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PHOTO: COURTESY ONTARIO SHORES

Happiness is reaching HIMSS Level 7

Ontario Shores Centre for Mental Health Sciences, in Whitby, Ont., last fall became the first Canadian healthcare facility to achieve Level 7 on the HIMSS Analytics EMRAM scale. It's also the first mental health hospital worldwide to accomplish this feat. The advanced, electronic systems enable Ontario Shores to function without paper; they also improve patient safety and medical outcomes. See page 7.

Alberta rolls out first wave of provincial eReferral system

BY ROSIE LOMBARDI

Patients often fall through the cracks of our current paper-based referral system, which requires a great deal of phoning, faxing, and follow-up between family doctors and specialists. Different regions are trying to automate referrals, but Alberta is the first jurisdiction in Canada to roll out a province-wide e-referral portal.

The leading-edge solution is built on top of its existing Netcare provincial EHR system, which already has 46,000 healthcare providers in its network.

The project not only automates referrals, but it also introduces new features to improve access, such as real-time tracking and transmission of medical data. It also provides transparency about the process to patients.

Launched in July 2014, the first phase of the roll-out automates referrals for three critical areas: hip and knee arthroplasty, breast cancer, and lung cancer. "We plan to evaluate the project after a full year of implementation and will harvest the lessons learned this summer. We will then decide where the eReferral capability best fits within the AHS IT roadmap," says Allison Bichel, executive director of access for Alberta Health Services (AHS).

The system works like many familiar travel sites, explains Bichel. GPs can logon

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Alberta first jurisdiction in Canada with provincial e-referral portal

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to the e-referral portal via Netcare to conduct searches for specialists by geographic area, next available appointment, or by name.

Once selected, the system offers a standard form to capture the minimum data set required to complete a referral. Lab work and other information can be directly attached from Netcare or other sources. "We designed the eReferral form so it shouldn't take more than three minutes to complete," says Bichel.

GPs can track the referral through the system, much like they would track a FedEx package, as the eReferral proceeds from appointment to visit to consult letter. This enables them to close the loop and ensure the referral is completed. "Our end-goal is to also allow patients to track it too, but we haven't launched that feature yet in this first phase," notes Bichel.

Responsibility for confirming an eReferral booking is up to the patient and specialist, not the GP, as another important goal is to reduce the administrative burden on the referring physician. "Family doctors are frequently stuck in the middle doing a lot of admin work back and forth between the two. We did some policy work to establish roles and responsibilities in these communications. GPs can still use the system to stay on top of things without necessarily handling the booking."

About 1,100 eReferrals have been processed through the system thus far, and the project team is still evaluating preliminary results. "About 650 were for breast cancer, and the rest were for arthroplasty and lung cancer," says Bichel. "We had actually expected the arthroplasty category to come first because there are typically more of these referrals than others. It's probably due to the fact that there are several major breast health centres across Alberta and there's a very specific referral base for them."

This unexpected finding highlights one of the chicken-and-egg challenges to uptake of the system. A breast health centre processes many cancer referrals in the course of a month, so it's worthwhile using the new eReferral system. But family doctors may only need to do one or two arthroplasty eReferrals per month, and they're still doing other types of referrals via fax because they aren't in the eReferral system yet.

Alison Bichel, Executive Director of Access, AHS

"Primary care providers are saying they're more likely to use the system once more types of referrals are available," says Bichel. "But we need a sufficient critical mass of eReferrals from them to further develop the system."

Another issue is that family doctors are unhappy about having to exit their EMR systems to logon to another system to do a referral. "We have no choice – we have to use a separate eReferral system to bridge all the different EMR systems in the province. To tackle this, we're looking at enhancing the system by allowing them to attach a PDF file from an EMR and send it over to Netcare instead of filling in a form."

In preparation for future development of the eReferral system, Bichel says there's a sister program underway called Alberta Referral Pathways, which is working on developing clinical content standards for new types of eReferrals. "There are 13 different tumor groups in the cancer world; we've only tackled two of them. So that could be our focus for the next wave of development."

Both GPs and specialists need to negotiate who does what in deciding the standards for these new eReferral types. "We need to clean up these processes before we automate anything. Referral standards don't exist now. To triage an eReferral, specialists need information from GPs. But what constitutes a minimum data set? Specialists may say they need X information, while GPs may respond that they don't have time to provide that much information."

Having the right information on an e-referral can increase productivity and decrease risk substantially, says Dr. Bill O'-Connor, an orthopedic surgeon and VP of clinical consulting at Orion Health, a software company that provides the technology that links all the systems that use Netcare.

"When I think back to the mistakes I made when I was practicing, it was typically because we were missing important information. The more information physicians have when they're seeing the patient, the better the results will be."

But it would be a mistake to view eReferral systems as a temporary stop-gap measure until the nirvana of perfectly integrated health systems materializes in the future, adds O'Connor.

"There are certain things that EMRs are terrible at doing. eReferral is one of them. You don't do your banking on your e-mail system – you use specific banking software. It's the same thing for this."

O'Connor says Orion is making strides in minimizing logging on and off between systems. "When we set it up, what we do is make many launches possible from within the EMR. We try to make the set-up as efficient as possible, but the reality is – and people are starting to catch on – they're never going to be able to do everything they need to do in an EMR. They're going to have to use other systems as well."

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CAMH implements new EHR system using the 'big bang' approach

BY ROSIE LOMBARDI

Most hospitals opt for an incremental approach to implementing EHR systems, often out of fear of joining the line-up of horror stories in the media about big IT project failures. But if the right elements are in place, the big bang approach – implementing everything all at once – can work. Toronto's Centre for Addiction and Mental Health (CAMH), an organization with over 3,000 staff, successfully went live in May, 2014 with its new EHR and data warehouse system with virtually no hiccups – and under budget.

"Over the course of the four-year period from procurement to implementation, our budget was about $50 million, and we even came in slightly under by $1 million on completion," says Tracey MacArthur, CAMH's CIO.

Although big bang implementations are not common in Canada, several U.S. hospitals have successfully used this approach in recent years, and CAMH's team carefully studied these models, says MacArthur. "It really needs an all-hands-on-deck approach. But even with that, I believe there are some constraints on the size of the organization that can do big bang. I'm not sure a very large organization could manage all the logistics."

MacArthur says project leaders weighed several factors in making the decision to go with the big bang approach. Cost was a big factor. "We would not need to support two different systems at the same time, or incur all of the interfacing and other technical costs of supporting two systems, or the costs of a long-term project team being in place – almost 60 percent of the project's costs were labour costs."

But cost wasn't the only consideration. CAMH's clinicians were eager to move from a paper-based system to an EHR. Mental health patient records require even more documentation than medical ones, and clinicians were frustrated with dealing with reams of paper files and the inability to pinpoint relevant information quickly.

"One of the huge advantages of the project was streamlining and standardizing our clinical documentation. We went from about 700 types of assessment forms to under 200. Our clinicians put a great deal of effort in completing that work in advance of the technical system implementation, so they were really ready to move forward," says MacArthur, adding that CAMH has been contacted by mental health institutions internationally to share its innovations in standardizing assessment forms.

This pre-implementation work was also good preparation for the collaborative effort needed for the technical implementation. "The main ingredient for a big bang implementation that we found is that the clinicians really need to be prepared for the intensive training and work."

CAMH's project team chose the Cerner Millennium EHR platform for implementation because it offered an all-encompassing solution that would span CAMH's emergency department, inpatient and outpatient clinics. In addition, the vendor was interested in gaining more expertise in mental health systems.

"We've been developing dynamic documentation to capture data in areas where there are a number of contributors to a health record," said Jim Shave, president of Cerner Canada. "The CAMH project helped us advance that system."

Cerner staff worked in conjunction with CAMH staff on the project, but MacArthur says most of the implementation team was comprised of in-house staff. "Over the course of the 20 months for the technical implementation, about 150 clinicians were involved in design, testing or coaching their peers at various points in the project. We also had a dedicated project team of about 100 people, mostly comprised of CAMH staff, but we also had some people from Cerner and Deloitte. "

Project leaders: Karen Martin, Dr. John Strauss, Pakizah Kozak, Tracey MacArthur and Cathy Surphlis Foks.

The team also implemented a separate data warehouse in parallel, so staff would be able to start using and analyzing the data immediately. "We take all the data out of Cerner, as well as other systems, and we put it in the data warehouse to aggregate it and generate reporting with Microsoft Business Intelligence. Our decision was to centralize all of reporting into our iManage tool, which is a single portal for all reporting, be it clinical, HR, or financial data."

MacArthur says there have been almost no technical hiccups since the system was implemented last year. "Our biggest challenges were around the management of the logistics on the critical go-live date. We were fortunate to receive support from other Cerner hospitals in the Toronto area. You really need just-in-time training with the big bang approach so the learning is still fresh, so most of it was completed in the six weeks prior to the go-live date."

However, the team has had to tweak some of the documentation templates since the implementation. "It was hard to anticipate precisely how much of our clinical documentation should be contained in discrete data fields versus free-form narrative documentation. We may have erred too much on one side or the other in our data capture, so we've been fine-tuning that."

With electronic data, clinicians can now see patterns and correlations they couldn't before. For example, there are links between physical and mental health, but clinicians didn't have hard data to crunch to determine how to improve care. "In the past, medical histories were noted in charts, but because we're capturing that information now as very discrete data elements, we're able to generate alerts to physicians. The system is showing us that over 90 percent of our patients are coming

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Fraser Health deploys Allscripts' dbMotion to integrate clinical systems

BY ROSIE LOMBARDI

Integrating separate and complex clinical information systems in a large health authority is like working with a giant Rubik's cube – but it can be done. Fraser Health, which has 23,000 staff servicing 1.7 million people in the Greater Vancouver area, is successfully implementing a commercial off- the- shelf health information exchange (HIE) solution to unify clinical information from hospital, community health, primary health care and provincial systems.

But now that the HIE solution is in place, the work to link all the systems is far from done. "Health information exchange is a continuous journey," explains Philip Barker, VP of informatics and analytics at Fraser Health.

From the starting point in 2012, the goal of the Unifying Clinical Information project was to implement a HIE that would allow Fraser Health to exchange information between all its clinical systems, says Barker. "We wanted all relevant information to be available to support clinical decision-making at the point of care, with no additional sign-ons or patient searches, while also minimizing clicking and keying to get that information."

To accomplish this, Fraser Health selected Allscripts' dbMotion, a HIE solution, to interconnect its Meditech systems running in 12 major hospitals, Civica Paris in community health, Intrahealth EMRs in primary care, and various provincial systems.

"We wanted an interoperable, integrated solution as opposed to overlaying a clinical system on top of other clinical systems. The difference is that it changes how you use a clinical information system. dbMotion makes your home clinical system very intelligent because it presents information in context, in the moment, from all other clinical sources. You don't have to drill down or hunt for information."

dbMotion's HIE technology also offers some highly useful intelligence features, adds Barker. "It does semantic harmonization across systems, which means it recognizes similar medical terms. For example, if a patient has 'peanut allergy' in one system and 'walnut allergy' in another, and presents them in a meaningful way. We thought this feature was particularly unique."

> **The solution provides semantic harmonization across systems, and recognizes similar terms.**

Another critical feature is the ability to place an agent on clinicians' desktop to notify them when new clinical information on that patient is available. "It's a tab that floats across the desktop to attract attention when there's relevant new information they haven't seen yet."

dbMotion also offers a feature that enables Fraser Health's HIE to share data with other health authorities. "It puts it in a clinical data repository that then can be used to exchange information with other health authorities or provincial e-Health projects. It's very important for us to be able to exchange our information, as the boundary between Fraser Health, and say, the Vancouver Coastal Health is porous and patients move between them."

The HIE was implemented in 2013, and the project team has begun the long journey to interconnect various systems to create a unified healthcare ecosystem.

At the core of the HIE is establishing a patient's identity with certainty, as this is needed to identify and track all the patient records flowing from one system into another, says Barker. "We worked closely with the Ministry of Health to leverage its client registry – the provincial electronic master patient index – so we could use it to identify and adjudicate client identity between our systems. The challenge of pa-

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Housekeeping staff improve time to inpatient beds with BlackBerrys

In 2014, Chatham-Kent Health Alliance (CKHA) implemented a patient flow dashboard tool to improve patient outcomes and increase organizational efficiency. The tool, developed by Oculys Health Informatics, quickly helped the organization have a real-time visual picture of the needs of patients in the Emergency Department (ED) waiting to be admitted while also providing an indication of bed capacity at a glance.

With the needs of patients visible across the organization, the staff responded – and with impressive results. "Before, there was a push to hurry and get people out of the Emerge, but now, we can pull them up to us," explained Marguerite Miller, unit clinical aide at CKHA.

Visibility combined with accountability started to shift the culture and in less than six months, CKHA's performance accelerated. As one of Ontario's 74 Pay for Performance hospitals, CKHA moved from 17th for total length of stay for admitted patients and 14th for time to inpatient bed respectively up to 6th place for both.

More impressive is that the organization reduced its total number of beds in operation from 265 to 216 within the same timeframe, allowing it to solidify its financial position, improve length of stay and reduce unnecessary wait times for patients.

While the results were both impressive and rewarding, there was something else happening. Interestingly, the organization noted that performance started to plateau at about the six month mark.

In a constrained environment, hospitals cannot afford to let performance idle. It's well documented that the longer a patient waits in an ED stretcher to be admitted, the faster they deteriorate. This lapse in time has a negative impact on the patient's outcome and the productivity of the ED and receiving inpatient units.

CKHA housekeeping's Carrie Sophonow, Jesse Kelly and Amy Zamboulis, with Oculys' Charlie Farkas.

So, what else could be done to ensure effective patient flow continues across departments? What other barriers to receiving appropriate and timely care exist?

"We knew that one of our process improvement opportunities was to improve the communication, notification and efficiency through which housekeeping could prioritize and organize the bed cleaning requirements on any given day," said Sarah Padfield, chief operating officer at CKHA.

In almost every hospital today, beds are at a premium – bed capacity at CKHA averages 92 percent. With the prevalence of infectious diseases, there is also the need to understand the patient environment and be vigilant in appropriate and effective cleaning practices within the hospital.

The balance between turning beds over quickly and doing it properly is something the organization holds in high regard.

In fact, CKHA's ability to go outbreak-free in 2014 is largely attributed to housekeeping's role as part of the care team. While it's understood that housekeeping is a key to the equation; their work is not well documented and they did not have effective tools to communicate and allocate resources to best support emerging needs across the organization.

And then a light went on. If Oculys delivers real-time visibility of admission needs and bed capacity, could it be expanded to make the role of housekeeping visible too?

"Because of our culture of innovation, success in working collaboratively with a technology partner and most importantly the leadership and willingness of our housekeeping team, we said why not put BlackBerry smartphones in the hands of housekeepers and let's see what improvements we can make," noted Padfield.

Adopting concepts used by hotels, Oculys, working in collaboration with CKHA staff, created a tool to automate workflow and track housekeeping tasks. This new solution, supported by the existing patient flow module, creates communication channels that reach across all disciplines and units. The real-time data and organizational view helps streamline decision-making and resources, which ultimately delivers consistent and timely responses by housekeeping staff throughout the hospital.

The process begins in the inpatient unit, when nursing staff identify a patient discharge through Oculys Performance. Then, a task is sent electronically for housekeeping staff to accept on their new BlackBerry Z30s (and because it's integrated with the regular Oculys tool, isolation protocols are known prior to entering the room too.)

Once they do, the tool helps track how the room cleaning is progressing and upon task completion, the system immediately notifies admitting that the patient waiting for that bed can be transferred.

"The Oculys Performance solution with the new housekeeping component supports real-time efficiency. Our goal is to distill the complexity of the hospital into a simple solution that is easily adopted and implemented," says Franck Hivert, Oculys Health Informatics president and CEO. "We worked closely with the CKHA team to solve a problem that would deliver measurable results and improve performance."

The housekeeping solution can also be used to support ongoing patient care needs, such as assigning tasks to support spills or urgent requests across the facility. Over time, the Oculys solution should alleviate the 'air traffic' syndrome the management team faces in trying to manage multiple and competing priorities.

"This project has created a real sense of pride within our team because it showcases that we are a progressive group who can see the benefits that technology will bring to our work," says Carrie Sophonow, housekeeping manager, CKHA. "Once fully implemented, we know we'll see increased efficiencies and we expect, new opportunities for our team to make a positive impact for patients at CKHA."

While CKHA is in the pilot phase of this new initiative, it is already providing promising opportunities to improve housekeeping processes, including reducing a lot of wasted time and energy in locating staff, duplicating communications and prioritizing and assigning tasks. By implementing this new Oculys solution and deploying it on BlackBerry smartphones, CKHA aims to further improve patient care while also reaffirming the role of housekeeping as a critical part of the care team within the hospital.

Ontario Shores becomes world-leading user of electronic medical records

BY SHERNETTE MUCCUTH HENRY

WHITBY, ONT. – Ontario Shores Centre for Mental Health Sciences (Ontario Shores) recently became the first hospital in Canada – and the first mental health hospital in the world – to achieve the prestigious HIMSS EMRAM Stage 7 award. The announcement was made last fall.

Offered by the Healthcare Information and Management Systems Society (HIMSS), the Stage 7 award signifies attainment of the highest level on the Electronic Medical Records Adoption Model (EMRAM). It scores hospitals in the HIMSS Analytics Database on their progress in completing 8 stages (0-7), with the goal of reaching Stage 7 – the pinnacle of an environment which is truly paperless.

"Our electronic medical record system improves the delivery and quality of care that we provide and standardizes clinical documentation in an environment that is efficient, secure and collaborative," said Karim Mamdani, president and CEO at Ontario Shores. Mamdani is part of the leadership team, comprising the board of directors and senior management, which guided and supported the implementation.

The progression to Stage 7 took seven years, and required significant investments in time and resources, with a governance structure firmly in place to monitor deliverables.

"We employed a change management framework which included full participation from the areas involved, significant communication including relevant education and training at all levels," explained Sanaz Riahi, director, professional practice and clinical information.

The results were well worth the effort, with the Stage 7 designation indicating that documented patient information is being used to determine the best diagnosis and treatment at all times. "It is important that we are getting the value out of the data collected. We use the data to make decisions that are based on facts to enhance how we practice and in turn help our patients," said Dr. Ilan Fischler, geriatric psychiatrist and medical director, clinical informatics.

One such example is the electronic admission assessment used at Ontario Shores. Used when a person is admitted to the hospital, there are certain mandatory fields which must be completed and which will then guide treatment. If the person being assessed has a history of smoking, for instance, the system will automatically populate with next steps, which may include the recommendation of appropriate nicotine replacement therapy.

Similarly, if a physician notes that a person will be receiving antipsychotic medication, the system will automatically populate with a recommendation to closely monitor for potential metabolic side effects.

One of the challenges in mental health is that antipsychotic medication may result in increased weight gain, obesity and an increased risk for diabetes. It is important when these medications are prescribed that they are accompanied by the appropriate monitoring.

An electronic record system means that once this medication is ordered by the physician, the system automatically generates suggestions for such additional monitoring. This greatly reduces any errors which may occur and enables clinical teams to proactively address any emerging issues and prevent metabolic complications.

"Since this system of monitoring has been instituted at Ontario Shores, adherence with the ideal recommended metabolic protocols has doubled," said Dr. Fischler.

The electronic system also facilitates the sharing of clinical information in a manner that supports the use of patient data to improve performance and transform clinical practices to one that is evidenced-based, ensuring that patients and families are recipients of recovery-oriented care.

Shernette Muccuth Henry is a Communications Officer with Ontario Shores Centre for Mental Health Sciences.

High-needs patients to benefit from new portal in Barrie, Ontario

BY JERRY ZEIDENBERG

The Barrie and Community Family Health Team, in Barrie, Ont., is one of the first primary care groups in the province to roll-out a computerized web portal, enabling patients and their care-givers to communicate with clinicians and check on their medical records.

The system is certainly in line with the trend towards empowering patients by giving them ready access to their information. But it's far more than that – it's being tested to see if it can, as the pundits predict, reduce overall health-system costs and also improve medical outcomes.

"It has to show health improvement, and also a cost improvement," said Dr. Brent Elsey, medical lead for the Barrie and Community Family Health Team, and a project director for the portal, which is known as MyHe@lthLinked.

The portal started signing on patients and clinicians in March, and Dr. Elsey says that a data management group will crunch the numbers after six months to obtain initial results.

After issuing an RFP for the project, the team selected a portal and patient health record system from McKesson's RelayHealth. For its part, RelayHealth has supplied the technology for a patient portal in Nova Scotia, and recently won contracts in Thunder Bay and Cobourg, Ont.

In Barrie, the first priority is to sign-on patients with complex, chronic conditions. According to the Ontario government, these patients comprise only 5 percent of the population, but account for 66 percent of the health spending in the province.

If the portal can help keep these patients healthy and out of emergency rooms, it would contribute mightily to controlling runaway healthcare costs. And in doing so, it would improve the quality of life for the patients and their families.

As Dr. Elsey observes, the portal should be able to accomplish these goals by giving patients or their care-givers faster access to physicians and other clinicians, including nurses and nurse practitioners.

"It's easy to foresee cases where patients don't end up in the ER because they could contact us," he said. "For example, because they got an antibiotic, they didn't get sick and end up in the hospital."

Proponents of secure messaging between clinicians and patients, a phenomenon called eVisits, say that closer communication will lead to better care-plans and improved adherence, as many patients simply won't come in for an office visit.

For some, it's too much trouble, while others will simply give up if they're kept on hold when trying to book an appointment by telephone.

But a quick message to the doctor or care-team can do wonders. The patient can find out if a weight gain is serious, if breathlessness or a cough needs immediate attention, or if a medication requires an adjustment.

"Often, patients simply want advice on a care-plan, such as what they should do when they're on vacation," says Dr. Elsey. "We can handle this through messaging, instead of requiring them to come into the office."

Of course, in many cases an in-person appointment is best, and the portal assists on this front, too. Using the online system, patients can cancel or re-book appointments, find out about how to prepare for an appointment, or ask about changing a care plan.

In Nova Scotia, which has been using RelayHealth for several years, the province found that secure communications have enabled doctors to handle more patient encounters, both virtual and in-person, according to a recent benefits study.

Moreover, by handling smaller matters via electronic messaging, more time is available to spend with patients in the office with more complex issues to discuss.

And although a fear among some physicians is that they will be overloaded by patient messages, the experience in Nova Scotia showed that most patients are

careful about not overtaxing their doctors with questions.

"And if there are patients who do send too many messages," said Dr. Elsey, "we can always tell them that they will have to come into the office with any further questions."

Remuneration is also a key issue, and many physicians will wonder how they will be paid for the work they do online. For salaried physicians working with a roster of patients, it's not a worry, as they're paid a set amount. eVisits tend to make their practices more efficient, and promise to keep patients healthier – which are powerful incentives for deploying a patient portal.

But those working on a fee-for-service model are asking for compensation – either a lump sum or a fee for each eVisit. Provinces using patient portals, and other forms of telemedicine, have been experimenting with different payment models.

In a second phase of the MyHe@lthLinked project, the Barrie team will start feeding lab and diagnostic imaging test results into the secure, patient records in the portal. Patients will also gain access to other parts of their records, such as allergies and medications.

E-visits can make practices run more efficiently, and enable patients to stay in close touch with their caregivers.

This will allow the more proactive patients to really take charge of their own health, modifying their behavior to achieve better results. For example, diabetics can monitor their results over time to ensure better eating or exercise habits.

But Dr. Elsey notes that care will be taken when sending information to the patient portal. "We know if we have an anxious patient, that he or she shouldn't have the information without an explanation," he said.

On the other hand, there are many patients who are perfectly able to interpret their own lab results, along with other information. "When the tests are normal, there is no problem in giving them the results. If they're abnormal results, we still may attach a note for the patient to call us."

As Dr. Elsey says, for certain patients, access to the information can encourage self-management.

MyHe@lthLinked is a project set up by the Barrie and Community Family Health Team as part of Healthlinks, a program the province launched to encourage community initiatives for the care of high-needs patients.

And while the initial thrust will be to recruit complex, chronic care patients, Dr. Elsey says that in the long run, he'd like to see the portal made available to all patients.

When interviewed at the beginning of March, Dr. Elsey said the project was aiming to enlist at least 10 providers and about 100 patients by the end of the month. But with excitement growing about MyHe@lthLinked, he anticipated the figures would be more like 20 clinicians coming aboard in the first month.

By the end of the year, he predicts that 1,800 patients will be using the system, along with 100 clinicians, including doctors, nurses and nurse practitioners.

In the Barrie area, most of the physicians use QHR's Accuro electronic medical record, and RelayHealth has integrated the system with this EMR. "We need to make it easy to use for the physicians," said David Mosher, Director of RelayHealth at McKesson Canada. "We've configured it so that it launches right from their EMRs, so they don't have to start a new application."

MyHe@lthLinked is also easy to use for patients, who can connect and share information with those they choose by using their web browsers. "It's like LinkedIn," said Mosher. "You make a connection with another person, and then it allows you to share data with them. Family members can also be authorized to book appointments or contact care providers."

He notes that MyHe@lthLinked has strong security tools, and has gone through a privacy and security assessment. Patients are able to specify just how much information they'd like to share with each member of the care team, and they can also check to see who has viewed the data.

"The patient can go in at any time, and can see who has looked at his or her record," said Mosher.

The MyHe@lthLinked portal was launched with funding from Canada Health Infoway, and the support of the provincial

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Information governance should be addressed in transition to EMRs

BY ANDREA BACQUÉ

The healthcare sector has embraced electronic records as the foundation for sharing information and delivering quality patient care. The business and clinical benefits of an electronic environment are clearly recognized, but, as healthcare providers are discovering, the transition from paper to electronic is often more difficult than anticipated.

In order to accelerate EMR adoption and reduce the reliance on paper, healthcare providers must come to terms with two fundamental concepts:

• embracing a hybrid environment in which paper and digital records coexist, and

• addressing the shortcomings of legacy paper record systems, including people, processes and technology.

In managing a major transition of this nature, leveraging a proven model or best practice approach is often recommended, independent of industry.

Does such a model exist in Canada? It appears to, in at least one instance. In Québec City, Iron Mountain has outfitted an EMR operation to cover over 130 million patient files for several hospitals in the area. To assist other healthcare providers across the country in their digitization journey, best practice principles and lessons learned from this example will be explored.

Hospitals and clinics in the Québec City area were aligned into four groups and combined their purchasing. Collectively, they had selected a single Electronic Medical Record system, as they had shared goals of improving patient care through digital access to patient records while addressing workforce and cost reduction objectives.


Andrea Bacqué

They knew the one-time back-file conversion would be massive, and although the intent was to run their own day-forward operation, they did not have the experience or expertise to set it up.

Adding to the issues and urgency for action was the fact that they collectively were running out of physical storage space for the paper records. The customer selected Iron Mountain to address the complete solution, including establishing both onsite and offsite EMR conversion centres. They believed that we could provide the services

Healthcare providers must come to terms with a hybrid environment, consisting of both paper and electronic records.

required and that we had the resources and commitment to deliver the best value.

Establishing a framework for governance: As a first step in the EMR transition, it is important to have senior leadership sponsorship around a framework for governance, particularly around the policies for Information.

Lifecycle Management (ILM). IG policies and practices are critical to the success of a wider IG strategy and should include foundational ILM policies to manage the processes for storage, retention, and disposition of medical and business records. These policies should also address special records management issues, such as formal hold orders and any applicable legal and regulatory requirements.

Getting organized for governance: Once the need for enterprise-wide Information Governance (IG) is established, it is important to understand how to get organized to make it happen.

In order to maintain oversight and measure progress against your IG strategy, it's critical to establish a multi-disciplinary steering committee. The committee

provides direction and oversight, sponsorship for resources and funding, and also offers leadership to engender organizational solidarity.

A steering committee is central to governance decision making, and requires broad representation across departments and functions, such as physician and nursing leaders, the CFO, CIO, CMIO, IT, HIM, informatics, legal, finance, compliance, and risk. In Québec City, the steering committee acted as the go-to, cross-functional group responsible for goal setting, approving and enforcing policies, and measuring results.

Developing an imaging strategy: The steering committee is also responsible for developing the imaging strategy.

To do this, they need to identify and understand the process by which health information is created, received and preserved for business and regulatory compliance purposes. Defining the information that comprises the "record of care" is part of any imaging strategy and the imaging strategy should look to define a trigger event or impetus for initiating digitization.

For example, in Québec City it was agreed that the patient's newly scheduled hospital appointment would be the optimum trigger event to initiate the go forward digitization processing of the patient's medical record within a 48 hour period.

In addition, the integrity of the record must be considered, and appropriate processes developed to ensure compliance and an effective physical to digital medical archive transition.

Retention and privacy: Establishing retention and privacy policies is a fundamental aspect of developing an effective EMR adoption strategy.

These policies must include specific criteria that define how long patient information must be retained and document detailed precautions on how to protect patients' privacy. More importantly, these policies must be enforced. Enforcing these

As a first step in the EMR transition, it is important to have senior leaders create a framework for governance.

policies means periodic movement of the files – whether for transfer or destruction purposes. In a hybrid environment that includes both paper and digital files, which means the process must be managed rigorously to avoid a potential data breach. For this reason, it is critical to maintain a secure chain-of-custody across the lifecycle of a record, including imaging, storage, archival and retrieval.

This chain-of-custody safeguard should apply to anyone within the organization, as well as any third party partners involved with the process.

Aligning with strategic organizational priorities: And lastly, like any major initiative, the importance of communicating the end-game benefits cannot be overstated. The message should be driven by senior leadership, via the Steering Committee, and reinforce that the transition to an EMR is a priority – not just because it's mandated, but because there are clear business benefits to be gained by the patient and the healthcare provider. From a business perspective, clarifying the benefits to the various stakeholders is critical to gaining initial and ongoing support for any EMR adoption initiative.

From a management perspective, identifying and reinforcing the clinical and operational benefits is the key to maintaining motivation over the duration of the adoption period.

Providers that achieve success will be those that take a comprehensive approach to balancing paper and digital records and develop a holistic document management solution executed against a clear strategy with defined governance oversight.

This requires reengineering old workflows to address the impact a hybrid reality has on people, processes and technologies. By winding down your paper processes and developing a comprehensive solution, you'll not only accelerate your transition to an EMR. In addition, you will more quickly realize increased patient throughput, shortened revenue cycles and improved operational efficiencies that drive value to the healthcare system and, most importantly, improve patient care.

Andrea Bacqué is Canadian Solutions Leader for Iron Mountain. She is based in Ottawa.

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VIEWPOINT

Entrepreneur finds the key to success in business: the ability to focus

The truth is that it's hard enough to do one thing very well, let alone many.

BY JOSHUA LUI, MD

A few weeks ago I had the pleasure of participating in an Alumni Panel for this year's Next 36 Selection Weekend. Together with fellow Next 36/Next Founders alumni Jaclyn Ling, Michael Helander and Jessica Ching, we talked about our experiences in the program and building our companies. (Side note: they are all working on very interesting things, and worth checking out).

Near the end of the Q&A, one of the finalists asked:

What is the most important thing you learned from this experience?

Without hesitation, for me it was focus.

I have come to believe focus is incredibly important, not just for startups, but for pursuing anything meaningful in life.

The basic truth is that it's hard enough to do one thing very well. It therefore follows that it's impossible to do many things well.

From a startup point of view, this meant putting 100 percent of our energy into increasingly fewer items, across all facets of our company, SeamlessMD. We moved from providing a solution for any medical condition to focusing exclusively on surgery. We dramatically reduced the number of metrics we focus on. And so on.

Today, we relentlessly say no to anything that does not move the dial on the few items that matter. This is important because most opportunities you encounter will be distractions.

Sometimes distractions are less obvious. For example, coffee meetings with kind, well-intentioned people but no obvious relevance; networking events in your industry, or product features that only one customer is asking for.

> **The most successful people I know are also the most generous with their time. I want to believe that isn't just a coincidence.**

A good barometer for whether an event was a distraction was whether you regretted it after. Over time, you will gather enough data points to know what is and isn't a distraction for you.

Your time is valuable – don't let anyone tell you otherwise. It's okay to say no – if you're saying yes more often than no, it might be worth re-thinking whether you are focused enough.

Dr. Joshua Liu is CEO of SeamlessMD, of Toronto, a computerized system that helps patients prepare for their operations before surgery and assists in monitoring their recovery afterwards. See www.seamless.md

And this goes beyond startups, at least for me. I am much happier focusing my time on close family and friends who matter the most to me. They deserve 100 percent of my attention.

The one exception I do make is around giving back and helping others. I never consider that a distraction, even if it is irrelevant to items I'm supposed to focus on. I will quickly say no to a coffee meeting about help I don't want, but I will happily take coffee with someone who really needs help.

The most successful people I know are also the most generous with their time. I want to believe that isn't a coincidence.

When I consider some of the insanely busy people who give me time when they have no reason to, I can't help but feel grateful, and want to pay it forward. It's also very rewarding to see other people you've helped do well.

Otherwise, I'm going to keep my head down and focus on the few things that matter. And I expect that list to get shorter, but more ambitious, with time.

How everyone else gets stuff done in document management

BY GREG BELL

Imagine you're a visual artist with the dream job – designing posters for your favourite band. You sketch out a few ideas in your notebook, take photos of them with your iPad, and share them with your team across the country.

Soon you're all looking at the same sketches on a virtual table. One of your colleagues in Nova Scotia finds photos from a shared album and starts positioning them over your sketches. Your friend on the train in Vancouver sees the photos and adds comments using her smartphone.

You draw a few changes using your tablet, and the whole team agrees they look great. In minutes you've collaboratively taken an idea to a refined draft, and shared it with the band – and they love the poster.

In many industries, one of the biggest challenges facing teams looking for collaborative document management solutions is picking from the hundreds of incredible tools available.

A plethora of fast, affordable and elegant software allows musicians to work in virtual recording studios, photographers to show their footage, and project managers to share plans and deadlines.

Meanwhile, conversations in healthcare circles are often about frustrations over getting seemingly simple things done, like sharing urgent patient information from one clinic to another.

The mid-2000s saw a significant shift towards secure cloud-based technology. With the non-healthcare world using tools like Box, Dropbox, and Google Drive for years to share work instantly, there is an expectation that business teams have access to the latest version of documents, and can work from and search common resources.

Even traditional email-on-a-computer has been left behind, as mobile collaboration apps are improved. Google and Microsoft have been in headlines lately for making highly polished apps for their competitor's smartphones, including Google Docs and Spreadsheets, Office, and Outlook.

Slack, an online and mobile tool for messaging and collaboration, recently boasted themselves as the fastest-growing workplace software ever. Teams with these tools save time, avoid errors and redundancies, and can work from anywhere.

What can healthcare learn from this innovation, so that clinicians, clinic managers, and patients can enjoy the same benefits? A few lessons to guide us:

• Cloud-based tools are ready for health information. With the right safeguards, it can be safer to keep your files on the cloud than in a locked filing cabinet behind your clinic desk. Billion-dollar companies now rely on cloud-based document solutions – in many circumstances the security will meet health data regulations.

> **Web tools for teamwork are becoming secure, and healthcare providers are starting to use them.**

• Even for clinics with electronic documents, huge cost savings can come from moving low-level security applications to software-as-a-service companies. No more need for that server in the closet with all of your patient documentation.

• Simple doesn't mean stupid: document management tools that do one thing well are often best. Mobile and web-based apps, rather than enormous desktop software, are elegant, usable, and get out of the way of the people using them.

• Better teamwork really does mean better productivity: strong demand for the ability to cut through noise and work together efficiently has resulted in new tools for communication and collaboration.

Tools like Medeo allow for secure, mobile patient-provider videoconference, with shared records of care and exchanged messages and files on the cloud.

Sookasa now offers HIPAA-compliant encryption for tools such as Dropbox and Salesforce, and the popular Box document manager has begun partnerships with health technology systems for secure, synced collaboration in hospitals and clinics.

Greg Bell is Director, Software Development, at QHR Technologies. The company is based in Kelowna, BC, with offices in Vancouver and Toronto.

From hospital to home, there are benefits to mobile clinical computing

BY MICHAEL MURPHY

At the intersection of technology and healthcare, there is a unique opportunity to collaboratively transform the healthcare system, strengthen provider relationships and improve patient outcomes. Mobile health – or mHealth – promises powerful benefits for the healthcare industry through the adoption of mobile devices, downloadable health apps and flex-work policies. Ultimately, mHealth enables the end-user – whether it is a clinician, physician or administrator – to work seamlessly across multiple devices with absolutely no restrictions in location and time.

There are significant benefits to embracing mobile technologies in healthcare, including:

• Instant access to information for healthcare providers – Access to patient data is a critical component to providing quality care. With mobile workstations and tablets, healthcare providers are no longer limited to capturing and accessing data at monolithic stations. One example of an organization that has implemented a mobile platform is Hamilton Health Sciences (HHS). Through mobile technology, HHS care providers can instantly access information, allowing physicians to diagnose patients from any location, on any device. If a physician is offsite and an issue with a patient arises, the physician is able to review the patient's charts and medication remotely, from a smartphone, laptop or tablet and enter a note for the clinician to follow up on.

Michael Murphy

• Significant cost reduction – Advancements in mobile technology are extending healthcare beyond the hospital environment and into the home. When a clinician visits a patient's home to provide an assessment, it saves a trip to a hospital for the patient or senior who may have limited mobility and alleviates the financial burden on the healthcare system. In fact, Home Care Ontario (www.homecareontario.ca) states that the average cost of a patient in a hospital bed for a day is $842 while a home care clinician can provide an in house checkup at $42 per day, a significant savings on the healthcare system when totalled per day and per patient.

• Lower wait times – Some hospital infrastructures take anywhere from 30 seconds to four minutes for a care provider to log into a patient session. By using mHealth technology, there is an improvement in patient wait times as doctors are able to keep their sessions open from room to room, eliminating the session login time. If a clinician is working with roughly 40 patients per day, and each session requires four minutes, this results in a time savings of nearly two hours each day. Multiply that number by the number of care providers working in a hospital on any given day and the time savings becomes significant.

• Revolutionizing patient care through Mobile Clinical Computing – Having to rely on stationary machines for information can delay patient care, especially as physicians are known to service numerous hospitals and may not always be on site. Stationary PCs or workstations on wheels use anonymous access logins which can pose significant security threats as anyone can potentially login and view patient data. As a result, hospitals are now starting to transition to Mobile Clinical Computing (MCC). This innovation allows clinicians to transfer the "cart on wheels" experience to a single tablet or mobile device, providing secure and instant access to information right at the patient's bedside.

Michael Murphy is the VP and country manager of Citrix Canada, a company that enables mobile work styles, allowing people to work and collaborate from anywhere.

FEATURE REPORT

Rocketing interest in programs that link doctors to hospitals, labs and patients

Physicians are using highly advanced solutions to connect with peers and patients.

BY DIANNE DANIEL

Leaving your family physician's office after a medical appointment can be a juggling act. Depending on the nature of your visit, you could be armed with a requisition for blood work, a script for medication, instructions for a test like endoscopy or ultrasound, perhaps even an appointment card for a specialist.

But what if you left empty handed? What if you received an e-mail instead, alerting you to check your on-line care portal for important information? What if you could simply show up at a lab or pharmacy and all of your information was waiting there on-line? Wouldn't that be easier?

The Group Health Centre (GHC) in Sault Ste. Marie, Ontario, believes so. In 2010, the multi-speciality, multi-disciplinary ambulatory care facility made a decision to rethink its electronic medical record (EMR) strategy, engaging consultants, looking at European models and visiting leading-edge facilities across the U.S. for input.

In the end it decided on a complete refresh, replacing an aging product with the EpicCare Ambulatory EMR from Epic Systems Corp., implementing a virtual desktop infrastructure with zero footprint clients, and essentially laying the groundwork for a paperless patient experience for the more than 70,000 people it serves.

"The model we went with is: if the banks can do it, why can't we?" says Ralph Barker, GHC vice-president, information services, and CIO. "We've really enabled and delivered true Bring-Your-Own-Device, anytime, anywhere."

The new EMR strategy was rolled out in 2014 and includes Imprivata single-sign-on technology, enabling users to 'tap' into secure sessions with a proximity badge. The solution connects 600 concurrent users, ranging from general practitioners (GPs) and specialists to nurse practitioners and administrators, as well as lab and pharmacy professionals. It supports 850 active devices, including desktops and tablet PCs, and enables leading-edge functionality like e-prescribing.

"We bought a very advanced rocket ship and we're learning how to fly," says Barker, who credits the strong commitment of the information services group and the Epic project team, including the three physician champions who participated, for the project's success, which was funded in part by Canada Health Infoway.

The switch to EpicCare had to occur in a "big bang" fashion, he adds, noting that the group's existing EMR vendor was ending support for a product that had been in use since 1997. "As complex as it was, the team delivered the project on time, on budget and in scope," he says.

Remarkably, GHC has a 98 percent penetration rate for its new virtual desktop infrastructure (VDI) strategy, with only 10 dedicated PCs left in the entire organization. One reason for the overwhelming adoption is that users were given the freedom to customize their desktops, just as they would a standalone PC.

In terms of minimizing workflow changes, GHC engaged physicians by delivering all functionality within the EMR. It eliminated the need to leave a patient record and then log into a separate portal to view lab results or prescribe medications.

"To me, that's the wrong approach and our physicians agreed," says Barker. "They don't want to work like that. They want it all presented in one application, which is the EMR."

Since implementing EpicCare, a typical patient visit at GHC might look like this: A patient arrives and is marked 'present' in the EMR, triggering an automatic check with the Ontario Ministry of Health to ensure a valid health card. In the exam room, a nurse taps into EpicCare with a proximity card, locates the correct patient record, and opens the session by measuring and recording vital signs, for example. The physician enters the room, taps into EpicCare and maintains the same patient session started by the nurse, but accesses it through his or her authenticated environment, with more functionality available.

"The interface actually adapts to their workflow," explains Barker. "So when the nurse secures the session coming out of the exam room, it locks it. The physician comes in, taps in, and the session re-enables in his navigator … It's become an enormous efficiency gain for the physicians and nurses."

Following the visit, if bloodwork is required, patients simply show up at a lab; if pills are prescribed, they go to any local pharmacy. All necessary information is accessed on-line and lab results are entered, so they can be trended.

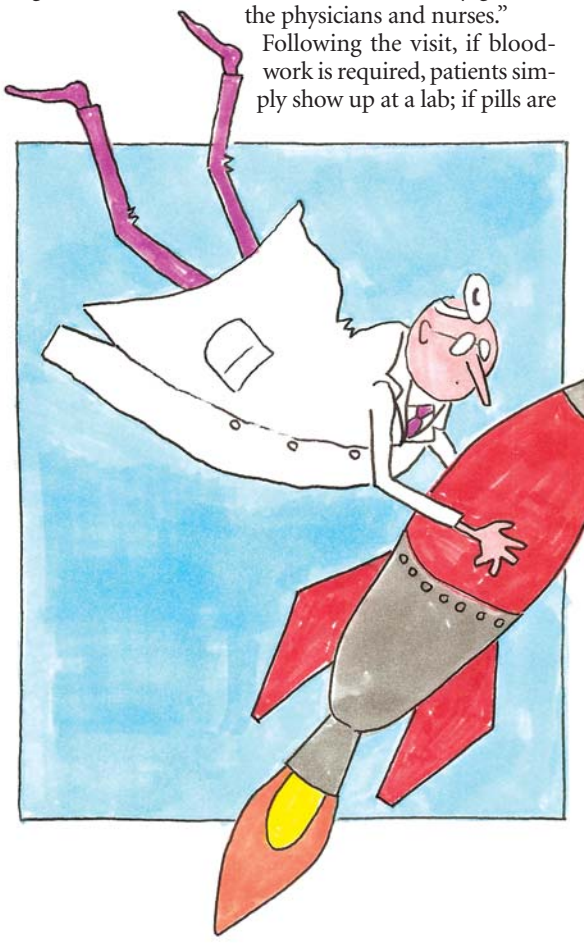

ILLUSTRATION: LINDA WEISS

Dr. Russell Tull is a GHC family physician with a full-time practice. As one of the physician champions who took part in Epic Physician Builder courses to facilitate his knowledge of EpicCare, he's been using the EMR in a live manner for more than one year. "Epic is a very powerful EMR, thus at times it can be a bit daunting with all of its features," he says. "… But once these are understood, the benefits are limitless."

Some of the features Dr. Tull uses regularly include the medication-medication interaction checking and medication-disease interaction checking. He is just beginning to use the product's artificial intelligence capabilities to ensure "all screening procedures are in place and all appropriate monitoring is being done for current problems or treatments – all automatically."

Most importantly, use of the MyCare patient portal available through EpicCare is changing the way he interacts with patients. "Patients can book appointments, see and add to their medical histories, print off or request refills on their meds, print immunization records for their kids, see growth charts, and most importantly, message the office with a non-urgent message directly, avoiding being met with a busy signal," he describes.

Another group of Ontario caregivers benefitting from a unified EMR strategy are the 62 community health centres (CHCs), 10 aboriginal health access centres and 10 nurse practitioner-led centres operating within the Association of Ontario Health Centres (AOHC). Each centre is governed by a board of clients, community members, health providers and community leaders; their over-arching goal is to ensure access to health services to those who encounter a diverse range of racial, cultural, linguistic, physical, social, economic, legal and geographic barriers, which often contribute to the risk of developing health problems.

To date, AOHC has successfully migrated 4,100 health providers, more than 1.2 million clients and more than 61.8 billion client records to Nightingale On Demand (NOD), a cloud-based EMR solution provided by Nightingale Informatix Corp. The milestone is "bittersweet," says AOHC CEO Adrianna Tetley, because six remaining francophone centres are still waiting for access to a bilingual version of the EMR, expected to be delivered later this year. "It's absolutely happening, it's just taking a lot longer," says Tetley. The delay is resulting from a mid-stream decision to provide the francophone centres with a newer version of Nightingale's EMR which will not only support the French language, but will also offer a much more intuitive platform for delivering patient-centred care, she explains.

AOHC's decision to move to a cloud-based EMR was made at a time when "cloud" was equivalent to "application service provider." Instead of having multiple servers in multiple sites running multiple instances of an EMR, AOHC made a deliberate decision to select a common platform, managing one contract with a single vendor.

"We wanted everyone to be on a common EMR so we could collect the data and tell the story about the efficiency and effectiveness of the work that we do," says Tetley.

AOHC is roughly four years into a 10-year enterprise licence with Nightingale. The product is used by multiple members of inter-professional teams, enabling client records to be shared among nurses, physicians, nurse practitioners, social workers, dietitians, health promoters and community health developers. Because funding for the EMR project is provided through eHealth Ontario, any improvements or customizations made to NOD are available to other users within the province as well, explains Tetley.

One advantage to adopting a cloud model is that enhancements to the EMR can be quickly rolled out to 4,000 users at once. Which is why AOHC is first in line to pilot many government-led efforts, such as the Ontario Laboratories Information System (OLIS), a province-wide, integrated repository of tests and results, and ConnectingGTA, the sharing of

information between five local health integration networks (LHINs) within the Greater Toronto Area.

"We're seen as a leader in connecting to the rest of the system," says Tetley. "We very much looked at the blueprint of eHealth and made sure everything we did was aligned with the information management blueprint for Canada and Ontario."

Another benefit is that the EMR is supported by a common data warehouse, enabling AOHC to apply analytics, including meaningful use data supplied by OntarioMD to measure who is using the EMR and how, and accountability indicators to compare CHC performance between sectors and peer groups. "If you're a downtown, urban CHC and you're the only one in your LHIN, you can find your comparative group with similar populations in Ottawa or Toronto and see how you are doing against your peers," explains Tetley.

Interestingly, AOHC has collected data to show that it is significantly above average when it comes to screening for two of the three cancer indicators set out as benchmarks by Cancer Care Ontario, despite the fact that its clients are usually more complex. "We say EMR is really important for clinical use, but telling our story, it's the non-operating reporting analytics (NORA) strategy that actually becomes our gem because it's where you can mine the information … to inform our funders and our decision makers," says Tetley.

Fundamentally, every AOHC member is able to make its own decision as to whether or not to use Nightingale On Demand. Tetley credits the association's ongoing support, in part, to a robust governance structure that ensures people are involved in decision-making.

A similar, cohesive structure is also proving valuable on Canada's west coast, where primary caregivers on Vancouver Island are now benefitting from a common e-notification platform, despite the fact that they use disparate EMRs. Recently, the Vancouver Island Health Authority (Island Health) introduced electronic notification, alerting family physicians when their patients are either admitted or discharged as inpatients in all 13 hospitals across the authority, as a direct result of feedback solicited from division members.

In the initial pilot project, administered from July to September 2014, 42 GPs received real-time notification of inpatient admission, discharge and death from two Island Health hospitals. Those GPs using EMRs received notification alerts directly within their EMR; those without, were notified via Excelleris Launchpad, a solution already in place to deliver lab and diagnostic imaging results across the island.

"We knew it would be good," says Val Stevens, Island Health's director of access and transitions, referring to the pilot's success. "We couldn't see that anyone wouldn't want to get one."

The alerts are automatically generated from the admission, discharge, transfer (ADT) portion of Island Health's Cerner hospital information system, using HL7 standards. No clinical information is provided; the alert states that the physician has been identified as the primary care provider and that more information can be viewed in PowerChart, the Cerner EMR used by hospitals throughout Island Health.

One change required at Island Health's end is that front line admitting staff are being asked to change the way they ask patients for the names of their family physicians. "We really wanted to make sure we were capturing accurate information in the record," says Stevens. "Because it's so important to have the right name in our clinical system, we wanted our clerks to say, 'Who is your family doctor?' instead of 'Is Dr. Smith still your family doctor?' This was a real opportunity for us to improve our processes right from the beginning of the patient's stay in hospital."

Overall, 96 percent of the physicians involved in the pilot reported that e-notification is an asset to their practice.

Now that Island Health is extending e-notification to include all hospitals and all family practice physicians, approximately 750 active GPs are being alerted about patient admissions, discharges and deaths in hospital. The next step, says Stevens, will be to define the follow-up "human-to-human" piece.

"We don't know what it will look like yet, but now that we have notification in place, we can move forward with that more human-to-human discharge and transition planning that needs to occur."

Hackers outside and snoopers inside: Hospital data must be guarded

BY ANDY SHAW

TORONTO – Security expert Patrick Malcolm ended a day-long Cyber Risk National Conference recently with a riveting "Getting into the Mind of a Cyber Criminal" talk. It was a wake-up call, not only for the 80 or so attendees, and others online, who monitored the Ontario Hospital Association conference, held earlier this year.

It was also an alarm bell for anyone who believes there's strong protection enveloping electronic health records and their networks.

No way, scoffs the visionary Malcolm, known for stirring audiences with "startling insights and brutal honesty". Claims Malcolm: "My average time for breaking into a client's computer system, even with the most sophisticated security, is about 78 minutes."

Malcolm, an 'ethical hacker-for-hire', operates NetRunner Inc. His clients include the security conscious likes of the Canadian Armed Forces, various police forces, and major businesses. Malcolm shows even these seemingly uber-secure giants how they can fall prey to what he calls the "criminally versatile" hacker.

Malcolm's benign hacking underlines the point that electronic health record keeping is still a risky business.

And few understand risk better than insurance people like David Hallstrom of CNA Insurance, a Chicago.-based firm with over a million clients world wide. The amusing Hallstrom has been underwriting technology risk insurance for 17 years.

"We live in a world where everyone is connected," Hallstrom reminded all in his conference opening presentation. "Just look at Facebook for example. There are now 1.35 billion Facebook users registered world wide with 17 million of those in Canada, half the country. And soon in the coming "internet of things" everything in your house will be connected, including toothbrushes, no kidding. They are on the market today and can send information on your brushing techniques via the internet to your dentist."

In other words, the opportunities for the criminally versatile hacker who wants your information have grown exponentially. How much hacking, then, is actually going on?

"Not everyone insures for cyber risk, so we don't know everything that is going on out there, but we do know what actually gets reported to insurance companies as claims," explains Hallstrom. "Of the reported breaches in 2014, about 34 percent were from hacking events, about 19 percent were interventions by employees (often the case in hospitals) and about 15 percent stemmed from a lost or stolen computing device such as a laptop or cell phone."

So what's being done here in Canada to prevent such breaches and to build or perhaps re-build confidence in electronic health records?

On that score, Brian Beamish, Ontario's independent information privacy commissioner had some instructive insights for conference attendees.

"The challenge with making health information secure is that it has a dual nature," observes Beamish. "Because it is such personal and sensitive information it needs strong privacy protection and yet it must also be quickly available to health professionals to provide care."

What's more, patients fear having their records hacked, adds Beamish: "We know from studies that people may withhold information from healthcare providers or not provide accurate information to them." The net result can be a devastating collapse of trust in the whole electronic healthcare system.

The conference then turned to what can be done about cyber threats with a "Learning from Each Other" discussion panel. Chad Marson, another certified ethical hacker, in his case for the banking and financial sector, led the discussion off with a nod to the need for meaningful collaboration.

"We're in a very competitive industry," says Marson who is a senior Operational Risk Officer for the BMO Financial Group, "but you'll never see an ad that says our

bank's security is better than another bank's. We never compete on security."

Marson has lived cyber collaboration as chair of the his industry's collective Critical Incident Response Team day, which brings together financial industry leaders to share common threats and work out what they should all do about them.

Says Marson: "Our industry advantage, of course, is that we have recourse. If credit cards are compromised, we can cancel them. But you can't cancel or bring back a person's medical information. That's why we calculate that a person's medical information is worth five to 10 times as much as their credit card is."

Panel member Janet Money knows about breaches in cyber walls through her work as a privacy and access associate at The Hospital for Sick Children, in Toronto.

"Of the 13 breaches we have had in 10 years of Ontario's privacy act, seven of them involved information technology;" says Money. "Five of those were the hospital's doing; four of them were existing systems issues like lack of encryption; three of the seven were rogue employees; and only one breach could be considered malicious."

Data breaches can lead to a devastating collapse of trust in the whole electronic health records system.

In that notorious breach, hackers demonstrated their versatility at making illicit cash by feeding information about hospital newborns to sellers of registered educational savings plans.

"But do these numbers show a trend or are they just a blip?" Money asked the conference and then answered: "With just one malicious incident over a decade, I would argue that it is not a trend; but it is something we should be concerned about."

Fellow panel member Marson thinks the concern over cyber security in healthcare, whatever its level of seriousness, should be focused on people, not technology, to stem information leaks: "People work hard at security, I know, but unfortunately they can be your easiest point of compromise.

"So your people have to be very aware of what kind of hacking they might be subject to and be trained on how to deal with it."

For Ontario privacy commissioner Brian Beamish, the answer to the threat of the criminally versatile is for healthcare organizations to build a "culture of privacy": "That requires a commitment from the top, which think is already there in most healthcare organizations, but it also involves generating solid policy as well as clear-cut procedures and making sure they don't sit on a shelf."

Cyber risk insurance man David Hallstrom agrees: "Too often we have seen CIOs even who don't know what to do with security threats. So you definitely need a security policy that makes clear to absolutely everyone in your organization: this is how you can use data; this is how our organization protects it; and you have to agree to follow these guidelines; and if you don't you will no longer be an employee here."

Cyber security guru, Patrick Malcolm however, calls for more drastic measures.

"The enemy, the hackers, have all the advantages because we are not treating our data as we should, and so they will outpace us," predicts Malcolm "So you need to think of your patient data as a toxic chemical. That means that just like handling toxic chemicals, you need to know exactly what you are doing when you move the data, know exactly what you are doing when you store it, and know exactly what you are doing when you access it."

And be aware too of the criminally versatile, whom Malcolm emulates daily in his consulting work.

As an example, he told of a cyber attack he launched on a willing client with supposedly rock-solid security. He tricked a pub waitress into thinking the USB key he handed her had been left behind by an employee of the client company upstairs and would she mind giving it to the next employee who came in – and she did.

The USB key was not what it appeared to be, however. The moment the unsuspecting employee plugged it in, his computer thought it was a keyboard, which computers never check for viruses nor malware.

"Once that happened," reported Malcolm, "I was able to hack their entire system in just under 44 minutes."

One-tap login to applications saves clinicians up to 45 minutes a day

BY DAVE WEBB

There's no question technology brings incredible improvements into the healthcare process. But those applications that enhance patient outcomes come with a cost in terms of time and convenience for clinicians.

Because the security and privacy of patient records, scheduling, medication orders and the dozens of other applications in a clinical environment is so crucial, doctors, nurses and other clinicians spend a lot of their time logging into (and out of) secure applications – perhaps as many as 70 times during an eight-hour shift.

"In our previous processes, physicians would walk into an office in the morning, and they'd typically (be working with) a couple of exam rooms and their offices and the nurses' stations," says Joe Cruise, IT director with Group Health Centre (GHC), which serves 70,000 residents in the Sault Ste. Marie and Algoma districts in Northern Ontario.

"The preparation time in the morning was often as much as 20 minutes to spend time in each exam room, prepping the station, getting the logins in place to ultimately get access to the medical records application."

As well, clinicians would sometimes have to go through several levels of authentication to access the application, each with their own credentials, Cruise says.

GHC is hardly a laggard in terms of healthcare technology adoption – the centre introduced electronic medical records (EMR) in 1997, making it one of the first organizations to adopt the technology – but Cruise and chief information officer Ralph Barker saw an opportunity to further streamline processes. It involved a "forklift" cutover, replacing the entire IT infrastructure with a new system built on three components.

A virtual desktop infrastructure (VDI) solution from VMware Inc. consolidates desktop images on a central server and distributes them to zero client devices in exam rooms, at nurses' stations, in offices, etc.

Clinicians can move from room to room and bring up their desktops exactly as they'd left them. The interfaces for a physician and a nurse, for example, are considerably different; this customization and portability means clinicians don't have to hunt for the appropriate interface when they move to a new screen.

Software from Epic Systems Corp. provides the EMR and practice management backend. But there was still the issue of login time from machine to machine.

Single sign-on technology from Imprivata Inc. helped pull the two together and make the clinicians' journey from station to station seamless. Simply tapping an access card on a reader on the VDI zero client verifies the user's identity, and calls up the appropriate interface.

By Cruise's estimate, that morning setup time goes from 20 minutes per room to less than four seconds each time the clinician logs in.

Clay Ritchey, chief marketing officer of 12-year-old Imprivata, says that VDI technology is gaining more traction in healthcare than many other industries, partly because privacy and regulatory compliance issues are a barrier to the adoption of cloud technologies. VDI offers similar benefits to those of a cloud infrastructure in an on-premise environment.

65% of healthcare organizations in the U.S. will have moved to some form of VDI infrastructure in the next 24 months.

He says 65 percent of healthcare organizations in the U.S. will have moved to some VDI infrastructure in the next 24 months.

But even so, with the average clinician dealing with more than 40 applications, and logging into them 10 to 12 times an hour, a password sign-in time of 30 to 60 seconds costs staff as much as 45 minutes a day, Ritchey says.

Single sign-on technology gives a user a persistent login, verified by a tap card or biometric identification through, for example, a fingerprint reader. Single sign-on also integrates the VDI infrastructure and the applications, allowing staff to instantly return to the interface they were most recently using.

"Single sign-on is required to unlock the power of (the healthcare organization's) VDI investments," Ritchey says.

It has made for a very different picture at GHC.

"When a nurse arrives, she literally taps a card, which authenticates her through to the medical records application, which is the primary app they need," Cruise says. It's configured with the interface the nurse needs; after reviewing and entering vital signs, the nurse taps the reader to secure the screen and walks away.

When the physician walks into the room, he or she taps a card on the reader, which authenticates the doctor and brings up the doctor's preferred EMR interface.

"It's a two-to-three-second pop, and the screen is there, and he's able to go immediately to work with the patient," says Cruise. "He sees the input from the nurse, but he is working under his own desktop layout."

High-needs patients to benefit from new portal in Barrie

CONTINUED FROM PAGE 9

Ministry of Health and eHealth Ontario.

Patients seem very anxious to connect with physicians on-line. As Dr. Elsey noted, of the first 10 patients he invited onto the system, nine immediately agreed. "One opted out," said Dr. Elsey, "because he didn't have a computer."

Evidently, patients and their care-givers like the ability to message clinicians. They also like accessing their own medical records.

Mosher notes that, "85 percent of patients say that having access to their health records makes them more aware of their health issues."

In the end, this helps both patients and the medical system. For example, he mentions medication compliance. "We know that compliance is only 50 percent. Many patients don't know why they're taking their pills, so they stop. But if they can send a quick message to their doctors, to find out if everything is happening the way it should, they're more likely to keep taking their meds."

In future, said Dr. Elsey, the portal will likely be opened to other organizations with a stake in the patient's care. He said discussions have already started with the local Community Care Access Centre, which coordinates home care with Emergency Medical Services.

"We can see this as a great benefit to paramedics, who could access the patient's record when giving care," said Dr. Elsey. Paramedics could see, for example, the medication record instead of relying on the recollections of the patient's family or friends.

Dr. Elsey is quick to point out, however, that analysis needs to be done to prove the worth of the system, especially to justify an ongoing investment.

The data management group, he says, will be collecting information about emergency department visits and hospital re-admissions, to see if they have fallen with use of the portal. They will also look at metrics like follow-up visits to GPs after discharge from hospital, to see if they have improved.

He is optimistic that MyHe@lthLinked will deliver on its promise. "This will be an enabling piece of technology," said Dr. Elsey. "In the end, it will help us deliver better care."

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CAMH leads

CONTINUED FROM PAGE 4

in with medical diagnoses, which is more than we expected."

CAMH's systems are now connected to a number of external entities, including its local family health team, the Ontario Lab Information System, the regional health record project, ConnectingGTA, and others. "We've been a viewing site only until now, but in the coming year, we'll be contributing data to ConnectingGTA. And now that our discharge summaries are electronic, we can send them to any GP within 24 hours."

With a wealth of data to slice and dice, CAMH can see where there are gaps. "Because we can now report more accurately on our patient population, we're starting to see where we're not doing a good job of collecting complete data on our patients and where we need to focus more effort. For example, getting a complete picture of how patients are arriving to us and capturing the referral sources, so that we'll know which organizations are most important for us to collaborate with."

CAMH will continue to build up its systems in the coming years, says MacArthur. "We're planning to expand our analytics platform so we can drive more quality-of-care advances. And we'll be focusing on integrating research with clinical care, and implementing our clinical-trial functionality in the future. For example, we're involved in collaboration with Trillium and Sick Kids called the Medical Psychiatry Alliance that will look at news ways of integrating mental and physical health care."

Shave says CAMH's success with its big bang implementation is already inspiring other Canadian hospitals to follow suit. "The next major implementation we're doing is at a community hospital in Cornwall that's also opted for a big bang implementation to reduce costs."

Big bang implementations have already been making a big comeback in the U.S. in recent years, and there are good reasons for this, says Shave. "It's really hard to take an incremental approach with a partly automated system while parts of the system are still based on paper. That piecemeal approach to automation introduces broken workflows and inconvenient or really difficult workarounds. Those horror stories in the media occurred in the past when the technologies and processes weren't sophisticated enough for big IT projects. The market wasn't ready for that level of collaboration and coordination. But all these elements have evolved today."

Fraser Health uses Allscripts' dbMotion

CONTINUED FROM PAGE 4

tient identity is very significant and you need to have eyes wide open to ensure your data is clean and there are good identity mechanisms in place."

Using the provincial registry's ironclad identity mechanisms minimizes the repetitive sign-ons and drudgery that can frustrate HIE users, he adds. "The registry ensures it's the right patient. That minimizes clicking and data entry because you don't have to hunt for patients or pick them from a list."

One interconnection of the Unifying Clinical Information project has been completed thus far. "We've implemented the dbMotion solution to the point where the Paris system, which is our community health service delivery system for mental health, substance abuse and home care, can view information from our hospitals' Meditech systems."

The team is currently working on the reverse flow – to make Paris data available to Meditech systems – and also integration with the provincial lab information system (PLIS) to make public and private sector lab results available to all Paris and Meditech users simultaneously. "This is all scheduled to go live in June 2015."

Decisions about the sequence of systems to link-up and roll-out are made by a clinical working group. "We have plans to integrate the next large clinical system, which is Intrahealth, used by our primary care providers," said Barker. "And we're going to be integrating our HIE with other provincial repositories such as Pharmanet, which will make pharmaceutical information much more readily available to our clinicians."

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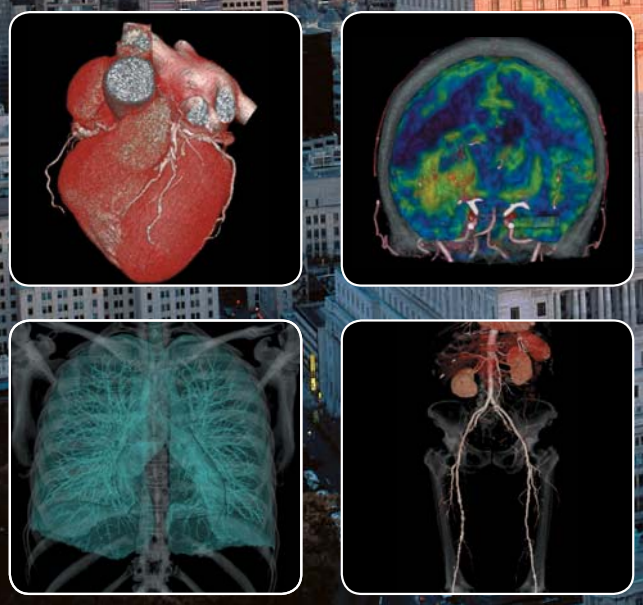

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