a bit troubling, and that you wouldn't want to be a patient receiving advice that the machine got wrong.

Nevertheless, Lee asserted that the soft-

ware can still be very helpful, as long as it has a human overseer checking its work.

As an example of its usefulness, Lee mentioned that his 90-year-old dad has been ill lately, and that he's been taking all kinds of medical tests. "I have little ability to interpret his lab results, and there's an opportunity for ChatGPT to act as an assistant and to explain the reports. This is a real boon."

Dr. Lee is co-author of a recent book titled, "The AI Revolution in Medicine," which he wrote with journalist Carey Goldberg and Harvard University data scientist and physician Dr. Isaac Kohane. His company, Microsoft, is also a major investor in OpenAI, the firm that developed ChatGPT. Indeed, in January, Microsoft invested \$10 billion in OpenAI.

Even with his tight connections to ChatGPT, Lee was a little more reserved about it than Moore. "There are incredible opportunities with genAI. But there are significant risks – some of which we don't know about yet."

Another panellist at the HIMSS kick-off discussion, Reid Blackman, had a darker view of genAI. He warned the audience "not to be fooled," and said the software is not really intelligent, it only looks like it is.

"It's a word predictor, not a deliberator," said Blackman, who holds a PhD and is author of the book, "Ethical Machines". He asserted that ChatGPT and other forms of genAI are still black boxes that can't tell us how they came to their decisions.

"If you're making a cancer drug and you enlist the help of ChatGPT," for example, "you want to know exactly how it arrived at the formulation. But ChatGPT doesn't give you reasons. It's responding CONTINUED ON PAGE 18

AWS offers fast-track to developing generative AI apps for healthcare

BY JERRY ZEIDENBERG

ORONTO – While Microsoft and Open AI have recently been the focus of media attention when it comes to generative AI – thanks to the massive uptake of the ChatGPT app – Amazon Web Services (AWS) is no slouch, either, on the artificial intelligence front.

At the e-Health 2023 conference, held in May, AWS's Fred Azar asserted that "100,000 customers have already used AWS AI and ML capabilities."

Dr. Azar leads AI and ML business development as part of AWS's worldwide public sector team. He and colleague Dr. Rowland Illing, chief medical officer at AWS, together outlined the resources that AWS brings to healthcare organizations using AI and machine learning in the cloud. Dr. Illing claimed that AWS is also the most broadly adopted cloud provider, with millions of active customers around the world.

Running AI in the cloud means that customers can develop and use advanced applications without buying or maintaining their own infrastructure. It can all be done remotely and scaled up or down as needed.

Dr. Illing said Canadian customers using a range of AWS cloud services include AlayaCare, BC's Provincial Health Services Authority (PHSA), the Canadian Institute for Health Information (CIHI), Ontario's Central East Hospital Cluster

(CEHC) and WELL Health Technologies. These centres are using the cloud to better manage their fast-growing data. Dr. Illing noted that in addition to the current sources of data, such as diagnostic imaging centres, there are new ones just on the horizon. In the future, consumer data from wearables, implantables and ingestibles will be connected to patient records, creating a sizeable jump in the volume of data collected by hospitals.

In the last year alone, said Dr. Azar, AWS produced 250 new AI products and services. Customers using AWS's AI services include Pfizer and Moderna, who deployed the AWS cloud and machine learning assets to help develop the COVID-19 vaccines in record time.

He mentioned that Grey Bruce Health Services, a 400-bed organization in Ontario, wanted to digitize its large base of paper-based, legacy health records. This was done to help clinicians to obtain the historical records they needed more quickly and to reduce the amount of physical space needed for storage.

To accomplish the task, Grey Bruce partnered with Iron Mountain and made use of the AWS cloud and AI to clean the data and convert it into a digital format. It was accomplished with the help of Iron Mountain's InSight application us-

You can experiment online with large-language models from AWS and its partners to see how they work.

ing large-scale scanning and optical character recognition.

On another front, AWS is involved in a project to reduce the charting load on physicians at Houston Methodist Hospital, with an application that uses AI for natural language processing and ambient listening during the patient/clinician encounter.

The application has been trained to capture the medical problems, diagnosis and treatment being discussed, and to automatically chart it. It can be reviewed and corrected by the physician afterwards, to ensure accuracy while reducing the time needed for paperwork and allowing him or her to focus on the patient during the encounter.

Dr. Azar discussed the emergence of generative AI, based on large-language models. These systems have abilities far beyond earlier AI frameworks, as they are able to carry out tasks in plain English – and many other languages. One doesn't need to be a data scientist or programmer to use them, anyone can instruct them and use them.

The large-language models need to be trained for certain tasks before they can be deployed effectively. For its part, AWS has its own trained family of foundation models, called Titan. It has also partnered with other companies offering different foundation models, including AI21 Labs, Anthropic and Stability.ai.

Customers can experiment with these foundation models online to see which one would suit their needs most closely.

A major benefit, said Azar, is that the healthcare organization's data is not needed to initially train the model – it has already been trained, saving time and CONTINUED ON PAGE 6

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Providence in BC deploys enterprise-wide Care Coordination Centre

BY DIANNE DANIEL

hat used to be a time-consuming, manual process of hunting for information from several hospital systems, talking to different departments and at times physically counting staff to determine bed availability across Providence Health Care – which includes St. Paul's Hospital, Mount Saint Joseph Hospital and Holy Family Hospital in Vancouver – will now happen with a single keystroke.

As the first healthcare system in British Columbia and the third in Canada to implement GE HealthCare's Command Center Software Platform (CCSP), Providence has joined an ecosystem of like-minded organizations working towards better access and flow, and quality patient care.

Often referred to as a hospital version of air traffic or mission control, CCSP is designed to provide clinical and operational insights at a glance, updating every 30 seconds as patient care is happening. By quickly finding and bringing to the forefront potential bottlenecks, risks and other issues, the software helps hospital teams stay connected and proactively intervene with solutions.

What's more, the platform enables all teams to see how their work fits into the bigger picture, whether they are an inpatient unit team, a departmental team or a hospital-wide team. This helps everyone delivering patient care prioritize their work to meet the needs of each patient in context of the needs of all patients (e.g. which inpatients require a CT scan at the start of the day to support patient discharges on high occupancy units, which medicine patients should the critical care outreach team round on next to reduce risk of deterioration and transfer to ICU.)

Providence is implementing six CCSP components as part of its Care Coordination Centre – Capacity Expediter Tile, Staffing Module, Patient Manager Tile, Discharge Prioritizer Module, Boarders Expediter Tile and Clinical Deterioration Module.

The AI-powered decision support software is hosted by GE HealthCare in its MS Azure cloud environment, and GE HealthCare is or-



Members of the team at Providence helping to roll out the Care Coordination Centre: Stephanie Hood (Program Manager, IT Innovation), Meghan McMenamie (Patient Care Manager, Access & Flow) and Tiffany Ng.

chestrating the foundational work in terms of verifying and establishing the data feeds.

The first CCSP components, Capacity Expediter Tile with Staffing Module, will go live early this Fall. Data from multiple hospital systems will flow into CCSP, where it will be processed using advanced logic and algorithms to provide a capacity snapshot of all three sites at any given moment.

"Today, care coordinators flip between the Cerner electronic medical record, Kronos staffing system and additional housekeeping software, and make many phone calls to inpatient units to understand bed availability and make bed allocation decisions," explained Providence Patient Care Manager, Access Services, Tiffany Ng.

"It's like a puzzle that we're putting together," said Ng, who says being able to have the information automatically in one place for everyone to see, rather than on a piece of paper in her office or simply in her head, is game-changing. "It's really great to see how technology has advanced and how it is helping us do what we do best – which is provide care to our patients."

"We're alleviating the administrative burden of hunting and gathering and focusing the conversation on problem solving rather than looking for information," said Ng. "It gives us a site-wide view into beds, capacity bottlenecks, patient status and what needs attention in real time and it's live 24/7."

Engaging front line staff in the development of the analytics software is critical, she added. Through working groups, clinical nurse leaders, patient managers and clinicians from separate hospital areas provide input into how they'd like to see the Tile information displayed.

The Staffing Module is new functionality that will be added to Capacity Expediter and was requested by Providence

It's the first system of its kind in BC, and the third in Canada to implement GE HealthCare's Command Centre software.

front-line staff. It will display available nursing staff now and in the next 24 hours in context of current census and target nurse-patient ratios.

"The Staffing Module is something we have been leading," said Ng. "We will be able to see in four-hour increments whether we have extra staff coming or if we are going to be short the entire day. Such valuable insights will help us make thoughtful decisions about which unit patients will receive care in," she explained.

Adding the staffing column to the Capacity Expediter Tile helps provide a clearer picture of the challenges facing a particular unit. It allows decision makers to deploy staff from one area of the hospital to another where an extra pair of hands is needed, or to hold off on admitting patients to a particular unit if it's expected to be full by midnight, for example. All of which helps to reduce pressure on staff at a time when burnout rates are extremely high.

The new Providence-led staffing functionality will now also be available to other hospitals who use GE HealthCare's Command Center Software Platform, said Zahava Uddin, Managing Director, GE HealthCare Command Centers. "We don't try to design and pilot things and see if they stick. Rather, if a client suggests a software enhancement to tackle a new industry use case that is important to the rest of Ecosystem, we think about it and find a way to make it happen," she said.

A Patient Manager Tile, which will be the next CCSP component to be implemented at Providence, is what Uddin calls a "super Tile." It uses data from existing systems to provide a holistic view of each patient, including key information such as important dates, flags, pending tasks, completed tasks, risk scores, patient-level alerts, care plan elements and other context-rich information to support care progression and discharge planning activities.

Providence Chief People, Nursing and Health Professions Officer Dr. Becky Palmer, who also serves as clinical informatics lead, expects to see a positive ripple effect from the hospital's digital transformation.

"What we know to be true for our healthcare professionals is they have many competing priorities in their day, and a lot of that is hunting and gathering for information regarding their patient's journey in the healthcare system," said Palmer, adding that the biggest impact of the real-time analytics software is that it gives staff access to an accurate, system-wide status view from their phones, computers and other digital devices, as well as from the screens on display in the physical centre, so they can spend less time on coordinating care and more time on delivering care.

She applauds the coordinators who've been working hard to pull information together manually for so long and expects that similar to the way the hospital's patient safety learning system focuses on "good catches," the real-time visibility made possible by the command centre software will help to shed light on areas where staff can make a "course correction" to achieve higher levels of satisfaction and productivity, and improve patient care.

When the new St. Paul's Hospital opens in 2027, it will boast a 2,800-square-foot purpose-built physical space, known as the Mr. and Mrs. P. A. Woodward's Foundation Care Coordination Centre, which will house Providence's dedicated cross-functional command centre team and feature a video wall with 16 large display screens. In the interim, the centre is operating with two screens in a dedicated room at the current St. Paul's Hospital and staff are already experiencing the benefits of working together and in sync.

AWS generative AI

CONTINUED FROM PAGE 4

trouble. The customer can take the model and train it further with their own deidentified data to refine the application.

Moreover, AWS has a service called Amazon Bedrock which is said to be an easy way to build and scale generative AI applications with foundation models.

Dr. Azar discussed a potential AIbased application, in which clinical or administrative information can be extracted from a variety of different documents – such as handwritten clinical notes, a typed document, a printed discharge summary, and others.

The system could put the information together in the background, in table form. The user can then ask questions in plain language, such as:

• What is the patient's chief complaint?

• How long has he been experiencing it?

- What is his surgical history?Insurance ID number?
- How is his abdominal pain?

He said AWS is working now with

Philips and 3M on generative AI applications for the healthcare sector.

In April, 3M Health Information Systems (HIS) announced a collaboration

> AWS announced that it is working with Philips and 3M to create generative AI applications for healthcare.

with AWS to accelerate the development of 3M M*Modal ambient intelligence. As part of the collaboration, 3M will use AWS Machine Learning and generative AI services, including Amazon Bedrock, Amazon Comprehend Medical and Amazon Transcribe Medical.

Joining forces with AWS will help 3M to further transform the patient-physician experience, placing the focus back on the patient and reducing administrative burden for physicians, 3M said in a news release. Currently, more than 300,000 physicians worldwide are using 3M's conversational AI platform.

Also in April, Philips announced the availability of Philips HealthSuite Imaging on AWS. Additionally, the two companies said they will build on their relationship, advancing AI in healthcare by applying Foundation Models using Amazon Bedrock to accelerate the development of cloud-based generative AI applications. The apps include clinical decision support, helping to enable more accurate diagnoses, and the automation of administrative tasks.

"This is really the art of the possible," said Dr. Azar.

The healthcare IT paradox is putting the promised role of technology in jeopardy

The ability of healthcare organizations to manage technology hasn't kept pace with its adoption.

BY SHASH ANAND, SVP OF PRODUCT STRATEGY, SOTI

rotecting patient privacy sits alongside primum non nocere (translated from Latin as "first, do no harm") as a core tenant of healthcare. It is concerning that according to a recent SOTI research report, *The Technology Lifeline: Charting Digital Progress in Healthcare*, 64 percent of Canadian healthcare providers said their organization experienced one

or more security breaches since 2021. Legally and ethically, healthcare organizations and providers have a duty to secure patient information. Yet, 32 percent of Canadian healthcare organizations have experienced a deliberate or accidental data leak from an employee in the last year, and 37 percent experienced a data breach from an outside source or DDoS attack. Why is that and what can be done about it?

The pandemic accelerated digitization and mobile adoption: Over the past few years, there has been an urgency to make operations more streamlined to enable remote or hybrid working, support the growth of telehealth and facilitate bring-your-owndevice (BYOD) policies.

Now there is also a shift to automation through Artificial Intelligence (AI) and Virtual Reality (VR). Organizations are rethinking which technologies are needed and where to advance healthcare.

The scale and diversification of device implementation across the healthcare sector continues to grow with 37 percent of IT professionals reporting an increase in the mix of devices (mobile devices, tablets, rugged and printers) used in their healthcare organization in the past year. Additionally, 28 percent of IT professionals reported an increase in the use of personal devices to access company systems and network.

What is becoming more apparent are concerns around how to integrate and manage these emerging technologies while transitioning away from legacy systems.

Ninety-four per cent (94 percent) of Canadian healthcare IT professionals said their organization has legacy technology and processes in place. As a result, the top three concerns facing IT professionals are security attacks (39 percent), too much time spent fixing issues (37 percent) and the inability to quickly access patient data (25 percent).

As new technologies are adopted, not only should new security processes be introduced, but organizations must also review their Enterprise Mobile Management (EMM) strategy and solutions.

This is to ensure IT teams can monitor device use and fix issues as they arise in near real-time. If not, administrative lapses, maintenance struggles, device downtime, lost efficiency and sub-optimal patient care will become even bigger issues.

The healthcare IT paradox: Over the past few years, frontline healthcare workers have made heroic efforts in keeping patients safe and healthy. In tandem, healthcare IT workers had to implement new technologies in a short amount of time, effectively plugging advanced mobile technology into an outdated backend system or platform.

The issue is that while 82 percent of healthcare IT professionals reported that their organizations used tablets or laptops and 81 percent used smartphones in the last year, organizations need to ensure they are effectively managing these devices.

Fifty-one percent of healthcare IT workers cannot detect new devices, support devices remotely or get



detailed information on device usage with legacy IT infrastructure, while 54 percent spend too much time fixing issues and not enough time working on essential IT issues.

The healthcare industry faces a paradox: amidst the rapid adoption of a diverse range of devices in healthcare to improve patient care outcomes, it faces an alarming imbalance between technological advancements and necessary resources to manage and secure these devices.

It's clear that the growing complexity of device management, including the management of legacy systems, requires urgent attention and adequate investment in resources to mitigate potential vulnerabilities and protect sensitive healthcare data.

Innovation remains a priority: While security concerns remain a top issue in the healthcare sector, 83 percent of all IT professionals indicated that usage of new technologies to improve organizational efficiency and patient care outcomes is a priority. Additionally, AI and VR are being actively investigated in the healthcare sector, with 67 percent of IT professionals stating that their healthcare organizations are in the research or implementation phases with these new solutions.

There is also a shift to automate manual processes. Just under half of those researched revealed that one or more manual processes used within their organization would benefit from being automated, including:

- Collecting data during patient visits (49 percent)
 Accessing general medical information/resources
- (43 percent)Accessing and updating patient records (45 percent)
- Accessing test results (41 percent)



As SVP of Product Strategy at SOTI, Shash Anand oversees the company's evolution from a single product centered around Mobile Device Management (MDM) to an integrated platform that solves many of the challenges around Enterprise Mobility Management (EMM) and Internet of Things (IoT) management. IT professionals in healthcare organizations clearly see the continued potential in technology's ability to improve patient care, and overall operations. Yet the paradox remains.

Maximizing technology's role in the future of healthcare: SOTI's research of IT professionals around the world has revealed that each employee is losing an average of 3.4 hours in a normal week due to technical or system difficulties. This goes against technology's role in the future of healthcare as one that will enable smoother, more secure and faster levels of care.

At its best, it should facilitate better interaction between caregivers and patients, while also encouraging employees to stay in the sector long-term, thanks to a more efficient, less frustrating and errorfree environment.

It is crucial to accept that technologies and devices such as laptops, smartphones, printers, scanners, RFID readers, AI and VR can only reach this potential if they're being integrated, managed, upgraded and maintained effectively. This requires real-time data and insight into their efficacy, and remote monitoring of each individual device's performance as an ongoing visible function.

Most importantly, it depends on connectivity. IT teams must ensure that each new solution complements existing (and sometimes legacy) systems already in place, to create single sources of accessible information, that also remain secure, updated in real-time and accessible remotely.

There are more lifesaving tools and technologies available now than at any other point in history, and IT professionals in the sector have demonstrated the need for improved management of developing infrastructures to support these tools.

Yet, in medical terms, healthcare organizations must "increase the dose" of technology used to treat patients and the tools needed to secure the data it collects. To do so, they must implement the advanced diagnostic intelligence solutions that will provide them with the performance visibility and remote device support they require. A T

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System connecting Ontario hospitals, long-term care centres goes live

BY NORM TOLLINSKY

linicians at five Ontario hospitals and 31 long-term care (LTC) homes no longer have to rely on scraps of paper, faxes, verbal reports and printed discharge summaries when patients are transferred to the ER and then returned to their LTC facility.

With the launch of the Ontario eHub Health Information Exchange in March, Windsor Regional Hospital, Hotel-Dieu Grace Healthcare, Erie Shores Healthcare in Leamington, the Chatham-Kent Health Alliance, Cornwall Community Hospital in eastern Ontario and 31 LTC homes in the Cornwall and Erie-St. Clair regions can share patient information with their respective EHRs. Every month, more LTC homes are connected to the Ontario eHub, increasing the opportunities for data exchange.

When patients are transferred from one of the five hospitals, a subset of their health information is automatically trans-

> With the launch of the Ontario eHub in March, many hospitals and LTC homes have started to share data electronically.

mitted from the hospital's Oracle Health (Cerner) system to the patient's record in PointClickCare via Oracle Health's Health Information exchange.

Starting this summer, the reverse flow of information will be enabled. Patients being transferred to one of the five hospitals will have their data automatically transferred from the LTC home's PointClickCare EHR to the hospital's Oracle Health system.

Throughout the year, additional hospitals across the province using Oracle Health and additional LTC homes using PointClickCare will be connected to the Ontario eHub until all 63 hospitals using Oracle Health are able to exchange patient information with nearly all of the LTC homes in the province.

Being connected to the Ontario eHub

allows data exchange between the connected hospital sites, as well. This is a significant benefit and improvement for patient transitions in areas where patients from hospitals in smaller communities are regularly transferred to larger regional hospitals for services such as oncology, dialysis, cardiology, and trauma care.

The information exchanged includes basic demographics, allergies, medications, problem lists, immunizations, key lab results, diagnostic reports and recent vital signs and symptoms – all of which are important pieces of data that enable the safe transition of care.

The Ontario eHub Health Information Exchange, powered by Oracle Health, "allows us to stop faxing all those sheets of paper, but it also makes the information readily available to clinicians because it's embedded within their workflow. It's right in Oracle Health and PointClickCare, so they don't have to go to another system or spend time looking for paper," said Lyn Baluyot, president and CEO of the Chatham-based Trans-Form Shared Service Organization (SSO).

TransForm SSO, which manages the IT and supply chain needs for the Erie-St. Clair hospitals, serves as the Ontario eHub Health Information Exchange project lead for all hospitals in Ontario using Oracle Health Hospital Information Systems.

According to Baluyot, a second wave of hospitals and LTC homes were set to go live with the eHub Health Information Exchange by the end of June. Among them are Toronto's Centre for Addiction and Mental Health (CAMH) and hospitals in the London area and Kitchener-Waterloo.

"By the end of 2024, all 63 hospitals in Ontario using Cerner-Oracle Health and all LTC facilities using PointClickCare will be connected to the eHub Health Information Exchange, and I know Epic and Meditech are gearing up to connect their hospitals to the Ontario eHub.

"Epic hospitals took the lead in the province in connecting hospitals to LTC. All of this work connecting acute care hospitals and LTC is possible through project Amplifi, which is led by St. Joseph's Healthcare in Hamilton's CIO, Tara Coxon, and project lead Andriana Lukich. It is through



Lyn Baluyot, CEO of TransForm Shared Service.

project Amplifi that the Ontario eHub was able to come to fruition," said Baluyot.

Once expanded beyond the current five hospitals and 31 LTC homes, the geographical location of where the patient transfers to or from will no longer be a barrier to sharing patient information," said Baluyot. "As long as the LTC home is using PointClickCare with a live connection and the hospital is connected either through the eHub or another connection, information will be shared."

According to Baluyot, approximately 80 percent of LTC homes in Ontario use PointClickCare as their EHR. The remaining 20 percent are using another system or may still be using paper, she said. "We're going to have to try to figure out if we are going to be able to connect them in future."

r. Tony Meriano, an ER doc at Windsor Regional Hospital and chief medical information officer at TransForm SSO, applauds the eHub Health Information Exchange as a major improvement in patient care and efficiency.

"The transfer of patient information in the past was quite variable," said Dr. Meriano. "Sometimes, we'd get no information at all. The patient would show up via EMS and we'd get a verbal report from the paramedics during the handover to nurses.

"If the handover occurred at shift change, there was a possible loss of information because one nurse would summarize the information and pass it on to another nurse. On other occasions, there might be a hand-written note or photocopies of some pages from the LTC home's EMR. You could never be sure."

With the Health Information Exchange, ER docs have access to all the information they require in Oracle Health when patients show up at the point of care, which is especially important if they arrive in extremis and aren't able to share information themselves, said Dr. Meriano.

"We know that our healthcare system across the country is stretched, and anything we can do to provide better care for our patients, get them out of the hospital quicker, or avoid admissions is going to pay dividends," he said.

"On discharge of the patient back to LTC, physicians (in the past) might call and update LTC staff on the patient's condition and what was done. Sometimes, there would be written instructions sent back with EMS if, for example, there was an order to stop a medication for a period of time."

With the adoption of a Cerner HIS in April 2021, Windsor Regional was able to provide LTC homes with discharge summaries, but they had to be printed out and scanned for inclusion in PointClickCare.

"In the past," said Dr. Meriano, "bad outcomes could happen, or mistakes could be made when information wasn't properly transcribed or didn't get passed on. Instructions to stop a certain medication sometimes didn't make it to the pharmacist or primary care provider. The Health Information Exchange prevents that from happening because the information is right in the patient's electronic chart."

Past efforts to exchange information between hospitals and LTC homes failed for a number of reasons, said Baluyot. "The systems weren't quite ready for this level of data exchange and there wasn't a commitment by healthcare organizations and their IT vendors to work collaboratively to create a solution that would work."

The difference with this effort was a decision to keep it simple and consistent throughout the province. Project Amplifi created the framework and guiding principles to make it possible to move forward across multiple vendors.

"It was important to zero in on the key data elements that need to be shared to support safe transitions of patient care. You don't need to send everything, but there are certain pieces of information that an ER doc needs to know when a patient arrives from a nursing home."

She observed that it's the same thing for the nursing home. There are certain core pieces of data they need to know to make sure the patient transitions back safely.

"We learned that we need to make small steps forward as quickly a possible to bring value to our patients and our communities instead of always trying to boil the ocean which will cause greater delays. We can't stop progress just because we can't solve all the problems. We have to look at what's really core to what we're trying to fix. For a long time, people were trying to solve too much all at once. However, by being agile we are able to move forward and course correct, as needed."



Niagara Health launches digital imaging system to improve patient care

IAGARA FALLS, ONT. – Faster diagnoses, increased collaboration between healthcare providers, and prioritizing the most urgent patient cases - these are just some of the benefits of a new diagnostic imaging system launched earlier this year at Niagara Health.

Called Sectra Enterprise Imaging Solutions, this powerful software also does everything from loading images faster, which makes it easier for healthcare providers to share patient information, to preventing gaps between patient referrals and follow-up appointments.

"If we want to provide the best possible care, we need to have the tools to do that," said Dr. Julian Dobranowski, chief of Diagnostic Imaging. "This is one of the important tools that will allow us to optimize the patient care we provide."

Sectra will allow healthcare teams in Cardiology, Radiology, Orthopedic Surgery, Emergency and Oncology departments to collaborate more efficiently and share resources across all five Niagara Health sites.

Additionally, it will offer workflow, communication, and diagnostic features that make it more convenient for clinicians to read studies, and report findings directly into the software rather than recording and transcribing them separately. It will also allow them to communicate directly with each other about a patient's condition and treatment.

Sectra will be fully integrated with the new hospital information system when it launches in September 2024.

Making diagnoses sooner: Niagara Health performs about 30,000 CT scans a year, with some scans capturing between 200 and 1,000 images. Having that information and those tools in one place means more efficient diagnoses, explained Dr. Amit Mehta, deputy chief of Diagnostic Imaging.

Radiologists will also be able to review



Dr. Amit Mehta: We can now prioritize urgent studies and prevent any delays in treatment for patients.

the most pressing patient cases first thanks to the ability to build features, such as artificial intelligence to organize cases by priority within Sectra.

"We try to do everything as quickly as possible but if we get a deluge of studies, it's hard to know which to do first. The only way to prioritize these until now was by the time of the study," Dr. Mehta said. "Going forward, this will allow us to prioritize studies that are the most urgent and that prevents any delays in treatment for those patients.

"Our goal for anyone coming from the Emergency Department is to interpret their images within an hour or less; strokes within 20 minutes. These are the patients who need treatment as soon as possible."

He and others on the Diagnostic

Imaging team will be able to use data provided by the Sectra system to track whether they achieve those targets and determine other possible service improvements, noted Mike Sharma, director of Diagnostics.

"The data analytics, which we will be able to mine from the Sectra picture archiving and communication system will include our volumes, report turnaround times and many other key performance indicators. This will allow us to monitor our performance and efficiency and to see where improvements can be made," Sharma said.

Healthcare providers outside Niagara will be able to access patient information quickly and easily, too, because Sectra integrates seamlessly with regional and

provincial digital imaging solutions. This will prevent unnecessary duplicate testing that can further delay diagnosis and treatment.

Meanwhile, teams at Niagara Health will be able to use Sectra to access and migrate over images done elsewhere in Ontario from as far back as 2010. They'll be able to view those archived images within minutes rather than having to wait days like with the previous digital imaging system.

"It was always a struggle to obtain prior examinations to do a comparison," Dr. Mehta said. "Without these prior studies, it would be hard for the radiologist to know if there were changes in a patient's condition or if things stabilized."

The switch to Sectra is part of Niagara Health's digital strategy, aimed at improving the patient experience. It comes after listening to patient feedback, Dr. Dobranowski said.

"We're trying to improve quality, patient outcomes, and the patient experience," he asserted. "That's the driver of this change."

Patients: Patient partner Catherine Bourque is excited by Sectra's potential.

Bourque has been receiving treatment for cancer at Niagara Health since 2015. She knows how critical high-quality diagnostic imaging, thorough, standardized reporting, and early diagnosis are to a patient's healthcare journey.

With physicians in Niagara, Mississauga and Toronto, she's also grateful Sectra's digital archives will be accessible to doctors anywhere in Ontario, reducing repeat tests, which creates additional stress for patients and can expose them to more radiation.

"I know the danger of delayed diagnoses and I've decided that's never going to happen to me again," Bourque said. "Information is power. Anything that makes diagnostics more accessible and easy to understand, I'm all for."

Canon Medical highlights its work in AI at the ISMRM conference

ORONTO - Canon Medical has been making advances in artificial intelligence and machine learning using an international "Team of Teams" approach to research and development. The company updated its AI strategy and reported on developments at the 2023 International Society for Magnetic Resonance in Medicine (ISMRM) Annual Meeting held in Toronto early June.

At the conference, the enhancements of Advanced intelligent Clear-IQ Engine (AiCE) and Precise IQ Engine (PIQE) were presented.

• Quality Electrodynamics (QED) was founded over 16 years ago, and in 2019 became a member of the Canon Components Business. In addition to their head-to-foot catalog of 1.5T and 3T products, QED is also an established supplier of 7T coils. Their 7T line includes research-use coils and FDA-

cleared coils to satisfy high-field clinical users - and includes knee and head coils, wrist, and c-spine coils.

 Skope Magnetic Resonance Technologies (Skope) focuses on bringing accuracy and detail to magnetic resonance imaging by combining sensor technology with advanced MR signal processing and image reconstruction. Examples from the Montreal Neurological Institute were provided at this year's ISMRM.

 Canon Healthcare IT delivers end-to-end customer value via clinical decision pathways that integrate with other clinical systems in each hospital. Canon Healthcare IT provides smart systems to run core MR imaging processing algorithms and applications in line with Canon MRI scanners. In 2018, Canon Medical said it

debuted the world's first Deep Learning Reconstruction technology, AiCE. Initially developed for CT, this denoising



deep-learning technology was deployed next across MRI and PET/molecular imaging to speed up scan times and improve image quality. As noted by Andrew Nelson, clinical product

manager MRI, Canon Medical Systems Canada Limited, "With AiCE, a higher level of quality of image is obtained and

> allows the user to be more efficient in their scanning." A system called PIQE is Canon's next evolution forward, offering "peak" performance in super resolution Deep Learning Reconstruction technology. PIQE increases matrix size, removes noise, and delivers sharp anatomical images to deliver high-speed, highresolution MR imaging compared to conventional scans. "Our team was thrilled with the level of interest coming out of ISMRM. Visitors were

excited to see the Vantage Galan 3T system at the booth and learn about how we are taking MR imaging to the next level with Canon's Altivity AI innovations," said Nelson.

Montreal Children's Hospital opens its dedicated simulation centre

ONTREAL – The Montreal Children's Hospital (MCH) is pleased to announce the official opening of its Centre for Pediatric Simulation, one of only a few world-class simulation centres with on-site pediatric education facilities.

The mission of the Centre for Pediatric Simulation is to provide interprofessional training created to mirror real-life situations – from the rarest to the most common scenarios – to help hospital teams provide the best patient care.

In this way, the centre will advance clinical care, disseminate knowledge, increase patient, family and staff safety, strengthen the culture of simulation as a training method and generate research topics.

The MCH has been conducting simulations for many years to enhance the knowledge of its professionals. However, to meet the growing demand, a dedicated full-time team has now been established and is housed in the MCH's National Bank Family Resource Centre.

"Continuing education is the cornerstone of ongoing improvement in patient care. Healthcare is becoming more complex, creating a pressing need for new and innovative learning methods for professionals, of which simulation is an integral part," said Dr. Ilana Bank, medical director of the Centre for Pediatric Simulation.

In addition to Dr. Bank, the team includes a head nurse and a nurse educator. This summer, they'll add an administrative assistant. They're backed by a committee of eight hospital professionals who repre-



Dr. Ilana Bank, medical director of the Centre for Pediatric Simulation, speaks at the centre's launch.

sent various roles, including physicians, nurses, social workers and therapists.

The plan, said Dr. Bank, is to conduct two to three simulations each day.

Practice makes perfect, and simulation allows health professionals to put knowledge into action in a risk-free environment. By being exposed to a variety of medical situations, healthcare professionals are better prepared and more confident when caring for a sick child. They also learn best practices for communicating with patients and their families and for providing them with reassurance and comfort. The types of simulations conducted will be based on the needs of various divisions and units of the hospital. "It depends on what they want to run," said Dr. Bank. "They might want to test a new technique or protocol, or they may have had a sentinel event and want to improve their processes. They may also want to train new people, like residents or student nurses."

She noted that in addition to clinicians, simulations sometimes include staff members like security personnel and housekeepers. "When you have a Code White, for example, an aggressive patient, security staff are the first to the scene, so you want to include them, too."

She asserted that communication skills are also taught, noting that communication breakdowns have been identified as a major cause of medical error. Improving the way people talk to each other can have a dramatic impact on the quality of care.

"Medical knowledge is something we're all good at," she said. "The challenge is ... in an acute situation, knowing how to share your knowledge, how to summarize and get your ideas across. We all need to be on the same page."

"It's imperative to communicate effectively, especially in a crisis."

Many events can be simulated, including trauma, surgical care, medical care, resuscitation drills, various codes (for example, respiratory arrest), and disaster preparedness. "Whatever you can imagine, we can do," said Dr. Bank.

The sessions can be filmed or livestreamed so they can be viewed remotely in real time or afterwards. Following each simulation, a debrief is organized to help identify challenges and opportunities for improvement.

Established in 1904, the Montreal Children's Hospital (MCH) is Quebec's oldest children's hospital and the pediatric hospital of the McGill University Health Centre (MUHC). A tertiary and quaternary care teaching and research facility, treating newborns, children and adolescents up to age 18, it serves 63 per cent of the geographic population of Quebec.

1,000 robotic surgeries later, the patient POV on ROSA

BY CHIARA MARCELLO

ORONTO – In April, the ROSA surgical robot completed its 1,000th case at Humber River Health. ROSA was the first orthopaedic surgery robot in Ontario, and Humber's Dr. Sebastian Rodriguez-Elizalde performed the first operation in October 2020.

It was a bold move to implement this innovative technology in the midst of the COVID-19 pandemic. However, ROSA has proved its worth by reducing surgical backlogs and enhancing patient outcomes at the hospital. Humber has since acquired a second ROSA and has six trained surgeons using the technology.

Coincidentally, ROSA's 1,000th surgery was performed by Dr. Rodriguez-Elizalde – the surgeon who did the initial operation in 2020. In April of this year, he utilized the robot to help patient Claude Vezina.

Before his orthopaedic surgery, Claude experienced limited ambulation due to pain and swelling. As a retiree, Claude enjoys spending time hunting, fishing, and working on his property but lacked the necessary mobility because of chronic pain. Claude had first heard about ROSA's orthopaedic surgery through a friend who underwent hip surgery by Dr. Rodriguez-Elizalde. Through further research, he became impressed by what the robotic technology could offer: same-day surgery, precise anatomical analysis of knee joints, and improved post-operative care. Performed by Dr. Rodriguez-Elizalde and a team of Humber's outstanding surgical staff, the ROSA 1000th case was a prosperous milestone and Claude's surgery was a success. "I am already ambulating and feel no pain at this time," explained Claude less than four hours after his surgery. "I am feeling encouraged to go out and continue my healing."



A surgical team at Humber River Health works on an orthopedic patient, assisted by the ROSA robot.

Due to his positive experience, Claude believes that Humber is a leading institution for care in Ontario. "[Humber] was well conceived and laid out. The human contact was good at all levels. Everyone communicated very well and explained everything to me thoroughly. It was 100 percent a good experience!"

Claude expressed his gratitude to the Humber team and the need for more surgical technology in our communities. According to Claude, as the population ages and individuals live longer, mobility of hips and knees has become increasingly important, creating a need for more access to technology of this nature. "I feel that if 999 people have gone before me, I am encouraged that I came here and made the right choice. I am not the first case, but I am one of many, and I know that Humber will have many more. I am very happy to have made this decision."

Visit the link below to watch an interview with Dr. Rodriguez-Elizalde and to learn more about ROSA: https://www.youtube.com/watch?v=7qO g4KN5xuI

Chiara Marcello works in the Communications Department at Humber River Hospital.

Treating people wherever they live is becoming increasingly important

BY JERRY ZEIDENBERG

HICAGO – Ebony Funches is young, Black and speaks carefully and sensitively. She has a PhD in nursing and is deeply involved in street medicine in Venice, California, just outside Los Angeles. Her patients often have a tri-morbid condition, meaning they're suffering with substance abuse, mental health challenges and physical problems.

They're also poor and homeless. In short, they're at the bottom of the social ladder and they've got huge issues to deal with.

To top it off, they tend to avoid coming into brick-and-mortar clinics.

At the HIMSS meeting in April, Dr. Funches described how she and her colleagues at the Venice Family Clinic are helping these patients – whose numbers have been growing in recent years, as the rich get richer and the poor spiral downwards.

"We're going out and treating people right where they are – under the freeway, in abandoned buildings, even in the mountains," said Dr. Funches. "They don't access regular care. They may have been [emotionally] burned, they don't trust other people, they have the stigma of homelessness, the shame, and they don't want to be judged. But they deserve healthcare."

Dr. Funches gave an example of a successful intervention with a street person in need of care.

"She was a young African-American girl suffering from mental illness and substance abuse. She could only tell me her first name, and she had schizophrenia. I spent time with her each week, gaining her trust. I did blood work and started giving her anti-psychotic drugs. In time, I was able to help her get organized."

Dr. Funches continued, "A few weeks later, she gave me another name, her real name. I then found out that she had health insurance and SSI, which covered the cost of renting a house for her.

"She's now living in the house and considering going back to school."

Getting homeless patients stabilized, physically and emotionally, and into housing, are the goals of street medicine.

Dr. Funches asserted that anyone can become homeless and find themselves without financial resources, physically sick and mentally ill. "It usually stems from a catastrophic event," she said. "Like the loss of a job or a divorce. And we see many people who come to California to pursue a career in acting, where their plans don't work out, and they start taking substances."

Without steady income, these people find themselves on the street, fighting for survival.

Technology has been a tremendous help in visiting and treating the street population. In particular, smartphones have been key tools.

"Our phones are outfitted with an app that integrates with the electronic health record at the clinic. We can take pictures of people, which is important for trying to identify clients who can't tell us who they



are. When they have documents, we can take pictures of them, too, for their files. And we can dictate by voice."

Assisted by smartphones in this way, a team from the Venice Family Medical Clinic can see 10 patients in a half-day.

Typically, the clinic will send out a clinician, such as a doctor or nurse, along with a case manager to handle the social services side of things, and a peer – someone who has experience with living on the street and can reassure clients.

Dr. Funches said that in addition to her cell phone, she travels with a backpack filled with equipment – including a stethoscope, an ophthalmoscope for eye exams, and an otoscope. "We find lots of bugs in their ears," she noted.

She also carries personal protective equipment – PPE. "You never know what you're going to be exposed to," she observed.

During an encounter, she can give topical medications and provide wound care. With the help of prescribing physicians, various medications can be ordered and brought to the site where the clients are living.

Dr. Funches added that she totes around a portable stool. "It's for when there's nowhere to sit. And in this job, you need to sit down."

The Venice Family Clinic has 13 clinicians working in street medicine. They also have three mobile units, with vans equipped like doctors' offices. In 2022, the Venice team conducted 2,347 street visits and saw 872 unique patients.

The clinic dates back to 1970, with volunteer physicians providing community care at a borrowed dental office after regular hours. It has evolved dramatically since then, and now has 17 locations, plus mobile clinics and its street medicine program. Dr. Funches said the street medicine activities expanded greatly in 2007, when the banking crisis in the U.S. set off a major recession. It grew again during the recent Covid pandemic.

Street medicine, as an organized approach, dates back to 1992, when Pittsburgh, Penn., physician Jim Withers went out onto the streets to treat the city's homeless population, assisted by a former street person who acted as a guide. Dr. Withers decided to devote his career to caring for the poorest of the urban poor.

He connected with other clinicians treating the underclass in cities around the

Street medicine has been developing worldwide as a specialty, led originally by physicians in Pittsburgh.

world. In 2005, Dr. Withers and his colleagues launched the International Street Medicine Symposium in Pittsburgh, bringing together clinicians from many nations. In 2009, they launched the Street Medicine Institute (SMI), which focuses on developing street medicine as a specialty, training caregivers and supporting programs worldwide.

There are now street medicine programs in over 85 cities across 15 countries on five continents. According to the SMI, the movement continues to grow.

Anthony Villaneuva, CIO at Neighborhood Health, in Nashville, Tenn., also spoke at the HIMSS session. The street medicine program in Nashville is much newer than the one in Venice, California. Villaneuva explained that a brick-and-mortar building in Nashville had to be closed just around the time that COVID-19 struck.

"We had 5,000 patients experiencing homelessness," he said. "When the pandemic started, we had to put programs together quickly. We ramped up and saw our first patients in 2020."

These, too, were people suffering from substance abuse and mental health issues, as well as physical ailments – the triple morbidity. In Nashville, many of the street people are former members of the armed forces. For one reason or another, they've fallen on hard times.

Villaneuva said technology has been extremely helpful in treating the homeless population, enabling staff and clinicians to do a lot of work in a short period of time, all remotely. Again, smartphones have been a key instrument. "We're doing coding, billing and charting," said Villaneuva. "And we're using speech-to-text, with the note going right into the chart."

To refine the technology, Villaneuva explained, Neighborhood Health's I.T. team went out into the field and followed around a clinical team to see how they worked. This showed them how things could be improved, and together, the I.T. staff and the clinicians were able to come up with better ways of charting and billing.

Villaneuva recounted the story of one client, a pregnant woman living in a tent under a bridge in Nashville. The visiting team of street clinicians were able to provide her with regular obstetric care. They also arranged insurance, enabling her and the newborn to obtain housing.

"Things like that inspire us to come into the office each morning," said Villaneuva.

Every day, medications are being prescribed to homeless clients, delivered by Jeep, and dispensed right where they are living. Teams are providing wound care and taking care of the general health of the urban poor. Importantly, Neighborhood Health inoculated the homeless with the COVID-19 vaccine during the pandemic.

"The government of Tennessee relied on us to vaccinate the homeless on the streets of Nashville," he said. "In 2022, just under 1,000 patients were vaccinated in one year."

Neighborhood Health has two street teams. They go out into the field with a Winnebago that's outfitted like a clinic and a Jeep that can transport people, equipment and meds. Since 2020, the teams have conducted nearly 6,000 visits.

While technology can be a big help in treating the urban indigent, session moderator Dr. Robert Murry, chief medical officer at NextGen Healthcare, emphasized the need for the human touch. "Collaboration, kindness, and humility are all-important," he said.

For her part, Dr. Funches said that establishing a human connection with the homeless is essential to treating them.

"I come into their tents at 8 in the morning, yelling and telling them who I am," she said. "They'll start telling me their stories – they may have been divorced with nowhere to go and started living on the street.

"They're very open, and they want to get better. They want to be housed and to be accepted members of the community."

Podcasts are a convenient way to consume healthcare information while on the go

Whether you're commuting to work or taking a walk, you can listen to a podcast and learn something new.

BY DR. SUNNY MALHOTRA

ealthcare is one of the most critical issues facing Canadians today. With the aging population, rising healthcare costs, and increasing prevalence of chronic diseases, it's more important than ever for Canadians to stay informed about their health and wellness. That's why healthcare podcasts have become an increasingly popular medium for providing information and insights to Canadians.

Podcasts are a convenient way to consume information while on the go. Whether you're commuting to work, taking a walk, or doing household chores, you can listen to a podcast and learn something new. Unlike other media formats, such as television or books, podcasts are often free and accessible to anyone with an internet connection.

One of the main benefits of healthcare podcasts is that they cover a wide range of topics related to health and wellness. From mental health and nutrition to disease prevention and management, there's a healthcare podcast for just about every topic. This means that Canadians can get the information they need to make informed decisions about their health and well-being.

There are several notable healthcare podcasts in Canada that are worth checking out. One of these podcasts is "Inside Medical Malpractice," hosted by Chris Rokosh, a nurse turned patient safety advocate. The podcast explores the often-overlooked issue of medical errors and malpractice, featuring interviews with patients, families, and healthcare professionals who have been affected by medical errors. Rokosh's firsthand experience with medical errors gives her a unique perspective on the issue and provides valuable insights for anyone concerned about patient safety. The Canadian Institute for Health Information (CIHI) also produces a podcast series, featuring interviews with healthcare experts on topics related to health system performance, data, and innovation. The podcast provides valuable insights into the challenges and opportunities facing the Canadian health-

The podcast 'Beyond MD' is hosted by Dr. Yatin Chadha and explores the intersection of medicine and entrepreneurship.

care system, as well as the latest research and trends in healthcare delivery and management.

Another healthcare podcast to add to your playlist is "Beyond MD," hosted by Dr. Yatin Chadha. The podcast explores the intersection of medicine and entrepreneurship, featuring interviews with physicians who have launched successful businesses. The podcast provides valuable insights into the challenges and opportunities of starting a healthcare business and highlights the innovative thinking and problem-solving skills of physicians.

For those interested in nutrition and wellness, the "Peak Human" podcast hosted by

Dr Sunny Vikrum Malhotra is a US trained sports cardiologist working in New York. He is the CEO of Cardiac Registry Support. www.cardiacregistrysupport.com. Twitter: @drsunnymalhotra Dr. Sanjeev Goel is a must-listen. The podcast explores the latest research and trends in the world of health and wellness, covering topics such as nutrition, exercise, and stress management. Dr. Goel's expertise as a physician and his passion for wellness make the podcast both informative and engaging.

One healthcare podcast that is popular in Canada is "The Dose," a podcast produced by CBC Radio. Hosted by Dr. Brian Goldman, the podcast covers a wide range of health topics and features interviews with experts in the field. The podcast also covers current health events and provides insights into the latest medical research.

A popular healthcare podcast in Canada is "Healthy Debate," a podcast produced by the Canadian healthcare news website of the same name. Hosted by journalist and healthcare policy expert Nora Loreto, the podcast covers topics such as healthcare reform, patient care, and healthcare policy. The podcast features

interviews with healthcare professionals, policymakers, and patient advocates, providing a well-rounded perspective on the healthcare

system in Canada. In conclusion, healthcare podcasts have

become an important resource for Canadians seeking information, insights, and inspiration on a wide range of health and wellness topics. Whether you're interested in healthcare policy, entrepreneurship, or wellness, there's a healthcare podcast out there for you. By subscribing to healthcare podcasts, Canadians can stay informed and empowered about their health and wellness, making informed decisions and taking control of their healthcare journey.

Nuance to roll out AI-powered clinical documentation co-pilot

Nunce is at the forefront of companies that have created applications to reduce physician burnout by using AI. There's been a lot of excitement generated recently over its DAX Express application, which uses artificial intelligence and natural language technology to monitor the conversational exchange between a physician and patient and to automatically chart the encounter.

"Medical diagnosis and AI, that's in the future," asserted Diana Nole, executive VP and general manager of Nuance's Healthcare division, in an interview with CHT at the recent HIMSS conference in Chicago. "Our focus is on the administrative burden, that's where AI can be applied with a lot of value right now."

It's something that Nuance has been researching over the past few years and has strengthened with the addition of OpenAI's GPT-4, its latest generative AI model. While Nuance has been developing its ambient charting application for several years, it has made a major leap forward with the new, generative AI technology.

Extending the popular Dragon Medical portfolio of solutions and building on the market-leading DAX ambient solution launched in 2020, DAX Express is the next milestone in Nuance's long-standing mission to reduce administrative burden and empower clinicians to spend more time taking care of patients and less time on paperwork

Nole said the company will start selling the commercial version of DAX Express in the United States in the Fall timeframe, and that it will then be rolled out around the world.

Nuance already has a large footprint in the healthcare sector, with an estimated 550,000 family doctors, specialists and radiologists worldwide already using its Dragon Medical dictation systems.

Its new DAX Express application is expected to have a major impact

on the paper burden faced by physicians, who regularly take their work home with them and conduct several hours of "pajama time" charting every night – time they would rather



spend with their friends and families. Nuance is aiming to give back that time through its technology, which can do the charting for the doctor during the

— workday.

"Clinicians have been stuck with this burden," said Nole. "We've been looking at how AI can be applied to solve the problem. We've seen that it doesn't have to involve diagnosis to make an impact."

She stressed, however, that while Nuance has researched and devel-

oped an application that effectively uses AI to interpret conversations and to create medical charts, there's still a human "co-pilot" in the equation. The AI-driven DAX Express will save time by producing electronic records for the physician, but they're always checked and edited, if needed, by the doctor.

"It's important to have a human in the loop," she said.

AI systems using the latest technology – namely large language models – are able to quickly "understand" human language and can process it and provide answers to questions. Still, there's always the chance that something is not interpreted correctly or needs revising. That's why human supervision is called for.

Nole added that, in the future, AIbased systems can perform other useful tasks for clinicians, in addition to notetaking. For example, she said, "they can write prescriptions, draft referrals, and fill out forms."

Should there be a Hippocratic Oath covering artificial intelligence?

BY JERRY ZEIDENBERG

HICAGO - Do we need a Hippocratic Oath for AI? That question was posed at HIMSS by Dr. Emre Sezgin, principal investigator and head of the Intelligent Futures Research Lab at Nationwide Children's Hospital, in Columbus, Ohio, and an assistant professor of pediatrics at Ohio State University's College of Medicine.

The traditional oath requires physicians to pledge to prescribe only beneficial treatments and to refrain from causing harm. When one delves into the possible misuses of artificial intelligence, and you see what trouble it could cause, you start to agree. And maybe it shouldn't only be physicians taking the pledge, but all professionals involved in applying AI to healthcare.

Dr. Sezgin was part of the ML and AI Forum. The panellists discussed voice technology in a session called: "It Speaks, It Listens, It's Your Daily Voice Assistant". After listening, I came away with a new understanding - and a sense of awe - of the power of voice technologies.

As Dr. Sezgin noted, "Voice is very personal, and it's the most personal way to identify us, as individuals, outside of our DNA. [The analysis of voice can determine] our emotional state, gender, race, age and geographical background."

When AI systems know all of this, Dr. Sezgin asked, "Will it discriminate against me, based on my voice?"

Another panelist, Dr. David Metcalf, asserted that police could potentially use this information to target citizens. (It wasn't mentioned, but such a thought evoked images of Chinese police and authorities using AI to identify Uyghurs and other minorities.)

Dr. Metcalf is director of the Mixed Emerging Technology Integration Lab at the University of Central Florida.

He observed that by parsing the voice, AI systems can now detect Parkinson's Disease. That's good, if it's used for early diagnosis and treatment. But what if it's used by employers when hiring - will they hire a person who shows signs of developing a serious disease? What if they're also using other voice technologies to assess employees?

Freddie Feldman, director of voice and conversational interfaces at Wolters Kluwer Health, noted that systems are now available that understand the conversations between patients and doctors, an application known as AI-powered scribes. The advertised benefit is to automatically capture the clinical encounter and to generate the chart, and in this way reduce the burden on the doctor. It's a terrific way of helping with physician burnout - doctors have too much paperwork, after all.

But Feldman asked, will the systems also pick up what you're saying in the waiting room? How will this information be used?

"It highlights the need for regulation in this area," he commented.

The panelists naturally discussed Chat-GPT – a topic that seemed to be on the lips of every speaker at the HIMSS conference. Feldman, for his part, was highly skeptical of the powers of ChatGPT. "Are you going to let patients talk to it? No, it can't be trusted, we don't know where the information comes from. It hallucinates. Ask it a question, and it gives you an answer, but we don't know where it comes from, and we don't [immediately] know if it's correct."

He described a test of ChatGPT, where it was asked: How do you instruct a person who is about to die? ChatGPT responded

with what local funeral home to use. "We wanted to know what language to use with a dying person," explained Feldman. However, he said that with further coaching and questions, ChatGPT was able to understand and provide a more appropriate answer.

Voice technologies and conversational

AI, including large-language models like ChatGPT, are evolving at an accelerated rate, observed Dr. Sezgin. But issues of standards, trust and ethics aren't keeping pace. There needs to be more attention paid to privacy. Respect for personal rights and values, moreover, should be reinforced, he said.



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ChatGPT at HIMSS

CONTINUED FROM PAGE 4

to a set of words. But don't be fooled, those aren't reasons."

Blackman noted that generative AI systems work by manipulating huge libraries of words and are trained to predict the most probable sets of words in response to questions they are asked. For that reason, they are referred to as "Large Language Models" or LLM.

Kay Firth-Butterfield, CEO of the Centre for Trustworthy Technology, was also harsh in her criticisms and warnings. The former law professor and judge is currently a barrister in London, UK, and is considered one of the foremost experts on the law and governance of AI.

In particular, she asked, when Chat-GPT or other forms of genAI get things wrong in a clinical setting, "who are you going to sue?

"Are we going to sue the person who is using the tools? That's you.

Alternatively, will the developer of

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1577 North Service Road E, 2nd Floor Oakville ON L6H 0H6 T: 905-465-8000 F: 905-465-8162 E-mail: customeradvocate.ca@siemens-healthineers.com Web: www.siemens-healthineers.ca Siemens Healthineers is continuously developing its product and service portfolio, with AIsupported applications and digital offerings that play an increasingly important role in the next generation of medical technology. These new applications enhance the company's foundation in in-vitro diagnostics, image-guided therapy, invivo diagnostics, and innovative cancer care. An estimated five million patients globally everyday benefit from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics and molecular medicine, as well as digital health and enterprise services.

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ChatGPT, namely OpenAI, be liable? Will doctors or health organizations that have contributed to it be responsible? These issues, she noted, are still up in the air from a legal point of view.

Firth-Butterfield also commented on ethical issues, such as access. She pointed out that while 100 million people signed onto ChatGPT right after the most recent version was released in March, there are still 3 billion people on the planet who have little or no access to the Internet. If it does turn out that genAI is a transformational tool, these people will be left even further behind.

For his part, Moore is betting that genAI will become a revolutionary tool that benefits mankind. His point, however, is that in order to obtain these advantages, people will have to learn how to use it as soon as possible and adapt it to their needs. For healthcare, he said, that means developing expertise at the hospital level.

"Get your hands on it and understand this technology," he said. "Don't wait to see what happens."

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Sustainability of F18 medical isotope production for PET scanning

The challenge of equitable access to PET scans: A pricing problem.

BY DANIEL BANKS AND DREW MARQUARDT

anada's small population distributed across its large geography poses significant challenges in providing equitable medical care across its rural and urban areas. A notable challenge is provision of cancer diagnosis techniques, including Positron Emission Tomography (PET) scans.

PET scans rely on short-lived radioisotopes, typically Fluorine18 (F18), which has a half-life of less than two hours. F18 needs to be produced locally to avoid significant losses due to radioactive decay during transportation.

Thus, PET scanning is typically only available in cities large enough to sustain not only the capital costs of a PET scanner, but also a local radiopharmaceutical manufacturer that produces F18 and converts it into the radiopharmaceutical needed for PET scanning: [18F]fluorodeoxyglucose, known as FDG.

Without access to a PET scanner locally, cancer patients must travel to receive their diagnosis. Such travel can burden patients and complicate their condition – and, during an epidemic or pandemic, patients may be discouraged or forbidden to reduce transmission of pathogens from one local medical system to another.

Thus, greater access to PET scanning for patients in rural areas and small cities would be a step toward more equitable medical care and self-sufficiency of local medical systems.

Availability of PET scans in Windsor without local FDG production: Two small cities in Ontario each have a PET scanner but no local supply of FDG, namely, Windsor and Sudbury. In these cases, the FDG is just-in-time shipped from larger centres such as London, Hamilton, or Toronto.

Well over half of the FDG is lost to decay during shipment. These losses drive up the per-patient cost of PET scans and limit the number of patients that can be served from a single production run of FDG from the supplier.

Windsor's PET scanner has been well supplied with FDG from London. However, within the next few years, growth in demand for PET scans could overtake the number of patients that can be served each day, leading either to increased costs for additional FDG shipments or to the need for patients to travel elsewhere for a PET scan.

Modelling sustainability of local FDG production in Windsor: Producing FDG locally would be more efficient because it eliminates losses of FDG during transit. However, the price must be high enough to provide FDG producers with a sound business case for meeting the local demand.

We examined the sustainability of local FDG production in Windsor, looking for insights that may apply generally to the sustainability of FDG production in small Canadian cities (e.g. Sudbury). Our study focused on the role pricing plays in achieving sustainability.

We were motivated in part by the example of the radioisotope Technetium-99m, used for SPECT scans. The Nuclear Energy Agency has shown that a large increase in the price of Technetium-99m could achieve sustainability for producers without causing a noticeable increase in the price of a SPECT scan.

So, we asked, At what increase in the cost of FDG does local FDG production become sustainable? Does this increase make a big difference in the cost of

a PET scan? And, how much do these price changes depend on the local demand for PET scans?

To answer these questions, we developed a business model for FDG production in which we could vary inputs, such as demand for the FDG, price of the FDG, whether the FDG is produced locally or shipped in from elsewhere, and expectations for capital cost recovery. We developed our model based on expert insights from FDG suppliers, suppliers of FDG production equipment, and cancer care providers.

Our most notable assumption was that the FDG production personnel would be shared with a host hospital or affiliated university, and that such personnel would perform other nuclear medicine or research functions when they were not needed for FDG production.

This assumption is critical at low production volumes because it enables us to treat personnel costs as a variable cost that scales with the demand for PET scans. More details about our model and key results are described in our corresponding white paper, *Sus*- PET scans are offered 1.5 days per week, serving up to 11 patients per day.

Our calculations show that for locally produced FDG, a basic level of sustainability could be reached in Windsor today using this compact schedule, without increasing the per-patient cost of a PET scan to the public health system. Our calculations assume that the provincial payer would need to agree to doubling the cost of the FDG, which would be offset by reducing the number of FDG batches produced by half.

If all capital costs of FDG production are to be recovered, a 36 percent increase in the cost of a PET scan would be required.

Discussion and conclusion: It is reasonable to consider FDG production scenarios in which not all capital costs must be recovered at current levels of demand, given that (a) hospital buildings (where FDG is best produced to minimize losses due to radioactive decay) and medical equipment are often funded through private donations and special allocations from provincial governments, and that (b) the



tainability of F18 medical isotope production in small Canadian cities, available on the Canadian Health-care Technology website, in the White Papers section.

Key findings: A key finding of our analysis is that with Windsor's current level of patient demand (typically three days per week, serving five-to-six patients per day) and current PET scan costs, the business model for local FDG production would be close to achieving a basic level of sustainability in which the most critical capital costs of FDG production are expected to be recovered (e.g. the cost of the radiopharmaceutical manufacturing equipment, but not the cyclotron or the building in which it is housed).

To achieve this basic level of sustainability, the price of a batch of FDG would need to rise 56 percent – but this increase would make a difference of only 17 percent in the total cost of a PET scan in Windsor. To recover all capital costs, the total cost of a PET scan would rise 54 percent.

If the FDG was produced locally, however, the PET scanning schedule could be optimized to serve more patients with a single batch of FDG, since losses during shipment would be avoided.

To fully exploit each batch of FDG produced locally, we also modelled a compact schedule in which expected increases in demand for PET scans over the lifetime of a cyclotron and building will only improve the business model and make replacing these assets in coming decades more feasible than today.

With this in mind, our results suggest that a local FDG production facility might be sustainable in Windsor today without increasing the net cost to the public health system, if the PET scanning schedule can be adjusted to fully exploit every batch of FDG produced locally, and if the local producer is a university or hospital that can employ FDG production staff elsewhere on days when FDG is not being produced.

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Daniel Banks, PhD, MBA, is President of TVB Associates Inc., a company providing advice in areas of science policy, strategy and communications, and in the development of equipment and associated computer systems and software. Drew Marquardt, PhD (Biophysics) is an Associate Professor at the University of Windsor.

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