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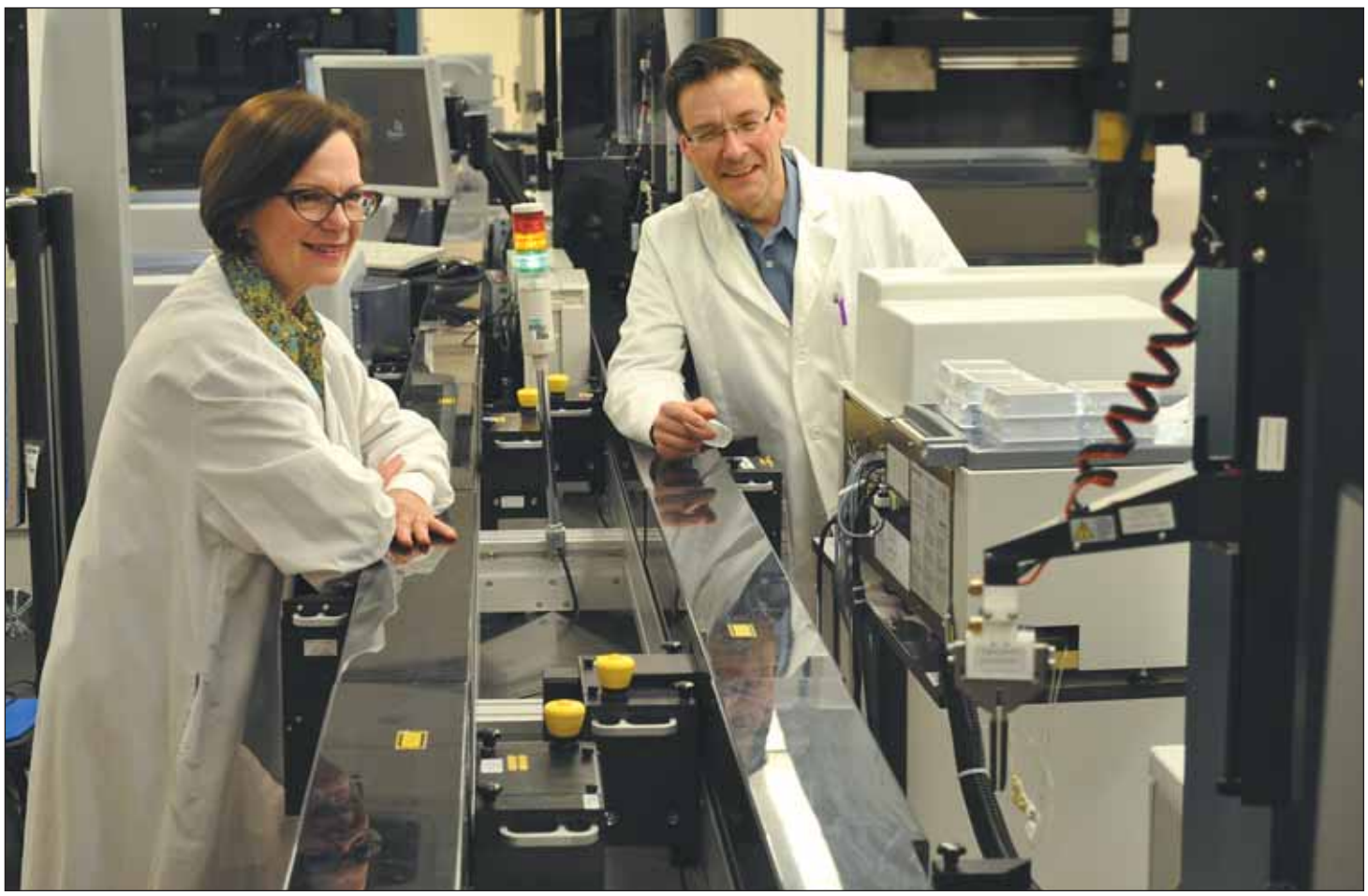

PHOTO: COURTESY OF ROYAL VICTORIA HOSPITAL, BARRIE, ONT.

Total lab automation at Barrie's Royal Victoria

The newly constructed Royal Victoria Hospital in Barrie, Ont., invested $70 million in state-of-the-art diagnostic technologies, including a completely automated lab system. The solution provides continuous lab sample processing and analysis, enabling staff to focus on higher-value tasks. Pictured are hospital president and CEO, Janice Skot, and Dr. Russell Price, clinical director of lab medicine. **SEE STORY ON PAGE 13.**

Stat! Better communication needed among physicians

BY JERRY ZEIDENBERG

CALGARY – To improve the coordination of patient-care among general practitioners, radiologists, surgeons and other specialists, the Health Quality Council of Alberta is calling for greater investment in electronic communications networks.

That may sound paradoxical, as Alberta is often cited as the Canadian province that has invested most in electronic systems for healthcare, and is a national leader in the use of electronic charting.

But the HQCA is calling in particular for networks that connect one doctor to another, so that each can inform the other of what he or she is doing with patients.

Such networks would include electronic referrals and notifications that messages have been received and dealt with. They would also include alerting systems that convey urgent messages such as critical test results.

They differ from most of the regional electronic networks that have been created so far, which upload patient data to central repositories and allow physicians to access information at their discretion. The systems being called for are much more proactive, and would replace the phone calls and

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Coordination of patient-care among physicians needs improvement

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faxes that still predominate among doctors' offices.

The HQCA report has caught the attention of Alberta's minister of health, Fred Horne, who is demanding that provincial medical organizations, including the Alberta Medical Association, take note of this call for action on electronic networks that link physicians, as well as the report's nine other recommendations. (For the full list, with details, see www.hqca.ca.)

"The minister has asked many of the organizations for their plans to implement the recommendations," said Patricia Pelton, acting chief executive officer of the HQCA. "He wants to hear their plans within the next few months."

The HQCA attracted a good deal of publicity by focusing on the case of 31-year-old Greg Price, who died three days after undergoing surgery for testicular cancer in May 2012. While this form of cancer has high rates of survival if caught early and treated quickly, Mr. Price had to wait months for appointments with specialists (the first surgeon he was referred to didn't respond for 93 days), received few call-backs for subsequent appointments and tests when he needed them, had to wait nearly three weeks for an 'urgent' CT scan, and essentially dropped through the cracks of the system.

As his father, David, said at a Calgary press conference late last year, "Greg died prematurely. We believe he died prematurely because of multiple gaps and failures in the so-called system of healthcare in Alberta."

Problems with 'continuity of care' have dogged healthcare systems across Canada for years, and the issue of communication breakdown was recently examined in depth by the Health Quality Council of Alberta. The council produced a 92-page report last December that analyzed the dilemma in general, and focused on the case of Greg Price in particular.

"We know that in any study of sentinel events [unexpected events that lead to severe injury or the death of patients], communication breakdowns are always among the top factors," said Dr. Ward Flemons, author of the study and an HQCA medical advisor.

In addition to peer-to-peer networks linking medical professionals, the HQCA is calling for the use of a patient portal that allows patients not only to view their health records and test results, but also lets them see what has happened with referrals to specialists.

In this way, patients can keep tabs on their appointments and prod the system, when necessary.

"Gone are the days when a doctor can manage his patient's health completely, 100 percent of the time," said Dr. Flemons. "Patients often have five or six different chronic conditions. Every member of the team has to be active, and has to be monitoring the same information – and that team includes the patient himself."

As it happens, Alberta Health has been working on a patient portal for some time, and the plan is to go live with it this year.

In addition, the province will start testing e-referrals in 2014.

Dr. Flemons concedes there are many challenges ahead when it comes to building physician networks to improve the continuity of care. Firstly, it requires that all physicians use computerized health record systems. While the province is at the top of the list when it comes to physician usage of EMRs, not all doctors in Alberta are fans of the systems. That means there will still be gaps in the proposed solution.

Patricia Pelton

Dr. Ward Flemons

As well, a network that securely connects thousands of doctors to each other would need to be devised. That, too, is a missing link.

"We agree, it's going to be a considerable project," said Dr. Flemons. "But if you make it easy for people to do the right things, they will do the right things."

Some commentators in Alberta praised the HQCA report, but were skeptical of its recommendations ever coming to pass – or at least in the near future. In response, Dr. Flemons noted that families of patients who have suffered from gaps in continuity of care, including the Price family, will pressure politicians and medical organizations to keep their promises. For its part, the Price family has created a web site to highlight the issue: See http://healtharrows.ca. "The families are going to hold people accountable," said Dr. Flemons.

Recommendations include additional investments in EHR

Some of the recommendations of the HQCA report:

• That Alberta Health and Alberta Health Services should strongly consider making additional investments in the provincial electronic health record and e-referral system to standardize workflow processes for all specialized healthcare services. The improved communication would enable the following functionality.

• Electronic referrals confirmed as 'received' by the service provider.

• Management of appointment scheduling including booking confirmation and patient notification.

• Report generation and transmission back to the referring provider.

• Confirmation that the patient has completed a follow-up appointment with the referring provider.

• Notification to the referring provider about referrals that are incomplete, delayed, or denied when submitted to the service provider.

• Notification to the referring provider about known or projected waiting times for tests, consultations, or procedures that are outside specified limits.

• Notification to the referring provider and the patient about important processes (referral, appointment scheduling, patient notification, appointment completion, patient follow-up) that were not completed successfully according to the scheduled completion time.

• A patient portal for viewing:

• When the key steps in the referral, appointment time, and report generation process for specialist consultation, special diagnostic imaging studies, and procedures have been successfully completed and notifications when they have not.

• Appropriate contact information for patients when they detect a problem with the special health service, referral, appointment booking, or follow-up procedures.

• Lab results, DI reports, pathology reports, procedure findings, hospital discharge summaries, other diagnostic information (e.g., EKG, echocardiograms, pulmonary function tests).

When a reliable electronic referral system is developed and functioning, the net benefit to Albertans will not be realized until all healthcare providers are using the system to manage the referral and follow-up processes for patients who require specialized healthcare services.

It's recommended that radiologists should be able to directly refer patients to other specialists, in urgent cases.

Given that, Alberta Health will need to work with Alberta's healthcare providers to ensure that when the system is operational and reliable, it becomes the only accepted approach for managing patients who require these services.

• The College of Physicians & Surgeons of Alberta and other relevant healthcare colleges should amend their Standards of Practice, and Alberta Health Services should amend its policies and procedures, related to coordination and provision of services. In so doing, healthcare professionals and clinics that provide specialist consultation, advanced diagnostic imaging studies, or semi-invasive and invasive procedures would confirm completion of those studies, services, or procedures and be required to track critical process steps (transactions) between a referring provider and a service provider such that both know and have documented in a patient record that the following steps have been completed:

• A request for service has been sent and received.

• A specific appointment date and time for the service has been made.

• The requesting provider and the patient have been notified of the appointment details (and the patient has accepted the appointment).

• The report of findings has been successfully sent to (and received by) the requesting provider. This will only be possible when there is a complete provider registry that is continuously maintained and updated; this is particularly essential when service providers have a critically important result that needs to be communicated urgently to the requesting provider who is therefore responsible for managing the result for the patient.

• The Alberta Society of Radiologists (ASR) in collaboration with Alberta Health Services (AHS) and the College of Physicians & Surgeons of Alberta (CPSA) develop policy and procedures that would support radiologists to expedite the care of a patient whom they find has a time-sensitive health condition by:

• Directly ordering the next logical DI test if one is required.

• Directly referring a patient who has a time-sensitive health condition to a clinical service when it is obvious the patient requires that expertise.

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Combining health, tech and creativity at Hacking Health Toronto

BY ANDY SHAW

The three-day Hacking Health Toronto event held at the city's MaRS Centre late last fall sounded more to the uninitiated like a continuing medical education course for pulmonary specialists than a high-energy collaborative for aspiring medtech innovators – all out to heal the healthcare system's many ills – matched up with seasoned, willing-to-help mentors.

While more than a few angel investors also looked on, the "Hackathon" began early Friday evening with a pep-rally style pitch session staged by the Hackathon's Montreal-based organizers and their 27 black-shirted volunteers. In quick succession, some 42 groups of dedicated researchers, healthcare organizations, new business start-ups, physicians, social workers, and other medtech creators of all stripes leapt to the stage to rapidly pitch their problem-solver in one-minute or less (drowned out by a behind-the-curtains DJ's music if they went longer) and spell out the kind of help they felt they needed to develop their breakthrough further. From a MaRS centre auditorium full house of 406 Hackathon participants, the on-stage innovators called for designers, programmers, healthcare practitioners, engineers, privacy experts, marketers, data analysts, or even patients to step forward and help them out.

After all 42 ideas were pitched, the expert mentors in the audience got to choose which innovators they were going to team up with for the weekend.

And so, for much of the next 48 hours and well into both nights, mentors and supplicants alike armed themselves with laptops, calculators, whiteboards, notepads, etc., and collaborated away at circular tables. At each, the common goal was to come up with a mock-up, model, or prototype that would not only solve a front-line healthcare problem, but also be transformed into a workable "demo" by Sunday noon, which in a two-minute on stage presentation would win the hearts and minds of the six Hackathon judges. They, in turn, would then dole out the coveted prizes offered by the Hackathon's impressive list of sponsors.

In all, 19 Hacking Health Toronto sponsors or partners participated by offering prizes, mentoring the Hackathon pitchers, and of course keeping an eye out for innovations that might help their own causes or organizations.

At least one mentor among the sponsors was there to also help the 42 presenters woo the Hackathon judges. In a MaRS Centre anteroom briefing, Ian Chalmers of Pivot Design Group, counselled: "Make sure you let the judges know in your presentations that you are practical. Explain how the idea is going to get funded. Is it a paid-for app, or is it pay-per-use? Do you hope to get sponsorship from a hospital or agency, do you hope to get seed capital, and that kind of thing."

By late Sunday afternoon at the Hackathon's wind-up, a weary but still eager MaRS Centre audience sat hushed to hear who had won what.

Among sponsor prizes, The Women's College Highest Fruit Award went to three bidders for initial further development at the hospital:

Alo: a seven-member team of independent engineers, a physiotherapist, a recent med school grad, a website designer, and a gadget-guy technician who pitched a cloud-based solution to the problem of transferring complex care patient information to multiple healthcare providers, and which also enables patients to update their own medical histories.

Dignity Talk: a five-member team lead by a respiratory therapist who proposed a web/mobile application called "Choose Your Own Adventure" for planning your own and more agreeable death. Their pitch pointed out: "Most people, when asked, say they'd prefer to die at home, free of pain and surrounded by loved-ones… (but) doctors don't know what their dying patients actually value at the end of their lives … By default, many people die a highly medicalized death in an ICU. Because of cultural barriers, patients are being denied the choice of a comfortable, dignified death."

The My Baby and Me Passport team produced a winning smartphone app.

PHOTO: CONNIE TSANG, www.connietsangphotos.com

S.O.S: a five-member team, including a registered nurse leader, a mobile app developer, a third-year university biology student, a bio-medical engineer, and a medical doctor with a doctorate, all connected with the Baycrest Centre for Learning, Research and Innovation in Long-Term Care – addressed the problem of poor patient-condition data capture during emergency transfers. Their answer: a fully automated system that constantly records the patient's condition, then consequently prioritizes the urgency and the actions called for, and ends up generating a complete report of what was done and why.

Women's College will have these three teams put through a human-design workshop with their design experts, clinicians, and patients all helping out. Afterwards, each team will present their now more refined and workable idea to the hospital's senior management. One will then be picked for a full, three-month trial at Women's College.

The Beworks behavioural change prize went to BLU+, a seven-member team led by an organizer and mentor who is also a patient, assisted by a an art-and-design college grad, a pharmacy student, a .NET developer, a marketer, a health informatics specialist, and digital user interface designer.

Their aim: to produce a "human maintenance manual" containing nothing less than "a detailed interactive timeline of things you need to do to stay out of the hospital, from age zero to 100."

Women's College winner S.O.S. also got the nod as the best solution for clinical applications; PatientFlow won again as best for health administration; and the best for consumer health and patient application went to the My Baby and Me Passport pitch.

Network enables friends and families to connect and contribute to care

BY DIANNE CRAIG

"Let me know if there is anything I can do." Delivering the news of a devastating diagnosis to friends and family usually elicits that heartfelt response, along with the assumption there is little they really can do. Caring for a family member facing a serious illness or a lifelong disability can be daunting and isolating. Vancouver-based Tyze, which has a cloud-based personal healthcare networking platform that enables families to build personal communities of care, is on a mission to change that.

Donna Thomson's 25-year old son Nicholas has severe cerebral palsy. Before she started using a Tyze personal network, Thomson and her family in Ottawa used a variety of professional services, including night nursing to monitor her son's severe sleep apnea, along with after-school helpers, her sister, neighbour, and mother.

She used a whiteboard and tried to connect with everyone when Nicholas was unstable and needed extra care. Some of the messages written on a medical chart on his bed were not getting through, for various reasons. This could be serious when changes in his medications were missed by some friends or other helpers who didn't see the messages and assumed nothing had changed with his needs and care. Also, when someone couldn't come in to help, Thomson sometimes had no way of reaching everyone quickly to find a replacement.

"With Tyze, all the medications are on a file. If there's a medication change, everyone (on the network) gets an email. If there are side effects in the seizure medication, everyone gets an email and verifiers go out for appointments," says Thomson. Also, she says, "if a task needs to be done, it goes on a task list, and people on the network can claim that task."

Intended for use by family, friends, and in some cases, formal care providers, Tyze networks are designed to optimize and enhance the support and care they can provide. Networks of enhanced care and support are closely tied to better health outcomes, improved experience of care and better cost efficiencies for the system – the three Triple Aim dimensions, a framework of ideals from the Institute for Healthcare Improvement (IHI).

Tyze Personal Networks are private social platforms that consist of a shared calendar, messaging system, stories and updates wall, file sharing and storage. Networks are set up to support individuals and families facing disability, chronic disease, end-of-life care and aging-related challenges like Alzheimer's, fracture or replacement surgery or transitions between various care settings. The cloud-based solution is accessible on an affordable monthly subscription, and some healthcare providers also give Tyze to patients and families. Tyze was recently acquired by Saint Elizabeth Health Care, a not-for-profit community care agency which has been offering the networks to families.

Tyze ties together families and caregivers.

Kerry Byrne, director of research at Tyze, describes the networks as a "set of tools and functions developed to mobilize informational, emotional and practical support." While it is easy to see the importance of having a personal network for quickly delivering status updates and arranging for help, it is the emotional support that is just as valuable.

In fact, Tyze evolved in part from founder and CEO Vickie Cammack's 20 year focus on developing strategies to address isolation. Speaking on the company's YouTube channel, she notes how ironic it is in our "hyper-connected world that we are collectively growing more vulnerable to isolation," and observes "there is no independence without interdependence."

According to results from five online surveys, 88 percent of users reported that Tyze made it easier to share information, and 83 percent reported it was easier to coordinate care.

Learn more about Tyze at Tyze.com and http://www.youtube.com/user/TyzeCommunity.

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SickKids helps develop an innovative, regional imaging repository

BY JAY PARKES

Six-year-old Randy LeBlanc has just been rushed into the Emergency Department at Toronto's Hospital for Sick Children complaining of severe chest pain. Randy, who lives in Orillia, Ontario, has a congenital heart defect. As a result of surgical procedures performed at Royal Victoria Hospital in Barrie and a strict medication regimen, Randy has been getting by pretty well – until now.

An experienced emergency physician is already waiting for Randy when his ambulance arrives. Made aware of Randy's condition by his parents, who accompany him, the physician immediately orders a chest X-ray.

Using a Web Viewer, the physician's colleague, a cardio-radiology specialist, is able to quickly and easily access Randy's previous medical images, which are stored in electronic format in a diagnostic imaging repository at Royal Victoria as part of Randy's longitudinal Electronic Health Record (EHR). By comparing these with the new exam just taken, the attending physician and radiologist are able to diagnose Randy's situation and initiate effective treatment.

Advancing the pan-Canadian EHR: The Web Viewer, the diagnostic imaging repository, and the ability for an authorized physician or radiologist at SickKids or any of Ontario's 148 hospitals to quickly, easily and securely store, access and share medical images online for any Ontario patient (e.g. X-rays, ultrasounds, MRIs, CTs), are all part of a larger initiative by Canada Health Infoway and jurisdictions across Canada to implement a single EHR for all Canadians.

Enabling clinicians to have a longitudinal view of diagnostic imaging (DI) history, regardless of where earlier images were acquired, accelerates diagnosis and treatment start and enables the seamless delivery of care to patients who present outside their local healthcare facility. It also reduces cost to the health system and improves the patient experience by reducing the need for duplicate exams and patient transfers.

For its part, Ontario has been implementing four such DI networks and associated repositories (DI-r), where all medical images will be stored and accessible by all hospitals in the province. Three of the image network and repository solutions are already fully deployed, including the Southwestern Ontario Digital Imaging Network (2009), the Hospital Diagnostic Imaging Repository Service (2010), formerly the Toronto East Network, and the Northern & Eastern Ontario DI Network (2011).

GTA West project marks final phase: The fourth and final step toward sharing of medical images amongst Ontario's hospitals is the Greater Toronto Area (GTA) West DI network project, a $50 million initiative being orchestrated by the University Health Network on behalf of the GTA West consortium. The project, which began in 2010 and is already operational, was expected to be fully rolled-out by the end of summer, 2013.

"The GTA West DI network is the first such solution in the country to be designed and implemented using open, industry standards for the communication, storage and transmission of diagnostic images," said Hitesh Seth, sector VP, consulting services at CGI Group, which is providing the design, implementation hosting and ongoing operation, as well as systems integration and overall project management.

According to Seth, the standards-based design facilitates the easy connection and sharing of images within GTA West, as well as externally with other imaging repositories. The resulting DI network and repository will support 22 hospital corporations with 38 sites across five Local Health Integration Networks. It will serve patients living in the western parts of the GTA and in North Simcoe Muskoka, and will support access by approximately 10,000 medical professionals.

Right at home amongst early adopters: The team at SickKids is no stranger to firsts and to being on the leading edge when it comes to adopting new imaging technology. The hospital was among the first to implement a Picture Archiving & Communications System (PACS), for example, first to leverage an enterprise storage solution as a PACS backend, thus eliminating the need for CDs to transport medical images, and among the first to go fully digital from the get-go, implementing PACS and eliminating the use of film-based images across all departments, including the operating room.

Daniela Crivianu-Gaita, VP and CIO at SickKids.

In addition, clinicians at SickKids were on board early when it came to sharing medical images electronically with another facility, in this case, Bloorview Hospital, which serves as a rehabilitation centre for patients leaving SickKids.

"We were asked to be a pilot site for the GTA West DI network project because of the hospital's history of leading the way in imaging innovation, and because of the unique requirements and challenges that a combined tertiary care and academic centre focused on the care of children presents," explained Daniela Crivianu-Gaita, VP & CIO, information management and technology portfolio, at the Hospital for Sick Children.

According to Crivianu-Gaita, it was felt that a DI network solution designed to handle all the challenges of a pediatric environment would pretty much work anywhere. For example, the hospital's patients, ranging from newborns to 18-year-olds, often have chronic conditions and are seen regularly for many years. As a result, a significant amount of historical patient record information, including medical images, must be quickly and easily accessible to clinicians, and remain accessible for an extended period, so that it can be viewed in the context of the growth of the patient.

Pilot test confirms design: The pilot deployment at SickKids consisted mainly of building links between the SickKids data centre and PACS system and the data centre at CGI, where the imaging repository and other GTA West DI network components are hosted.

These links, which use the eHealth Ontario ONE Network connectivity backbone, enable SickKids and Bloorview to transfer medical images to and from the repository. They also allow images and associated radiology reports to be retrieved from other hospital PACS systems through the GTA West repository.

"This infrastructure was thoroughly tested to ensure different usage scenarios were covered, and all the different possible workflows were simulated, to confirm that the connectivity and systems were working as expected," said Crivianu-Gaita.

GoldCare MobilityPlus and BlackBerrys help PSWs deliver care

At some point last fall Felister Mburu understood that her typical workday as a PSW with VHA Home Healthcare, in Toronto, would change dramatically. Mburu works in the East York region, which was part of a pilot project that saw the company deploy GoldCare MobilityPlus on 20 BlackBerry 10 devices.

VHA is one of the first healthcare companies to implement a BB10 platform and, to date, has rolled out approximately 400 BlackBerry devices. Implementation is scheduled to finish in April 2014, by which time a total of 1,000 devices will be rolled out to all PSW staff across Ontario.

GoldCare is a leading provider of healthcare information management software for community, residential and long-term care organizations, as well as 18 Children's Treatment Centres across the province.

GoldCare MobilityPlus lets you securely manage appointment, client and program information, and improve documentation, reporting and communication from a smartphone platform. The solution increases communication and efficiency, decreases missed and unfilled visits, improves compliance at the point of care, reduces operating costs, and promotes care team and client collaboration.

"MobilityPlus improves the quality of care I'm able to give my clients and makes the old way seem old-fashioned," said Mburu. "You don't have to keep calling the office for addresses or messages or ask someone to speak slower because you can't understand them. When you're driving, GPS takes you where you want. There's no confusion – you have the apartment, the entry code, the street, the client, you have everything you want. I love it!"

Ben Kim is the MobilityPlus Project Lead for VHA. Having moved from Preferred Health Care Services, where his responsibilities included implementing that company's MobilityPlus solution, Kim joined VHA in 2012 and brought with him extensive industry experience and familiarity with the GoldCare mHealth solution. He reported that PSW response to implementing MobilityPlus at VHA has been mostly positive.

"Personally, I believe MobilityPlus benefits the field staff by empowering them. It provides a lot more information to the field staff than previously," said Kim. "Just like patient empowerment through ensuring they're informed of their condition and treatment choices and options, PSW empowerment is practiced through providing them with their schedule information and client information. It gives them better control over their schedules, and better decision making on delivering care because they know more about their clients than before."

> **Using the smartphone, 'You don't have to keep calling the office for addresses, or ask someone to speak slower.'**

VHA responded to staff apprehensive of the implementation or those experiencing difficulty using the device by nominating MobilityPlus champions, early adopters who engaged in training sessions to support their co-workers in the field. As one of these champions, PSW Paul Miole, who is part of the Toronto Central team, assists with training his colleagues to take on the new system.

"Information can be immediately sent to coordinators and supervisors for solutions to client issues and events," Miole explained. "Another great benefit is the ability to see the care plan visually on the device."

VHA's pilot evaluation reveals that MobilityPlus has impacted a number of key performance indicators. Missed visits, client complaints and administration are drastically reduced. Staff satisfaction has improved because staff are more informed about clients and schedules, receive a faster response from supervisors and the office, and are better connected with co-workers.

Website gives patients and caregivers an easy-to-use information source

Produced by Ontario's Community Care Access Centres (CCAC), which coordinate care in communities, thehealthline.ca is a website that in one place provides access to current information about a wide range of health services across the province.

The site informs people about the services available, and where and how they can access them, whether for help at home or in the community, for caregiver support or financial support services, for transportation, or even for help finding shelter.

Full provincial implementation was completed on August 1, 2013, making thehealthline.ca available across all 14 LHINs. The result is a comprehensive information and referral process that is accurate, complete and standardized.

Thehealthline.ca simplifies access to information for Ontarians, whether patient or provider. It offers several intuitive search options that make it easy for people, even those relatively unfamiliar with the Internet, to find the information they need.

"One of the things I really like to do when I have a patient in the office is to turn to the computer and bring up a web page, a resource they can access at home," said Dr. Jonathan Kerr, family physician, Belleville, Ontario. "thehealthline.ca is quick and easy to use, and they can go home with the website address and access the resources themselves."

The site enables family physicians and caregivers to effectively connect their patients to local services.

Thehealthline.ca contains approximately 40,000 service records, and the site receives more than one million visits annually in the South West region alone. Users can search by location and postal code, generating results based on their specific location and services nearest to them in increments of five km, 20 km and 40 km. Thehealthline.ca also includes a health library and news, events and job listings for each region.

By making reliable health information accessible, the site supports consumer empowerment, self-management and independent community living. Location searching, mapping, detailed listings, videos and other special features help people access and understand the services they need, as close to home as possible. The site is also a resource for family physicians and other health professionals, helping them connect their patients to local services.

Launched in 2002 through an innovative partnership among health institutions in London, thehealthline.ca quickly expanded across southwestern Ontario. In 2011, CCACs selected thehealthline.ca as the provincial online solution from a number of alternatives for its collaborative business model and innovative information platform.

Recognizing health information as a public good, the CCACs, the Local Health Integration Networks (LHIN) and thehealthline.ca Information Network are committed to working in partnership to ensure that data is collected only once, shared freely and that thehealthline.ca integrates local information from reputable sources.

Key data partners include FindHelp Information Services, Community Information Centre of Ottawa, Information Niagara, Inform Hamilton, Community Connection, 211 North West (Lakehead Social Planning Council), Halton Information Partners, Community Information Partners Peel, Community Information Centre Waterloo Region (Social Planning Council Kitchener-Waterloo), Community Information Guelph, and Waterloo Social Planning.

The Ontario Association of Community Care Access Centres (OACCAC) and thehealthline.ca Information Network work under an umbrella agreement in partnership with CCACs to coordinate and support an integrated network of 14 websites corresponding with LHIN borders and the provincial gateway site.

VIEWPOINT

Peer review is on the radar screen as a key issue for Canadian radiologists

Peer review improves quality and provides continuous education for diagnostic imaging specialists.

Canadian Healthcare Technology's Andy Shaw recently interviewed Dr. Jacques Lévesque, President, Canadian Association of Radiologists (CAR). Dr. Lévesque is a clinical professor of radiology at Laval University, and a practising radiologist at his own clinic in Quebec City.

CHT: Dr. Lévesque, is it fair to say that what's top-of-mind for you these days is both how Canadian healthcare systems can provide a better quality of patient care and what radiologists can do to contribute to it?

Dr. Lévesque: That's true, and so you probably also know that CAR has for many years involved itself with quality assurance, especially in our association through different types of guidelines for radiologists, and also for physicians who order medical imaging in Canada.

And what we are stressing now is less about the radiological exams themselves – we do those very well – but more about the appropriateness of that exam. And we're pleased to see that this emphasis on appropriateness is emerging as a trend. We can see it, for instance, in the interest that is being expressed at the local hospital level, as well as more broadly and nationally.

CHT: Do you see any other encouraging trends these days in what radiologists can do to improve patient care?

Dr. Lévesque: Yes, physician peer review. It's starting to happen in more and more health jurisdictions in Canada right now [including Ontario which recently announced a province-wide peer review program]. Although many centres have practised peer review in their facilities for some time, there is a movement towards broader programs in jurisdictions. There is a peer review pilot project going on in BC, for example, and in other jurisdictions are at various exploration levels.

CHT: In practical day-to-day terms, can you describe how peer review works?

Dr. Lévesque: There are different types of peer review – one method looks back on images and reports previously done, and another looks at images and reports at the time they are carried out.

The first practical challenge is how many examinations get reviewed. As a practitioner doing mammograms, chest X-rays, and other general radiology work, I might make 50 examinations a day. Impossible to have them all peer-reviewed, of course, but because our examinations are now digital and we are connected by PACS networks, we have the software that can randomly select a set percentage of my exams every day and send them off together with my dictated report to a colleague for his or her review. So, say, just as an example, it was 4 percent; that would mean two of my 50 examinations would be sent off for a colleague to review.

CHT: So what happens then?

Dr. Lévesque: Well, the radiologists receiving those images would normally send back one of three possible responses: the first response would be to agree with my assessment; the second could be a note I get back saying that something in my interpretation of the image may be looked at differently; and finally they could also say flatly that I have made a mistake, which is possible, of course, because nobody is perfect.

So not only does peer review put greater safety into the healthcare system, it also is a whole other way of providing continuous medical education. Because it is such an elegant, double-benefit solution, I think peer review is going to have a huge impact in the next 10 years.

CHT: What about the radiologists themselves? Could they be contributing to better care by making more efforts to improve communications with patients?

Dr. Lévesque: That's a very interesting question to me – because I believe a radiologist should be an integral part of patient care. And when you think about it, there was a time when they were. Twenty years ago, before the pendulum swung to digital images, we were all reading film. Physicians themselves were going into the X-ray department and looking at them, and whenever they had a question they would come to see us. They really had no other choice but to do that, and so our day-to-day contact back then with physicians was much better. But now with the digital revolution upon us, the doctors can see their patients' images and read our reports in the wards or their offices and as a result there is far less contact. That to me means radiologists should take the lead and go on rounds and become an actual member of the care team again, to ensure their expertise is available readily to other physicians and patients.

> **"Because it is such an elegant, double benefit solution, I think peer review is going to have a huge impact in the next 10 years," says Dr. Levesque.**

Dr. Jacques Lévesque, President, Canadian Association of Radiologists

In my own case, I take advantage of 30 years experience and write in my reports, often making suggestions about doing this and that, which we should consider concerning a particular patient. That's the kind of thing that can be discussed on rounds and it's a very good way to make yourself as a radiologist integral to the team. It's time, in other words, that the pendulum swings back the other way.

CHT: Just to be fair to that digital world, hasn't it helped in lowering radiation dosages that patients are exposed to?

Dr. Lévesque: We agree fully that the digital world has brought many benefits to our profession and to the care we provide patients. Lowering radiation dose is one of those benefits. Digitized detectors are far more sensitive and so now we need less dose, often as much as 50 percent less with the CT and X-ray technology we have now.

But I think the real advances will come in the next 10 years when every patient will have a digital record of the doses they've received throughout their lifetime.

There was a pilot project going on at Dalhousie University that points to the future. If you have had a tumour when you are very young and you are examined frequently with CT scans, that won't be forgotten when you are older. In the future, patients having a complete cumulative dose record will be very helpful to more effective and safer care for them.

CHT: Just one more question about the benefits about going digital: Do you think the portals that are emerging on the web where patients can see their own examination images are contributing to a happier healthcare customer?

Dr. Lévesque: Well, happier perhaps, but certainly portals that give the patient access to their images and care information are also a great way to make the patient more responsible. It is easier, with that kind of information available to you, to start building a personal health record. We are just in the infancy, but I can see that there's also so much more we can do with these portals. They make it easier for hospitals, for instance, to do more out-patient follow up. So they can be a way of shifting more expensive healthcare into the less-costly out-patient realm. But there are issues that have to be resolved and privacy is a big one. Right now in many jurisdictions, for example, if I work in a private clinic I cannot access patient records in the hospital.

CHT: Finally, Dr. Lévesque, is there any one point you would like our readers to retain from this interview above all the others ?

Dr. Lévesque: I think the idea of physician peer review can't be over emphasized – because it's not just a safeguard against medical discrepancies. For radiologists, regular peer reviews are really more about constant professional development. If you go to a conference every now and then you'll probably retain 20% of what you learned at best. But peer review allows you to learn on a daily basis and because the learning relates directly to the work you are actually doing, you will retain infinitely more.

Courage in the face of danger: Heroism is required of eHealth pros

BY DOMINIC COVVEY

Heroism. We often hear that word associated with a soldier, a police officer, or an ordinary citizen giving his or her life to save someone or to accomplish something of importance. Heroism means that there was courageous behavior that achieved outstanding effects or preserved noble qualities. Actually, it bothers me that heroism seems associated only with the risk taken when death or major injury is likely.

Interestingly, there are many synonyms for heroism. There are the obvious ones like bravery, courage and valor. But, there is also a different dimension: backbone, spine, grit, spirit, mettle, chivalry or the older term 'moxie'. We honour heroism because we see it as evidence of the best in humans.

Dominic Covvey

Is there heroism related to eHealth? My answer an absolute YES!

Let's think about that for a minute. What if you are aware that there is an activity going on that essentially wastes taxpayers' money. I experienced an example of that long ago related to an agreement between a provincial government and a company. The deal was known to be bad, the uppity-ups recognized this, but there were excuses for proceeding.

I knew of this deal and lacked the heroism to blow the whistle on it. Frankly, I was told that if I did, it would end my ability to work with the government and exposing it would do no good except embarrass people. In retrospect, I was simply a coward. There was an opportunity for heroism there, in that I would've risked my career at least for a number of years by outing the dumb thing and maybe saving a few million dollars of people's hard earned money.

So, one kind of heroism is whistleblowing. If you unmask something that is injuring people and is wrong, you take the risk of losing your job and maybe even your ability to ever work again in your field of choice. In eHealth, we have seen many examples of where the whistle needed to be blown. In some cases the malfeasance eventually became known through other means, but those involved early on did nothing about it. No doubt, if they had, they would have suffered publicly and privately. However, we needed them to do it, and that would have exhibited heroism.

What about a project that's going awry and no one does anything about it? Let's say you take your observations of significant dislocations up the chain of command and no one does anything about it? Need an example? Read my last article, in the February edition of Canadian Healthcare Technology, on the Obamacare website debacle! Why didn't anyone speak up? That would've exhibited heroism and could conceivably have saved possibly hundreds of millions of dollars and grave inconvenience for many people who want to get health insurance.

People tell me stories about how things are going at their institutions. They feel things are just not making sense or are proceeding inappropriately. Despite this, the project still goes go on and no one does anything about it – notwithstanding the likelihood the project will fail or gravely disappoint. In this case, pointing out the problems or trying to intervene might get you kicked off the project team or get you labeled as a malcontent. I would suggest that speaking up and, if necessary, going up the chain of command is an example of heroism and we desperately need that heroism in all our organizations.

Maybe we need an eHealth Silver Star or even a Medal of Honour for eHealth heroism. And we certainly need heroes!

Dominic Covvey is President, National Institutes of Health Informatics, and an Adjunct Professor at the University of Waterloo.

Patient participation improves surgical wait times in Saskatchewan

Surgical waits now average only three months, down from 18 months to two years in 2010.

BY DIANNE DANIEL

If you're going to take steps to reduce surgical wait times, isn't it prudent to consult the people who are actually doing the waiting? The province of Saskatchewan believes so. In 2010 it launched the Saskatchewan Surgical Initiative (SSI), a four-year plan to transform the surgical experience and provide all patients an opportunity to have surgery within three months. Involving patients in the process is one of the initiative's critical success factors.

Up front, patients were responsible for identifying wait times as a key concern, based on information coming out of Saskatchewan's 2009 Patient First Review. As the transformation unfolds, they retain an integral role by serving as patient advisors on committees. They are also part of the solution, using an on-line surgical directory to exercise a greater degree of control over their personal surgical experiences.

"It's been a fundamental shift in the way we think of things," says SSI executive director Terry Blackmore. "Collaboration, a common vision and having patients involved has really made us think a lot more about system improvement from the perspective of a patient."

In addition to patients, the SSI executive sponsorship group and guiding coalition consists of representatives from the Saskatchewan Ministry of Health, the health regions and front-line providers. From the outset their target of reducing wait times to three months was aggressive.

"Is three months the right target? I don't know. It was a bit arbitrary, but our access and the wait times are much improved from four years ago," says Blackmore. "As we get closer and closer to the end, weeding out those inefficiencies becomes more and more difficult because we're already almost there."

In 2010, people were waiting 18 months to two years for surgery and patients often asked to be added to a wait list "just in case" they needed surgery down the road.

"It was not uncommon for people to think, my knee's kind of bugging me, I should really go see a specialist and put my name on a waiting list because it's going to take two years to get surgery and by then it will probably be really bad," explains Blackmore.

Now, the majority of patients are waiting three months or less and the mindset has shifted from one of doubt to one of trust. Patients are added at the appropriate time as opposed to "just in case," she says.

Saskatchewan's success is based on a disciplined, lean methodology approach. Essentially the SSI is putting the surgical process under the microscope, identifying waste, looking for ways to eliminate it and introducing changes that add value. From a technology perspective, the province's surgical registry – introduced in 2004 as a central data repository to collect and measure surgical data and wait times – has proven to be a key facilitator, enabling the initiative to further establish an on-line specialist directory and launch a pooled referral system.

Anybody, members of the public included, can access the specialist directory and the health ministry has held awareness campaigns to publicize its availability. The directory indicates which surgeons perform various specialties, and provides estimates of expected wait times. The goal is to arm the general public with information to make informed decisions.

"People are comfortable with using technology and will poke around and search," says Blackmore. "Maybe I live in Regina, but the surgeon in Moose Jaw has a shorter wait time and it's important to me to have the procedure done quickly. I can make that choice."

Pooled referrals is another change gaining acceptance. When a patient opts to go with the next available surgeon, a referral is sent to a central computer system. From there the case is forwarded to the appropriate surgeon, who either accepts it or rejects it, stating why. If an appointment is scheduled, the specialist ensures all preliminary testing is completed in advance.

ILLUSTRATION: LINDA WEISS

It's about maximizing the value of that first visit, says Dr. Peter Barrett, SSI clinical lead and one of the first to use pooled referrals in his urology office. Traditionally, it would take as many as three visits to a specialist before all tests were completed and a decision about surgery could be reached. Now, surgeons are armed with the information they need from day one, reducing the wait time for surgery and improving access by freeing up two or more appointments to see new patients.

"At no point was the intent to take away choice," he adds. "Even with pooling, patients are informed that they can see any doctor they want as long as they know up front that they may have to wait longer."

Other changes that are contributing to reduced wait times in Saskatchewan include more emphasis on clinical pathways, implementation of standard surgical checklists, better patient flow and discharge planning, and more training of operating-room nurses to increase surgical capacity. In addition, a variations and appropriateness working group is examining ways to further reduce times by standardizing processes and flow, such as case carts for certain procedures and best practice protocols.

Yet, the real game-changer, maintains Dr. Barrett, was the decision to put patient representatives on every committee. A mantra that sums it up best is one he borrows from Alaska's South Central Foundation: "Nothing about me without me."

"Lots of places have a patient advisory committee, but to me, that always ghetto-ized them," he says. "If you actually put them on every committee, it's amazing how it changes the conversations."

One "Aha!" moment came when Dr. Barrett ran a letter by the SSI's executive sponsor group for approval. He was informing surgeons about why internationally recognized surgical checklists were going to be mandatory. "I can still remember this one patient looking at me and saying, 'You mean you don't do this now?'" he recalls.

Report cards have a role: The changes introduced in Saskatchewan as part of the SSI are in line with the Canadian Wait Time Alliance's (WTA's) objective to put more information about wait time performance in the public domain. One reason for issuing report cards is to show different provinces how they compare with each other, as well as to give patients a better understanding of how individual experiences fit into the big picture.

"My strong sense is that patients don't mind waiting a reasonable length of time as long as they know they're not lost in the system, that somebody is keeping an eye on things, that it's safe to wait and there aren't going to be any screw ups," says Dr. Chris Simpson, WTA chair and president-elect of the Canadian Medical Association.

Dr. Simpson applauds the strong cultural component to the work under way in Saskatchewan, noting the province has a long history of patient-centred reform and collaboration.

"Culture is what drives change," he says. "The notion that we're accountable for patient outcomes and accountable for patient satisfaction as customers is a cultural thing and maybe that's where Saskatchewan is a little bit ahead of some of the other provinces."

In its 2013 report card on wait times in Canada, the WTA iterated the best way to make sustained reductions in wait times is to introduce changes around how they are "mitigated, measured, monitored and managed." Saskatchewan received an "A" for ongoing efforts to provide timely data that is comprehensive, patient-friendly and helpful. It also earned recognition for having the strongest

cataract wait time reporting and specialist consultations.

Nadeem Esmail, director of Health Policy Studies at the Fraser Institute questions whether some of the strides made by the province will be sustainable over the long term. He contends that in the absence of health policy reforms like activity-based funding and other market-oriented strategies that have worked well in other countries, Canadians will continue to wait longer than average.

"The idea that we have to wait permeates Canadian thinking about healthcare and it's nonsense," says Esmail. "The core problem remains – we spend more, we wait longer. We have to figure out how to spend less and wait less at the same time, and the solution is clearly health policy reform."

Activity-based funding creates incentive to increase the volume of surgeries delivered, shorten wait times and attract more patients, he argues. In Stockholm, for example, total volume of activity increased by 11 percent while total costs fell by one percent as a result of activity-based funding.

"In Canada, all of a sudden the fearmongers come out and says that's the destruction of medicare and universality," says Esmail. "It's an unfounded fear. The reality is it works better for everyone."

WTA's Dr. Simpson welcomes the idea of activity-based funding, noting that tentative strides are under way in Ontario. But he cautions against whole-scale changes across the board. "I'm an incremental revolutionist," he says. "You can't upset the apple cart overnight and expect everything to fall into place … There's no shame in making mistakes. As long as you're doing it in small steps and incrementally, then you can learn from it and change direction."

The continuous improvement culture in Saskatchewan takes a similar approach. The idea is to start small, ensure a particular improvement is solid and then expand it to the next hospital. Sometimes the change can be as simple as introducing a daily phone call to ensure patient transfers between hospitals go smoothly.

One thing everyone agrees on is you can't fix the problem of surgical wait times through increased funding. But you can spend money more wisely, contends Dr. Barrett. The SSI budget for 2013-2014 is $70.5 million. More than $60 million is directed towards hospital costs related to higher surgery volumes; $7.8 million is for home care and post-operative rehab support; roughly $1.2 million is for improved assessment clinics and patient pathways; and, $4 million is for quality and safety improvements.

Since 2007, the number of people waiting longer than six months for surgery in Saskatchewan has fallen 66 percent, from 10,635 to 3,577. Pooled referrals now exist for orthopedic surgeons, neurosurgeons, general surgeons, urologists, cardiac and vascular surgeons, obstetricians and gynecologists. And clinical pathways are in place for hip and knee, spine, bariatric, prostate and pelvic floor surgeries, with acute stroke care and lower extremity wound care under development.

Dr. Barrett is confident those improvements will be sustainable over the long term due to the culture of continuous improvement now in place. By collecting, analyzing and reporting real-time data about wait times and surgeries, the province has its pulse on the situation and is unlikely to slip back to where it once was.

As a representative of the WTA, Dr. Simpson agrees. "Any sort of slippage we've seen in our report cards, I firmly believe has been because people have said, 'There. Mission accomplished.' As soon as you take your eye off the ball, it slips back to its former state."

Another advantage in Saskatchewan, and a possible lesson to learn for other provinces, he adds, is the genuine sense of collective responsibility that exists between the various groups, including patients. Rather than a culture of blame, there's a sense of working together to solve a problem.

"I think they become better than the sum of their parts when they take that collective view," says Dr. Simpson. "What they're doing isn't revolutionary in and of itself. It's just basically measuring things well, reporting things well and then being committed to a culture of continuous improvement."

CIMTEC assists with the commercialization of new technologies

The Centre for Imaging Technology Commercialization (CIMTEC) was founded in 2011 to accelerate the commercialization of medical imaging and digital pathology technologies. It works with researchers, start-ups and small and medium-sized companies across Canada, providing a one-stop-shop of technology and business development services to help customers along the entire commercialization continuum.

"We find that many of our customers come to us with limited knowledge of the commercialization process and how to begin," says Michael Waterston, business development director at CIMTEC, "or they simply don't have the in-house skills, knowledge or capacity to follow through with every step and nuance required to successfully bring a product to market." Adds Waterston, "CIMTEC can become a valuable part of each customer's team by filling their knowledge and capacity gaps."

To work with CIMTEC, a medical imaging innovation must be past proof-of-concept with evidence that it works. From a regulatory standpoint, there is a significant difference between a proof-of-concept and what's required to sell a product for clinical use. CIMTEC's team of engineers and specialists draws upon its many years of industry experience to help customers develop their hardware and software to commercial quality standards.

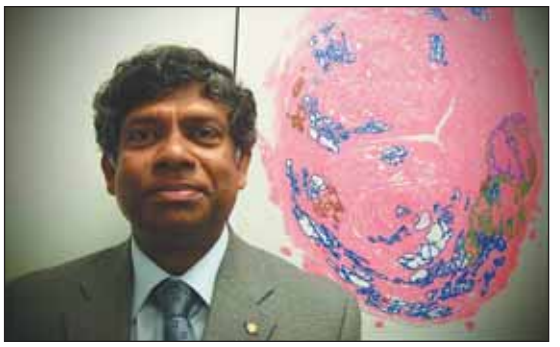
The key is to start the conversation with CIMTEC so they can understand the needs of your project and help tailor a commercialization plan for a specific product or company.

KalGene Pharmaceuticals, Inc.: KalGene Pharmaceuticals, Inc.'s oncology programs are aimed at improving clinical outcomes through the use of personalized medicine, with a particular focus on breast and other epithelial cancers. KalGene has established several international research and development collaborations and recently signed a multi-year collaborative agreement with CIMTEC for commercialization of its companion diagnostics and therapeutics program.

Dr. T. Nathan Yoganathan, president and CSO of KalGene Pharmaceuticals, Inc. says, "We are pleased to work with CIMTEC to further our mission of developing products that save lives and improve healthcare outcomes. Our collaboration with CIMTEC will enable us to better advance our goal of developing cancer diagnostic and treatments through the power of personalized medicines".

Says Bart Sullivan, CEO of CIMTEC: "Our work with KalGene is a prime example of the value CIMTEC brings to the medical imaging community. CIMTEC's expertise in digital pathology and KalGene's strong background in biotechnology has created a potent partnership to support KalGene's development of an advanced cancer diagnostic system."

Perfint Healthcare: Because incidence of liver cancer is particularly high in Asia and sub-Saharan Africa, Perfint Healthcare in India was looking for an ultrasound-based solution to liver cancer treatment. Perfint came to CIMTEC by way of a prototype 3D ultrasound-guided focal liver tumour ablation system being developed by CIMTEC in partnership with Western University's Robarts Research Institute with funds from the Ontario Institute for Cancer Research (OICR). The prototype system showed very positive results during testing in the clinic of interventional radiologist, Dr. Nirmal Kakani at London Health Sciences Centre.



Dr. T. Nathan Yoganathan, President of KalGene Pharmaceuticals.

The current phase of the project is partly funded through the International Science and Technology Partnerships Canada (ISTP) program and the Department of Biotechnology India. CIMTEC, Western University and Claron Technology Inc. are developing hardware and novel software modules and integrating them into an image-guided oncology therapy system for wide distribution abroad by Perfint Healthcare.

"This collaborative project has the potential to profoundly impact liver cancer treatment in developing countries such as India, North Asia and part of Europe where access to CT and MR scanners is extremely limited," says Dr. Aaron Fenster, CIMTEC Centre director and founding director of the Imaging Research Laboratories at Robarts Research Institute at Western's Schulich School of Medicine & Dentistry. "The big advantage is that highly accurate ablations can be performed in a procedure suite, as opposed to a CT scanner, making them more accessible, faster and much cheaper."

Automation improves surgical wait times at Capital District Health

BY LYNN MOLLOY

HALIFAX – Capital District Health Authority (CDHA), an academic health district, is Nova Scotia's largest provider of health services provincially. It has seven surgical venues completing approximately 34,000 surgeries per year. Its 12,000 employees, physicians, learners and volunteers care for a catchment area of over 400,000 residents and provide tertiary/quaternary care to the rest of Nova Scotia, the Maritimes and the Atlantic provinces.

In December 2012, CDHA, successfully implemented Novari Surgical Access to approximately 130 surgeon's offices. Novari is an off-the-shelf software solution for e-booking, with the ability to measure, monitor and manage patients waiting for surgery. The software also includes a module for integrating with the pre-operative process – pre-admission clinic. Physician offices now have up-to-date wait list information at their fingertips and administrative assistants can easily wait list and book patients for surgery.

In CDHA, there was much variation in processes from office to office with respect to surgical bookings, technology and knowledge of internal hospital information systems. About 60 percent of the surgical offices are located inside the hospital (on-site) and the remainder are located in the community (off-site). The surgical booking process was totally paper-based prior to implementation and the surgical booking offices were inundated with reams and reams of paper.

The process to wait list and book a patient for surgery was twofold. The administrative assistants submitted paperwork to the booking office so a patient could be placed on an elective wait list. The patient was entered into Pathways Healthcare Scheduling (PHS) and populated a provincial wait list registry PAR-NS (Provincial Access Registry Nova Scotia).

When a date was identified for surgery, the administrative assistants would then update the paperwork and resend to the booking officer to get a patient booked for surgery. The movement of paper between the surgeons' office and the booking office was heavy, with forms being lost, misplaced, misfiled and sometimes sent to the wrong clinical area.

Offices located off-site relied on couriers and fax machines for submission of necessary information, while on-site offices would fax, hand deliver or place in interdepartmental mail. This was simply not manageable and needed to improve for maximum use of resources and to provide timely access to care.

Prior to implementation, training sessions were held for all users that would be accessing Novari Surgical Access. For many offices the learning curve was steep, with the project team providing support as needed for a few weeks following implementation. With many off-site offices, it was necessary to establish Virtual Private Networks (VPNs) for the offices to safely access the software in a secure protected environment.

The communication and coordination of the Information Technology Department and our provincial information technology team (Health Information Technology Services Nova Scotia HITS-NS) was invaluable in providing this service.

Today, the process for data collection is now timely (real-time data), efficient, accurate and reflective of the patients experience, while providing the necessary information required to make effective resource allocation decisions.

With the implementation of Novari Surgical Access, all surgeons' offices in CDHA have transitioned from a paper-based booking process to an electronic paperless booking process, including scanning the necessary documentation to book a surgical case and electronically sending to the booking office with the e-booking request.

> **Physician offices now have up-to-date wait list data, and appointments can be easily booked by administrators.**

The surgeon's office receives notification when a case has been successfully sent to the booking office, scheduled, cancelled completed and/or removed from the elective wait list. There is an internal messaging feature that allows the surgeons office and the booking office to keep abreast and updated of any changes to the operating room schedule.

This feature has greatly reduced the number of phone calls between the booking and surgeons offices. The system is also interfaced with the hospital registration system, greatly reducing the amount of duplicate data entry occurring. The transferring of patients from one office to another is seamless and can be completed with a few clicks of the mouse. Clinical leads in the operating room now have easy access to view bookings as they arrive from the surgeons' office allowing planning and coordinating of equipment to occur in a timely fashion and decrease cancellations associated with conflicts or unavailability of specialized equipment.

With the implementation of Novari Surgical Access, the accountability for placing patients on the elective wait list and queuing for surgery is solely the responsibility of the administrative assistants. The redundancy in the process between the surgeons and booking office has been removed and the data entry errors occurring with duplicate data entry is no longer an issue. Patients are being placed on the wait list in a more transparent prospective approach and the movement of paper between the surgeon and booking office has been eliminated.

Lynn Molloy is Manager, ORIS & Surgical Access (PAR-NS/Novari), Perioperative Services, at Capital District Health Authority in Halifax.

Expansion at Barrie's RVH features advanced lab automation technology

BY JANICE M. SKOT

Anyone driving Ontario's busy Highway 400 through Barrie over the past four years couldn't help but notice the construction of the newly expanded Royal Victoria Regional Health Centre (RVH). The hospital, which serves the city of Barrie, Simcoe County and the District of Muskoka, doubled in size to one million square feet, adding 101 new inpatient beds, additional operating suites, a regional cancer centre and specialty programs not found elsewhere in the region.

One particularly noteworthy highlight of the expansion project is the $70 million we invested in leading-edge clinical technology and equipment. Among these investments, which also included the latest imaging equipment and 'Smart OR' technology, is a fully automated medical laboratory system.

The hospital received a big boost recently when, as part of our expansion project, RVH introduced one of the first Total Laboratory Automation (TLA) systems in Canada. The system, consisting of approximately 10 analytical lab instruments directly connected to a 65-foot-long, L-shaped, dual-track conveyor, automatically routes lab specimens to the appropriate analyzers, where the requested tests are performed, and allows technologists to monitor and verify test results more efficiently – all without samples being touched after loading.

The automated system became operational at RVH in 2011 as part of a six-stage laboratory renovation and laboratory staff, physicians and patients all enjoy significant benefits that include:

- Quality and Accuracy: Bar code information read from each vial by the automated system ensures necessary tests are conducted and test results are properly matched to the right patient
- Staff Safety: The system automatically removes rubber stoppers on specimen vials, eliminating the risk of repetitive-motion injuries to staff, who previously uncapped hundreds of vials daily
- Process Consistency: With automation, the delivery of samples to the analyzers is much more consistent and considerably less time-consuming than the previous manual approach
- Increased Capacity: Automation enables us to easily handle the increasing volume of assessments arising from the health centre's expansion, without having to hire additional staff
- Continuous Flow: With specimens continuously moving through the system, testing workload is smoother and overall turnaround time for producing results is faster and more consistent
- Cost Avoidance: Increasing testing capacity without adding staff avoids recruiting during a market shortage of experienced Medical Laboratory Technologists
- Cost Reduction: Increased capacity is allowing referred-out testing to be brought back in-house, thereby reducing cost and turnaround time, while increasing process efficiency

According to Dr. Russell Price, RVH's chief of pathology and clinical director of laboratory medicine, "Of the many notable benefits of the automated system, the most significant is that its continuous flow operation provides the most efficient way of delivering the results physicians need for clinical decision-making. From a LEAN process perspective, it eliminates much non-value-added activity, allowing staff to focus on reviewing the quality of diagnostic information."

Echoing Dr. Price's sentiments, Barbara Lemay, RVH's administrative director of laboratory services, adds that, "Most importantly, by streamlining and improving workflow processes, core lab automation enables us to provide lab results in a timely, and extremely safe and precise manner for the treatment of our patients."

Janice Skot has been the President and CEO of Royal Victoria Regional Health Centre since 2004.

Zero-footprint technology is changing the nature of image archiving

BY THOMAS HOUGH CMC

Few firms at RSNA13, held last December in Chicago, were showing a diagnostic imaging VNA. Most were showing Enterprise-wide VNAs. Typically, enterprise-wide VNAs are appearing to be a preferred solution due to the ability to deal with DICOM and Non-DICOM files, while being a single source for all content related to patient health events.

In the case of an enterprise-wide VNA, part of its purpose is in taking the "A" out of the Diagnostic Imaging PACS. The enterprise-wide VNA is oriented toward collecting all forms of images, videos and documents within the healthcare enterprise and providing storage for this content. In addition, well-developed enterprise-wide VNAs support electronic medical record (EMR) applications.

DICOM viewing applications are in the process of separating from the PACS to become an independent layer integrated between the VNA and the EMR application in the healthcare infrastructure.

Firms such as, Carestream, Merge, Philips, General Electric, McKesson, Calgary Scientific, and Claron Technologies, along with a number of other firms, all provide a viewing layer to facilitate clinicians across the enterprise quick and efficient access, as needed, for patient health events. These viewing applications are classified as zero footprint viewing applications and provide access to images and other medical content via an agnostic web browser that supports HTML 5, so viewers can operate within the shell of the web browser.

Historically, radiologists and clinicians would meet in the Diagnostic Imaging department to view advanced visualizations of specialized anatomical exams, including 3-D, colonoscopy, CT angiography, CT/MR perfusion or cardiac exams, to mention only a few.

Thomas Hough

What makes the zero footprint viewer "leading-edge' is how users are able to access patient health record content. State of the art viewers employ a current generation browser that supports HTML 5. This can be found on any workstation in a hospital, a computer at a clinician's home, or a wide variety of mobile applications such as iPhone, iPad, or Android phones or tablets. The use of HTML 5 for all image display and manipulation being done on the server side facilitates two advantages. First, the Image and PHI only reside on the display screen RAM. Thus, when you close the browser, there is no remaining PHI data to be found. Second, a single server does all the image renderings; from simple window level and magnification to advanced visualization, thus access to this technology becomes cost-effective and provides access to all clinicians across the healthcare enterprise.

Now a query through a well-developed EMR portal permits clinicians to see a patient's longitudinal health record across any Enterprise-wide healthcare facility and/or geographic region. With the VNA and viewing layer supporting and integrated into the EMR application, the need for DI VNAs become diminished.

With the "A" taken out of PACS, as suggested above, and the viewing application becoming a layer on top of any VNA, PACS as we have defined it in the past is now being deconstructed to become only a part of the larger healthcare enterprise information infrastructure. Healthcare providers who are seeking PACS replacements that are not thinking in terms of this strategy will find themselves in a very expensive place with a difficult path forward. Moreover, they won't be keeping pace with peers who travel this new path forward.

Thomas Hough is President and founder of True North Consulting & Associates Inc. The company is based in Mississauga, Ont.

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International CT Symposium 2014

May 23-24, 2014
Fairmont Hotel Vancouver

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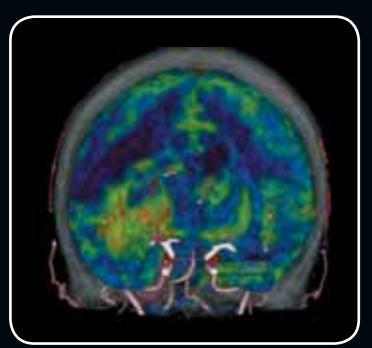

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- The Focus of the Physicist
- Role of CT Scanning in MSK
- Initial Experience Using 160 Slice CT
- Radiation Dose Considerations
- Ultra Low Dose Chest CT
- Pediatric Imaging
- Organ Perfusion & Dual Energy in the Abdomen
- Neurological Imaging Using Volumetric CT

Guest Speakers

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- Dr. Russel Bull – Royal Bournemouth Hospital, UK
- Dr. Marcus Chen – NIH, USA
- Ms. Kate Clough - Bradford NHS, UK
- Dr. Cupido Daniels – Dalhousie University
- Dr. Bruce B. Forster - University of British Columbia
- Dr. Mark Kon - Bradford NHS, UK
- Dr. John Mayo – Vancouver General Hospital
- Dr. Narinder Paul – UHN, Toronto
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