



# CANADIAN Healthcare Technology

CANADA'S MAGAZINE FOR MANAGERS AND USERS OF INFORMATION SYSTEMS IN HEALTHCARE | VOL. 18, NO. 3 | APRIL 2013

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Many of the speakers at the recent HIMSS conference, in New Orleans, addressed the need to use analytics to solve healthcare's woes. But you've got to have access to clean data, and lots of it.  
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Healthcare organizations are producing scads of computerized data. It's high-time they devised strategies for dealing with issues of quality and risk; what's more, high-level executives, including CEOs, should be involved.  
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Cornwall Community Hospital has acquired a new generation of washable phones in a bid to improve communications and access



to data, but at the same time reducing the infections that handheld devices can carry.

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PHOTO: HIMSS

## Clinton throws support behind healthcare IT

Former U.S. president Bill Clinton was a keynote speaker at the March HIMSS conference in New Orleans, a gathering that attracted more than 34,000 attendees. Mr. Clinton mesmerized a standing-room only crowd, and urged the use of new technological solutions to reduce the spiralling costs of healthcare. "In the life of every nation," he said, "almost every major system gets long in the tooth." **SEE HIMSS COVERAGE ON PAGE 6.**

## Massive acceptance of BYOD at MUHC

BY JERRY ZEIDENBERG

The Bring Your Own Device (BYOD) phenom has certainly taken hold at Montreal's McGill University Health Centre. In fact, when it comes to mobile devices for caregivers, it may be the only option.

"There's no dedicated budget at the new hospital for mobile devices, so we'll likely go to BYOD," commented Dr. Jeffrey Barkun,

professor of surgery at McGill University and chief clinical officer for technology transition at MUHC.

Dr. Barkun was a speaker at the Toronto-based Mobile Healthcare Summit, which was organized by the Strategy Institute and held in late January. He explained that MUHC is in the midst of building a new, billion-dollar facility, but money is so tight, there's nothing in the budget to equip clinicians with wireless devices.

"BYOD is really a necessity," commented Dr. Barkun.

In recognition the world is going wireless – clinicians included – MUHC launched its own BYOD pilot in 2009. And they decided to target the smartphone as the device of choice, rather than tablet computers.

In large measure, that's because a majority of the nurses on the targeted ward were found to already own smartphones, along

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**How do we make real progress in CT solutions?  
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sense and simplicity

# Massive acceptance of the Bring Your Own Device phenom at MUHC

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with a good number of the residents. Research predicted that 80 percent of physicians were likely to own a smartphone by 2012, and among them the iPhone was most popular.

A team of two persons was created to produce web apps that would enable clinicians to connect with patient records housed in the organization's Oasis information system.

Dr. Barkun explained that the approach wasn't aimed at providing full access to the HIS. "We didn't want to reproduce the HIS on a small device," he said. Instead, the team created apps and screens that are optimized for smartphones, giving clinicians quick access to key pieces of information about patients.

Less than four years later, there has been extraordinary acceptance of the BYOD solution and the VSign software devised at MUHC. Today, noted Dr. Barkun, there are nearly 1,000 users of the system – including 750 residents and staff physicians, 62 nurses and some 50 pharmacists.

The hospital IS group has been devel-

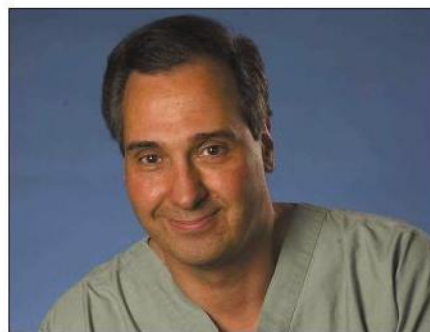
oping a Specialized System platform to document clinical notes, and the incremental cost of developing and testing VSign was about \$278,000 over a period of two-and-a-half years. On a cost-effectiveness basis, "This was a home run," asserted Dr. Barkun. "We've had a higher return on this than almost any other software developed for clinicians."

Indeed, on a day-to-day basis, clinicians can obtain the information they need right at the patient bedside.

And although the desktop workstations are still regarded as the main computers for data entry, the residents by far prefer using their own smartphones to look-up what they need about their patients.

And on one occasion, when the wired network went down temporarily at one of the hospital sites, clinicians were still able to obtain patient data by using their smartphones.

Six categories of patient information are instantly available, including vital signs and lab results. Clinicians can see which medications a patient is on, and views are organized according to the needs of physicians and nurses.



Dr. Jeffrey Barkun, McGill University Health Centre.

Upcoming applications include views of patients by ward or area of service. As well, the next phase of the software will show which doctors and nurses are caring for patients – something that is extremely useful for team members when seeking information or a helping hand. The communication system used is SMS text, and clinicians are able to keep in touch with each other wherever they may be – even while on coffee breaks.

In future, the hospital plans to expand the results that are available so that radiology and microbiology are included. It also

hopes to add clinical note-taking. And it intends to continue ramping-up so that VSign is an enterprise-wide solution.

Dr. Barkun said there were originally some qualms raised about infection control with the devices. As one solution, containers of wipes were placed throughout the hospitals and clinicians were urged to keep their devices clean.

The stratagem worked. "Nurses tell us their phones are cleaner than anything else on the wards," commented Dr. Barkun.

An ancillary benefit has been that with the handiness of the wipes, staff and clinicians are cleaning other pieces of equipment, as well.

Privacy was also a concern, but no data actually resides on the smartphones, it only appears on screen and can't be saved. There's a 40-minute inactivity logout, and to get into the system, users must identify two images in the correct order.

And while a desktop computer on the ward can be read by anyone walking by, it's been found to be virtually impossible to read a patient record on a smartphone by peeking over someone's shoulder.

Indeed, those who first voiced concerns about infection control and security are now supporters of the smartphone solution.

Not everything has been ideal, however, about the introduction of BYOD. Cellular signals, for example, are not uniformly prevalent throughout the hospitals. "We have 3G, but it's good in some areas and not so good in others," said Dr. Barkun.

As well, budget constraints have meant that only two staff members were allocated to app development and support.

Nevertheless, those talented individuals produced the software, called VSign, and it has been quickly adopted by clinicians – a testament to the usability of the system. And the dynamic duo has also been open to answering the texts of users, and even providing support on weekends.

Dr. Barkun says the hospital still has no official BYOD policy, but it's in development and will soon be formalized.

He contrasted the approach taken at McGill University Health Centre, which focused on smartphones, with that of the Ottawa Hospital, another user of the Oasis information system. For its part, the Ottawa Hospital has acquired over 3,000 iPads as the device of choice for clinicians.

"What they have done with iPads is terrific, but we couldn't even afford to buy one iPad," said Dr. Barkun.

While other organizations may opt for iPads, the focus on smartphones has worked out well at McGill, where there has been massive acceptance of the BYOD strategy. "We didn't do any promotion for this," said Dr. Barkun. "It grew on its own."



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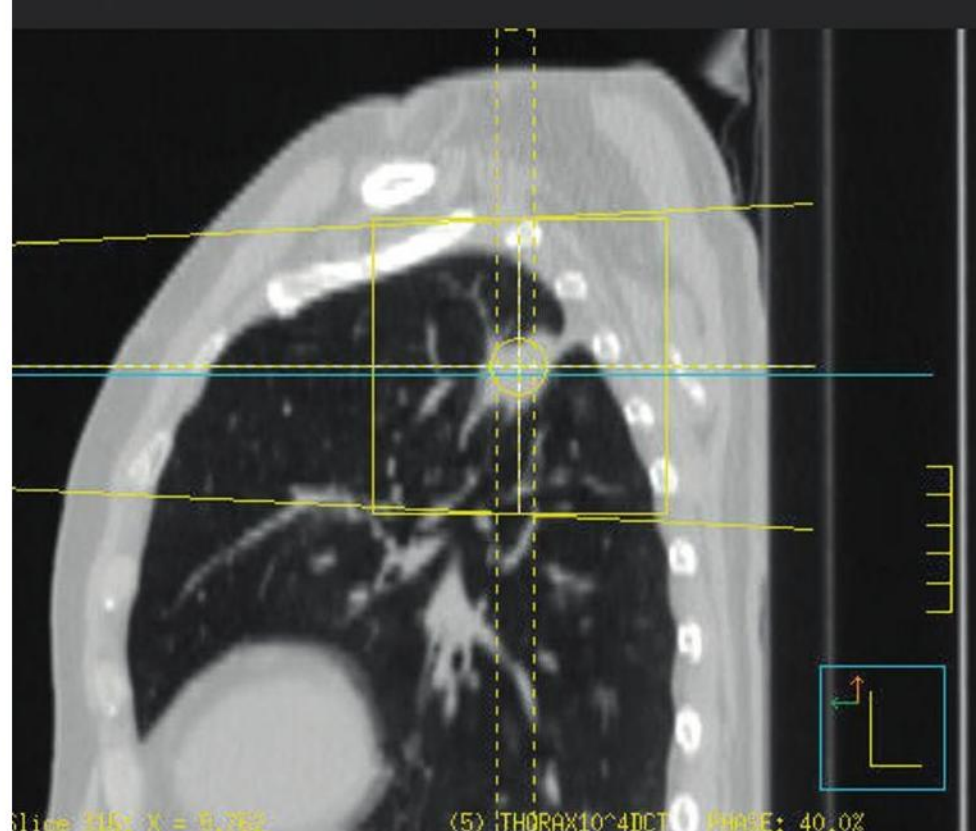
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# Cornwall hospital takes technological leap with Sony mobile phones

**C**ORNWALL, ONT. – Cornwall Community Hospital has recently acquired new mobile devices to assist with communications within its complex healthcare environment. As many healthcare workers will attest, it is difficult to find devices that meet the stringent infection control standards of today's environment, especially when it comes to mobile devices.

The hospital seized an opportunity to exploit new applications developed for the hospital workforce, which required modern communication tools such as email alerts to various clinical and support staff. It was evident at the beginning of the planning process that a smartphone-type of device was required; a tablet or laptop proved to be too large to be convenient for staff, not to mention, these devices lacked the ability to meet infection control guidelines.

Nancy-Ann Bush, manager of Infection Prevention and Control, commented: "From an infection prevention and control perspective, the use of electronic devices in the hospital environment is a challenge. Most of these devices cannot be disinfected with hospital grade disinfectants, and they tend to sustain damage to internal systems from excessive fluid."

"This 'smartphone' with its waterproof feature will allow cleaning and rinsing

with soap and water," added Bush. "As always, hand hygiene is the most important factor in the prevention of transmission of microorganisms and all devices should be approached with clean hands."

It was then determined that in order to leverage the hospital's sophisticated 300 megabit switched Wi-Fi network, a small portable device with email and Session Initiation Protocol (SIP) clients would be ideal. The SIP client would essentially allow the hospital to add the devices as extensions to the hospital's phone system, allowing them to make calls free of charge.

Mario Alibrando, director of Information Technology, said: "We are pleased to have found the perfect device that meets our current needs." The Sony Xperia GO is an unlocked phone sold by Sony Canada. It includes features such as an IP67 rating, meaning it is completely protected against ingress of dust and is water resistant in up to 1 meter of water, immersed for 30 minutes.

The phone comes

**Cornwall's Mario Alibrando and Nancy-Ann Bush**



equipped with the Android 4.0 operating system, and a Sony integrated software package that includes a built-in SIP client. It is sold completely unlocked, meaning that a SIM card or monthly plan through a service provider is not required to operate the device.

The hospital has since implemented the technology that will be utilized for clinical and support staff, including the hospital's medication reconciliation program.

When particular conditions are met within the HIS Electronic Bed Management software, automated emails will be sent to clinical and support staff. For example, when an isolation cleaning for a patient room is required and

entered in the Bed Management system, an automatic email will be sent to mobile support staff via their Sony Xperia GO phones.

This allows for an expeditious turnaround of the patient room that can be measured by the timestamp within the email. The Sony Xperia GO can then be washed under a tap to remove any residual infectious material that may adhere to it.

Jeanette Despatie, chief executive officer (CEO), is excited about this advancement of technology in the hospital. "As a recognized Eastern Counties leader in the provision of exceptional health services, CCH is proud to be the first hospital in Ontario to institute these phones in the workplace."

She added, "We are always striving to make new improvements in our community hospital while keeping in mind that patient safety is at the forefront of all that we do. The fact that these devices are impervious to water damage and can be cleaned between uses will lessen the chance of spreading infection."

Perhaps it was designed for the clumsy individual who may drop it in water or expose it to an unusual amount of dust, but it complements the healthcare environment very well. Having these modern devices at their fingertips is sure to simplify some of the complexities in staff members' everyday tasks.

## The real benefits of mobile devices may be back in the office

BY SCOTT HERRMANN

**T**his is a story about how mobile technology has changed the way business is conducted at Guysborough County Home Support Agency (GCHSA) in Nova Scotia.

The agency made the move towards mobile devices to help with the safety of the individuals working alone. Government legislation required the home care agency to follow "work safe" regulations and to also implement a mobile application for field staff in community care.

Home-care agency field staff – traditionally synonymous with paper, pens and manual processes – used to log miles to and from visits as well as time spent with the clients.

Staff felt unsafe in a variety of situations, and there was no way to monitor and assure their safety. GCHSA was faced with these issues, and was primarily concerned with the safety and whereabouts of their staff.

Thankfully, their anxieties vanished through the use of GPS-enabled mobile devices equipped with the integrated Procura Mobile application.

Admittedly, change can be hard. Initially when the mobile application was launched at GCHSA, field staff feared "big brother" would be watching them – with their every move being monitored, even after work hours. This was natural for staff to feel, but overall, their worries were unwarranted.

Fear, uncertainty and doubt are prominent emotions when a community care organization rolls out a mobile application. Change makes staff uncomfortable, and there is that looming concern that the organization no longer trusts them.

GCHSA's vision in implementing a mobility solution was not to monitor their staff's movements, but to gain a reliable system to prove visit compliance, increase safety, and eliminate manual processes associated with community care visits.

They were now also able to share real-time information with all team members in the continuum of care. By having the conversation with field staff, agencies can address concerns about "big brother" and safety on the job will be resolved.

The GPS alerts that are built into the integration allowed the office to know if field staff arrived on time for the client visit or not at all.

The roll out of Procura Mobile was so successful that it is currently being expanded to include partner home-care agencies across Nova Scotia. The field staff who were initially concerned about the implementation now see the mobile application not only as their life-line back to the office, but they also understand that the GPS mobile application and automation make their lives easier.

They appreciate the "family or personal time" that they gain, and also the improvement in their work-life balance that's achieved by doing their documen-

tation in the field, at the point of care, rather than after hours. They see that as individuals working alone in the community, a solution with GPS-tracking offers them a greater level of protection, as it connects them back to the office and agency team members.

The 'old guard' staff, who may have cut corners in the past, now recognize this is no longer possible. Agency staff now understand that the old paper processes don't work and were a burden to the organization. Before mobile automation, paper was used to produce weekly and monthly schedules, which had to be distributed to the staff, collected back and matched to the schedule that was sent out.

Using paper was not only a hassle to distribute and collect, but it also was a resource drain on the environment. After 18 months of using the mobile application, Denise Halloran, executive director of GCHSA, along with field supervisors Tina Kinslow and Rita Fougere, can testify to the differences between the days of using paper versus today, where the mobile device has become the key to improved patient care.

During an interview we discussed the safety aspects as well as the saved re-

sources, but ultimately they felt it was the administrative side of the mobile application which produced the most immediate benefits.

"Procura Mobile has been an extremely positive transformation amongst the many operational changes over the past three years," said Halloran.

"It has given the administrative staff time to breathe. Procura Mobile has been the reason for a 40 percent reduction in time spent to verify payroll as well as the 49 percent savings in time to amend schedules and/or call front-line staff on a weekly basis.

"These time savings," she added, "allow the administrative staff to concentrate on other tasks, such as supervision and training."

Matching paperwork to schedules, making calls to rearrange the daily schedules of field staff, or contacting clients when they have confirmed or changed a visit is laborious. The automation in payroll due to an integrated mobile solution was a very pleasant gain to GCHSA's office staff, as well. There were no more late time cards to track down, either.

What is the key point of my story? Little did they know in Guysborough that the RFP for providing a mobile "field service" application to help with the safety of the individual working alone would provide so many "in office" benefits to their administrative staff.

Scott Herrmann is Director, Mobile Solutions for Procura.



Scott R. Herrmann



## Brantford General Hospital entrusts technology to help deliver excellence in breast cancer patient care

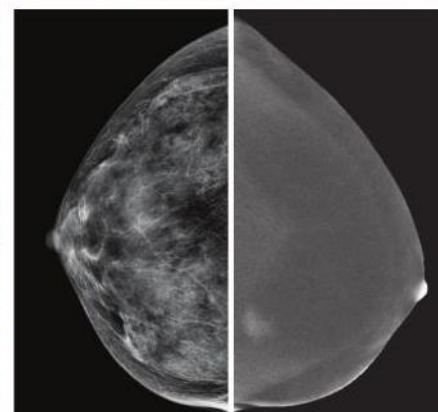
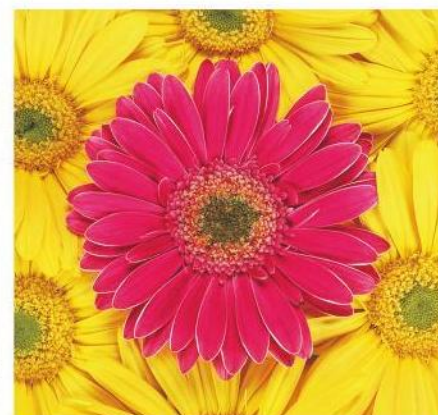
Patients and clinicians alike are celebrating the arrival at Brantford General Hospital of GE Healthcare's innovative SenoBright technology — the first of its kind in Canada.

Launched in 2010, SenoBright is already in use at numerous major mammography centres in the United States, France, Spain, Italy, Belgium, Germany, Austria, and Japan. SenoBright uses X-rays at multiple energies to create two separate but almost simultaneous exposures.

The system makes use of Contrast Enhanced Spectral Mammography (CESM) technology, which produces contrast-enhanced images of the breast using an x-ray contrast agent and a dual energy acquisition technique.

**"We are very excited to launch the innovative CESM technology at the Brantford General Hospital. We are the first site in Canada to do so."**

"We are very excited to launch the innovative CESM technology at the Brantford General Hospital. We are the first site in Canada to do so. It will be a tremendous benefit to our local breast imaging program in assisting with the workup of complex mammographic cases," said Dr. Azra Khan. Worldwide, more than 1.2 million people annually are diagnosed with breast



cancer. Since 1965, GE Healthcare has made significant progress in providing solutions for breast cancer detection and diagnosis that really bring a change to people's lives. Today through "healthymagination", we continuously develop innovations to reduce costs, increase access and improve quality and efficiency of healthcare.

### **Same staff, same equipment – same day**

CESM technology is intended to work as an upgrade to GE Healthcare's Senographe DS and Senographe Essential digital

mammography equipment. SenoBright enables a procedure to be conducted by the same staff, using the same mammography equipment, potentially on the same day as a traditional screening exam, thereby helping medical professionals to cut the critical time patients often have to wait from detection to diagnosis. GE Healthcare estimates that 2,500 digital mammography systems upgradeable to SenoBright are in clinical use today – delivering an excellent investment for these customers – and providing added functionality to an existing and vital tool.



# Health analytics takes centre stage at New Orleans HIMSS conference

BY JERRY ZEIDENBERG

**N**EW ORLEANS – When a huge ballroom is filled to capacity, and attendees are willing to stand at the back to hear what's going on, it's a sure sign the lecture topic has hit a chord. That was the case at the recent HIMSS conference, when executives from Denver Health, in Colorado, reported on their use of 'Big Data' to achieve among the lowest mortality rates in the United States.

The centre is Colorado's largest 'safety net' health provider – it has nearly a million visits annually and 46 percent of the patients are unable to pay for their care. Nevertheless, the centre has avoided deficits for the past 20 years.

"I.T. is the way we handle this," said Greg Veltri, CIO for Denver Health, a 477-bed organization that invests more than \$30 million a year in information technology.

Using analytics, Denver Health has been able to predict onslaughts of disease outbreaks, enabling it to prepare in advance. It has also been able to determine which treatments have the best outcomes. "You can find out which physician treatments have the best outcomes at the lowest costs," said Veltri.

Veltri and his colleague, Mical DeBrow, principal consultant with Siemens Medical, held forth on the lessons they've learned from the centre's business intelligence implementation. "It doesn't help you to know what happened 30 days ago," asserted DeBrow. He said managers need real-time or near real-time information, and that means they've got to link the myriad databases throughout the organization.

That in itself is a huge task, due to interoperability challenges. Another daunt-

ing task is creating a common language of medical terms. "A data dictionary that's used across the enterprise is critical," said DeBrow. Producing one isn't so easy. Veltri noted that even the term 'live birth' had multiple meanings in his organization. "There were 19 different categories of live births," he said, explaining that the I.T. team wasn't able to resolve this on its own. "You need to get your physicians involved."

Equipped with data mining tools, "you can actually predict patterns of behaviour," said Veltri. Added DeBrow: "You need to be able to predict to be able to plan."

He lamented that most U.S. healthcare providers have yet to use data mining or analytical software, and are far behind other industries in this area. "Walmart knows more about your patients than you do," quipped DeBrow.

Keynote speaker Warner Thomas, CEO of the eight-hospital Ochsner Health chain, hammered on the same theme in his HIMSS address – healthcare providers must make greater use of 'Big Data' to solve their problems. "Why don't we do more of this in healthcare," he repeatedly asked, pointing to how airlines and successful companies like Walmart and Amazon use data to run their businesses.

For its part, New Orleans-based Ochsner is investing heavily in information technologies to help produce better outcomes at lower costs. It's midway through an I.T. conversion with Epic as its partner. Already, the hospital has achieved Level 6 on the HIMSS EMRAM rankings – by contrast, there are only three or four such hospitals in all of Canada.

Thomas noted that healthcare must also learn from other industries about re-engineering to reduce its costs. He pointed

extensively to the airline industries as a model, noting that in 1995 U.S. airlines carried 460 million passengers and employed 546,000 people. By 2010, they carried 700 million passengers but had reduced their employee count to 536,000.

"How did they do it?" asked Thomas, answering his own question by pointing out that airlines now have consumers doing much more work. "They've moved work to us, and we like it," commented Thomas. He observed that passengers now



Warner Thomas, CEO of Ochsner Health.

make their own bookings and check themselves in at airports.

"It means they need fewer staff on the desk at check-in," said Thomas. His hospital is now incorporating some of these techniques – such as self-booking of appointments and self-check-in.

In Canada, Centre Hospitalier Universitaire de Sherbrooke (CHUS) is now investigating the use of self check-in with an easy-to-use kiosk from Quadramed. The system also allows patients to make appointments from home, instead of going to the hospital and waiting in lines.

Normand Bilodeau, assistant director of IT at CHUS, pointed out that if there is a wait for a test or service at the hospital, the

kiosk can arrange to text the patient on his or her phone, alerting them that the hospital unit is ready for them.

The kiosk can provide consent forms for various procedures, and can also check provincial health cards or take payments from people who don't have coverage.

An innovator in Canada when it comes to the use of analytics is the province of New Brunswick. Department of Health chief information officer Cheryl Hansen observed that a partnership with Orion Health has enabled providers to pull health data from a wide variety of sources. That's helping clinicians get the medical data they need for on-the-spot care, but it's also aiding policy makers.

Hansen asked her team at the department to build dashboard using Google Analytics – a free and easily understandable tool – to analyze the data in the system. That immediately transformed the way they look at information.

"It gives us a real-time look at what's happening, instead of waiting for reports that are months old," said Hansen. In one instance, they used a Google Analytics-powered application to examine lab utilization trends.

"We've got the infrastructure in place [through Orion] for this," commented Hansen. "We also have heavy-duty analytics tools, like Cognos and SSRS, but you can actually do a great deal with simple visual tools like Google."

"Once you have the underlying infrastructure, we've shown that you can do things without a lot of extra investment," noted Hansen. However, she did caution that it takes guidance and training to shift employees into using new analytical tools. "It's a culture change," she observed.

## Mobile solution enables data collection at the point of care

**M**ARKHAM, ONT. – Saint Elizabeth Health Care, whose team of 6,500 nurses, rehab therapists, personal support workers and crisis intervention staff deliver more than five million visits annually, is known for providing superior care. The organization is also a clinical technology leader.

In 2012, Saint Elizabeth Health Care set out to develop and deliver a structured clinical quality framework. To start this process, it turned to CellTrak (www.celltrak.com), an existing supplier and a leading provider of mobile clinical solutions. Its integrated mobile solution is a starting point for initiating, supporting and enabling better client outcomes.

Care delivery starts with the assessment of the client and the creation of a care plan. Depending on the client's needs, measurements are added to the plan. These required measures are then sent using the mobile device as part of the client care activities.

For example, for clients receiving wound care, information on wound volume and condition is collected. The

measurements are documented during the client visit, becoming part of the service record and later used for analyzing clinical outcomes.

"CellTrak enables the collection of clinical data to support the analysis of client health outcomes," said Mary Lou Ackerman, vice president of business capabilities at Saint Elizabeth Health Care.

"The solution already allows our organization to automate visit verification, travel expenses and enhances communication amongst staff members," she added. "With the use of a mobile device solution we are able to gather client information at the point of care. These data elements are then reported through our business intelligence system, providing feedback on client health outcomes back to the field staff."

"The ability to capture and monitor data on mobile devices automates the process of clinical analysis," said Ackerman. "It provides staff with greater insight into the care they provide."

Saint Elizabeth Health Care has set clinical performance measures and targets for specific client populations. These measures are reported and the re-

sults discussed collaboratively at care team meetings.

Knowledge sharing among the care team has led to creative solutions for more challenging situations. Having the ability to collect and report on clinical outcomes in relation to care supports evidence based decision making. The insight gained from the clinical quality framework is leading to better patient

**The ability to capture and monitor data on mobile devices automates the process of clinical analysis.**

outcomes. At a higher level, this information is used for advancing clinical practice through program development.

**Outcome based performance reimbursement (OBPR):** Management and reimbursement of an episode of care will soon require outcome reporting for the Initial, Interval and Discharge payment milestones. Mobile solutions can deliver significant outcome-based performance reimbursement functionality for wound

care. Saint Elizabeth was a technological leader by already implementing these types of data collecting. "Collecting the data elements at the point of care has eliminated the need to implement a paper process to collect this information," said Ackerman. "The mobile device simplified the collection of outcome based

**Improving outcomes at the point of care is a critical challenge for healthcare:** Combining post acute processes and technology to provide a foundation for care provider collaboration via a common approach to secured electronic healthcare records is critical to the future success of the healthcare systems.

Innovative solutions and mobile technology that brings additional resources to the fingertips of nurses and homecare professionals at the frontline to support their clinical decision-making have proven to contribute to improved client outcomes. With day to day changing patient needs, there is increasing evidence that mobile technology and applications will transform the industry and facilitate faster and better communications, as well as rapidly providing integrated outcome data to the front line field staff.

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# Infoway certification gives consumers confidence in e-health solutions

With the explosion of new technologies entering hospitals and clinics, healthcare managers and providers have been at their wit's end about what tools to acquire. Often enough, they're not sure if the latest solutions will work with

other systems or whether the new products will safeguard patient information.

Canada Health Infoway's Certification Services, launched in 2009, have helped them feel confident about their buying decisions. "We assure healthcare providers, and ministries of health across the coun-

try, that these products are going to perform well when it comes to protecting privacy," said Richard Alvarez, President and CEO, Canada Health Infoway. "We also test the products to ensure they are interoperable with other technologies being implemented."

More recently, Infoway has introduced Certification Services to consumer health IT products. Consumers are increasingly asking for access to their own health information, but they're encountering the same conundrum – how to be sure a product is safe and secure, and that it will interoperate with a variety of other solutions.

TELUS health space, is the only consumer health IT platform that has achieved Infoway certification to date. The platform, powered by Microsoft's HealthVault, enables consumers to easily connect to personal health records, electronic medical records, portable health devices, and other healthcare applications. By accessing and tracking their health data, consumers are better able to take charge of their health – and to avoid hospital visits.

TELUS Health credits certification with giving its platform nationwide credibility. "Infoway is identified as the organization driving e-Health from a Canadian perspective," says TELUS Health president Paul Lepage.

"They've put in place very rigorous procedures, making sure they meet or exceed all federal standards," he says. "The certification really is a seal of approval, one that lets consumers and health authorities know that we've met strict standards."

One consumer health project running on TELUS health space is the Mental Health Engagement Network, which involves 400 patients in London, Ontario. Using health space, Lawson is evaluating the benefits of web and mobile technologies in support of those living with mental illness. "We're asking," says Lepage, "can you use smart technologies in an interaction with patients to create a more sustainable method of providing care?"

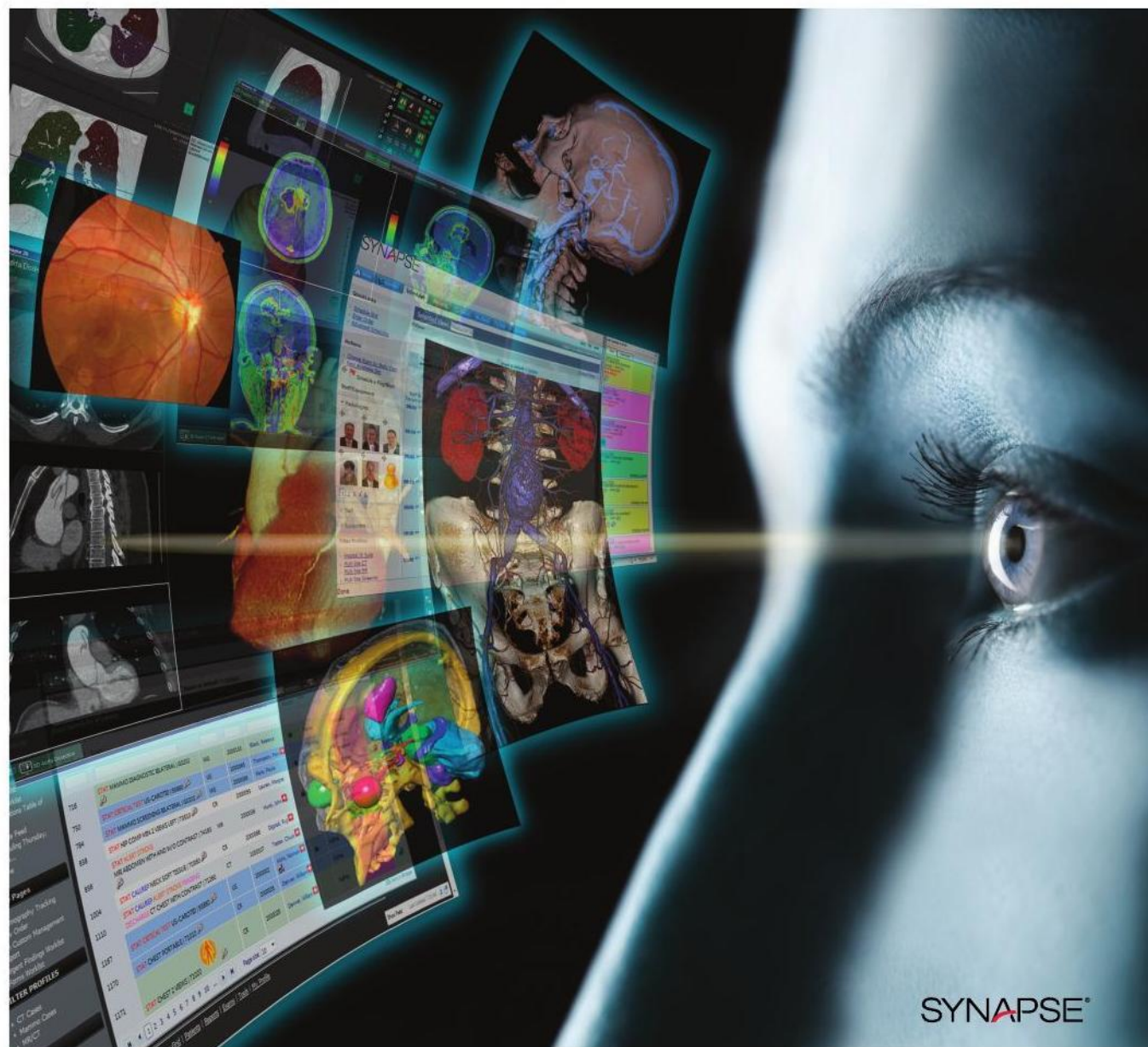
Each patient has a web app known as the Lawson SMART Record with which to monitor their health. Equipped with smartphones, they can track their moods, and set reminders to take their medications and do their exercises. What's more, healthcare providers have ongoing access to patients.

"The results so far have been amazing," says Lepage. "One of the mental healthcare providers said they've made more progress in the last few months with their patients than they have made in the previous two years."

In addition to the TELUS health space platform, Infoway has also certified two consumer health applications. One is Mihealth Global Systems' 'mihealth', a personalized web portal where patients enter, track and access their health data such as drug histories, lab test results and allergies. The other is Consulting Cadre International's Clarity Health Journal. This app takes a person's health details, whether in paper or electronic form, and re-engineers them into an updatable, electronic health journal that helps families manage their healthcare.

"Infoway is an independent voice, with an international brand," says Alvarez. "So when [the vendors] submit to our certification, as these applications have done, it certainly differentiates their innovative

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# NORTH YORK GENERAL HOSPITAL INCREASES ACCURACY IN THE MOMENTS THAT MATTER

To improve patient safety, North York General Hospital (NYGH) implemented electronic solutions at the point of care with support of a cross-functional team dedicated to changing the old way of doing things.

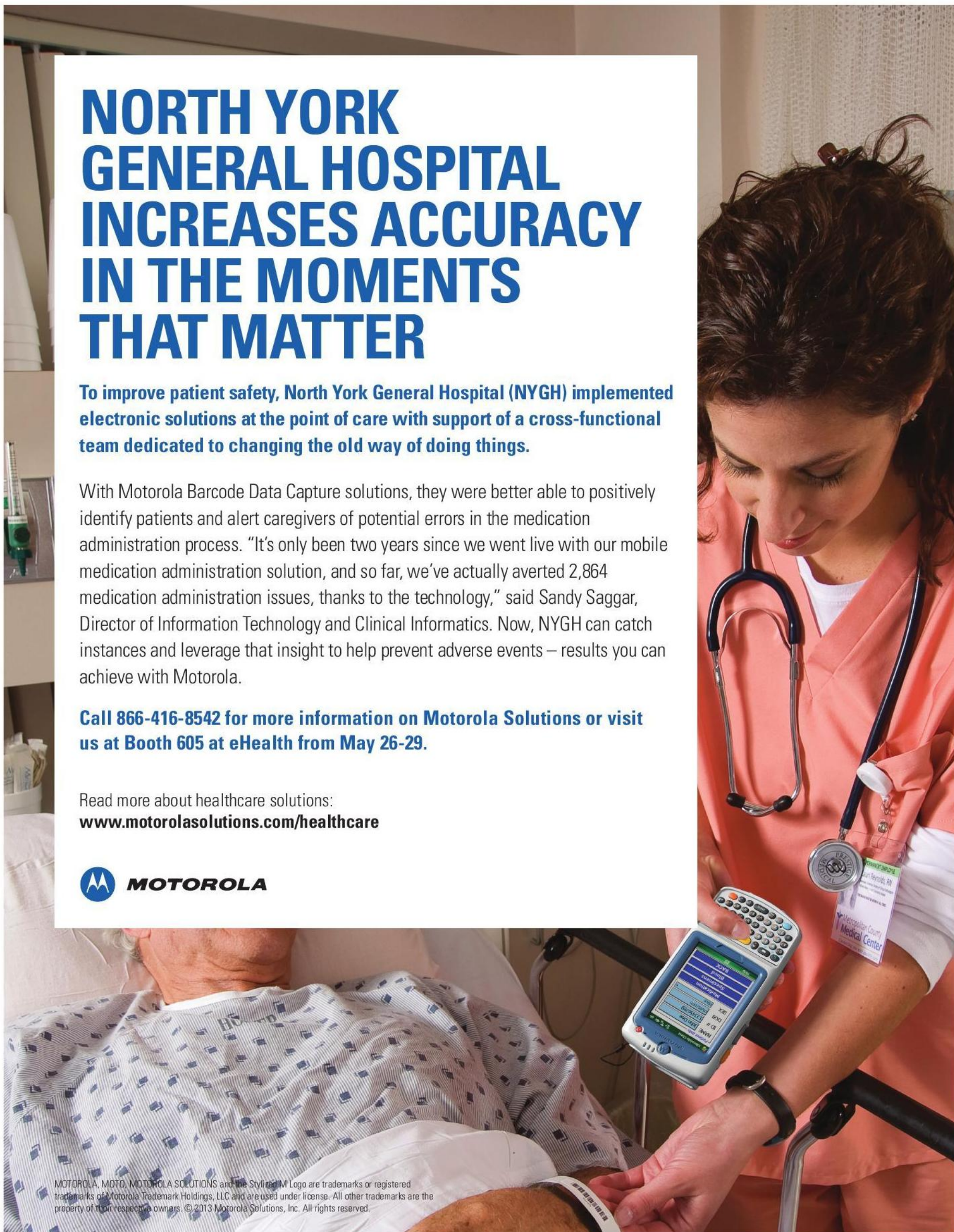
With Motorola Barcode Data Capture solutions, they were better able to positively identify patients and alert caregivers of potential errors in the medication administration process. "It's only been two years since we went live with our mobile medication administration solution, and so far, we've actually averted 2,864 medication administration issues, thanks to the technology," said Sandy Saggar, Director of Information Technology and Clinical Informatics. Now, NYGH can catch instances and leverage that insight to help prevent adverse events – results you can achieve with Motorola.

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# Do you have an information governance strategy?

Start planning now, as information governance will grow in importance over the next decade.

BY RICHARD IRVING, PHD

If your organization regularly collects and distributes large amounts of data, eventually you must address information governance. A quick search of the Internet will show you that there are as many approaches to information governance as there are vendors and consultants. Despite the variety of approaches, there are eight elements that should be common to any data governance strategy.

- Create responsibility for information governance at a senior level. This responsibility should not be solely in the hands of your CIO or Director of IT; it must be shared with the CEO and senior members of the clinical and administrative staff.

One approach is a senior level steering committee whose mandate is enterprise-wide information governance. The goal is to develop an organizational wide vision of how data is to be collected, stored, communicated, retained and removed.

The effort must address information quality and information risks, as well as collection issues, and should encompass organizational culture issues along with policies and procedures.

- Identify the current state of the organization in terms of data security, integrity and accuracy for each major data asset. This will include the process of data collection, storage and transmittal, as well as transformations that convert raw data to information.

A further step is to identify context issues that may be lost in this transformation. This may be a particularly hot issue with clinical data as I have discussed in a previous column.

- Review the organization's information security policies. This goes well beyond simple compliance issues and must address organizational culture. For ex-

ample, unless staff, both clinical and administrative, are convinced that data security is important, it will be impossible to have appropriate data security.

Furthermore, staff must be trained in the "Hows" of data security and not just the "Whys".

Developing this program is a joint effort between the information governance steering committee and the various groups of clinical and administrative staff.

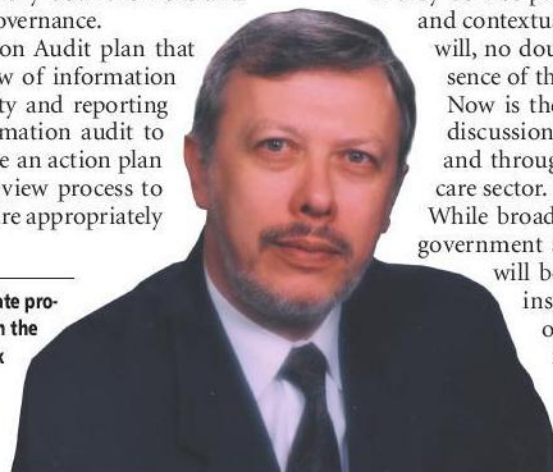
- Develop a long-term information governance

**Every institution should create its own Information Governance Steering Committee and begin the process of creating and implementing a plan.**

strategy that identifies the incremental steps required to have a comprehensive information governance plan. The plan must identify both the risks and benefits of information governance.

- Develop an Information Audit plan that provides a periodic review of information collection, storage, security and reporting procedures. For an information audit to have value; it must include an action plan to correct faults and a review process to ensure that these actions are appropriately implemented.

Richard Irving, PhD, is an associate professor of management science in the Schulich School of Business, York University, Toronto. If you have comments or ideas on this topic, he can be reached at [rirving@schulich.yorku.ca](mailto:rirving@schulich.yorku.ca).



- Establish appropriate links to the information governance plans of partner organizations. Clearly, there must be a strong connection to provincial and federal government agencies.

However, given the increasing integration of healthcare institutions, your governance initiative must be cognizant of the information governance plans of partner institutions.

- Develop contingency plans for mitigating the risks of data spills and errors.

- Develop a link between information quality and organizational effectiveness by tying organizational outcomes to information reliability, timeliness and accuracy.

Information governance will grow in importance over the next decade. As government increasingly resorts to healthcare analytics, individual institutions will be forced to continually review their information to ensure that it is accurate and that government is fully informed of contextual issues.

If they do not provide accurate information and contextual data, government policies will, no doubt, be developed in the absence of this input.

Now is the right time to begin these discussions at individual institutions and throughout the Canadian healthcare sector.

While broad based discussions between government and healthcare institutions will be useful, I believe that each institution should create its own Information Governance Steering Committee and begin the process of creating and implementing an information governance plan.

## ON FURTHER REFLECTION

### Magic buttons for getting your funding proposals approved

BY DOMINIC COVVEY

I wonder if there are magic buttons. Push them, and your proposals will be approved? Recently, I have been obsessing on the challenges of doing reviews. Most are aware that, if you submit an article to a journal or a conference, a review team will perform a process called 'peer review'. This means that, usually, two or more people who have a reasonable level of expertise will read your submission and make comments and a recommendation as to acceptance.

Funding proposals go through a similar process. If one applies to the major national funding agencies like the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes for Health Re-

search (CIHR), or the Social Sciences and Humanities Research Council (SSHRC), whatever is submitted will be peer reviewed prior to a decision about funding. This also occurs with more or less formality if other agencies are called on to consider funding a project. I get to see quite a few eHealth-related projects each year as a reviewer for various agencies.

What has amazed me is that proposals are put forward that target a variety of desired outcomes, but the mechanism for achieving these outcomes is often unclear and sometimes missing.

A second mistake submitters make in writing proposals for funding is not specifically and explicitly addressing the criteria for funding. I have to admit that, at times, I too have failed in this regard, often be-

cause I simply did not take adequate notice of the criteria or invest adequate time and effort to develop a good proposal.

I'd like to deal here with the issue of what I'll call 'Missing Mechanisms'. In the health domain, usually we are putting forward some sort of innovation that we intend to affect patient or other outcomes. I say 'other outcomes', because sometimes we might wish to affect provider satisfaction with the care process, utilization of the

healthcare system, and the like.

In one project, one of the major desired impacts was the reduction of patient utilization of the health system, especially related to repeated visits to the ER. When I reviewed the techniques that were to be used to achieve this and other outcomes, I ran into a problem. I could not find anything in the proposal that could be called an intervention that would cause the desired outcome.

I guess everyone in eHealth has the belief, or at least the hopeful fantasy, that using eHealth systems will benefit patients or the health system itself. The problem is that many desired outcomes require specific and effective interventions (such as special software that guides patient self-care).

CONTINUED ON PAGE 14



Dominic Covvey



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# Physicians, nurses and patients all make heavy use of mobile devices and apps

Easy-to-use devices are providing clinicians with information they need, anytime and anywhere.

BY ANDY SHAW

**Y**ou might think medical mobility has gone over the top, judging from the 2nd annual Mobile Healthcare Summit, organized by the Strategy Institute and held in a Toronto airport hotel recently.

"Well, I think we are certainly at the tipping point. We know of about 50,000 different apps that have been produced for eHealth already and I think there is enormous promise in that," said John Mattison, Mobile Healthcare's moderator in an exclusive interview, just after wrapping the speaker-rich, two-day conference.

Dr. Mattison should know. He is the assistant medical director and chief medical information officer at San Diego's mammoth Kaiser Permanente health management organization, one of the elite organizations to have achieved the HIMSS Level 7 designation. Currently, Dr. Mattison's keenest research and development interest is in providing direct-to-provider and direct-to-patient advanced clinical decision support via mobile applications.

"We have developed all these mobile applications, but to date, solid evidence of which one works for whom and why – is what we have been lacking," said Dr. Mattison. "But what's really exciting for me is that this year's conference has shown that's really beginning to change. And nowhere do I sense it more than from what we are seeing being developed in Canada."

There was no lack of conference speakers, both Canadian and American, who wanted to present solid evidence of how the mobile applications they had chosen to implement were either improving patient care or boosting provider productivity, or more often, doing both.

The conference's first presenter, for instance, Mark Farrow, VP and CIO at Hamilton Health Sciences Corporation (HHSC), in Hamilton, Ontario, was the first of the conference's 16 scheduled presentations to use "BYOD", an acronym related to making care givers more productive. Farrow presented a case study of how his six-hospital corporation had successfully taken a low-cost BYOD, or Bring-Your-Own-Device approach, to connecting up HHSC's 1,000 plus physicians using their own already-paid-for iPads, iPhones, BlackBerrys, Androids, and other mobile devices.

On Farrow's heels came two more case study presentations. One from Dr. Jeffrey Barkun, a professor of surgery and chief clinical officer for technology transition at McGill University Health Centre, in Montreal. Dr. Barkun showed how the combination of a mobile solution using bring-your-own smartphones, and the in-house development of easy-to-use apps, has resulted in quick acceptance by nurses, residents and physicians. That, in turn, has led to more efficient access to information at the point-of-care.

Next, Californian Benjamin Kanter MD, chief medical information officer (CMIO) at Palomar Pomerado Health (PPH) in San Diego, related how a mobile device-agnostic approach to the hospital's Medical Information Anytime Anywhere project to enhance the workflow around PPH's established

EHR, had improved both physician practices and patient care. Interestingly, Dr. Kanter's team has partnered with a private sector firm on software development, and the company will be commercializing the system in the near future.

Dennis Giokas, chief technology officer (CTO) for Canada Health Infoway, formally opened the conference with a keynote address on "Enhancing the Patient Experience Using Mobile Solutions." He gave context to the whole conference by citing the "nexus" of four powerful forces that have converged to give modern computing a new digital, development-shaping environment: information, mobile devices, social media, and cloud computing.

This nexus, he said, is "breaking medicine out of its cocoon", with a tip of the hat to author Dr. Eric Topol and his book along these lines, *The Creative Destruction of Medicine*. And Giokas had some surprising Canadian numbers to back that view up.

"When we look at mobile computing in health-

Skyscape (multiple resources for doctors, nurses, and medical students). And all function comfortably on iPads, iPhones, Androids, and BlackBerrys, among other mobile devices.

"Doctors are using mobile apps like these and online physician communities with the goal to confer, refer, and learn from the experts," said Giokas.

So clearly our doctors are no longer technology Luddites. Nor are hospital accountants and other healthcare bean counters as skeptical as they once were about mobile technology's promise to save gobs of money.

"We do know, of course, that in the past systems that were put in and expected to save a lot of money, have actually cost money, but a Deloitte study still suggests there will be some very significant savings in the not-too-distant future," said Giokas. Just take what Deloitte predicts remote patient monitoring alone can save the U.S. healthcare system: \$195 billion over 25 years – if remote patient monitoring is put in place effectively.

A similar "if" applies, Giokas pointed out, to remote patient monitoring benefits to patients: a 25 percent drop in care costs for the elderly; a reduction of 30 percent in maternal and pre-natal mortality rates; double the number of rural patients who can be reached by a doctor, and costs related to medical data collection could fall 24 percent.

But those dramatic percentage shifts pale, Giokas later pointed out in his presentation, compared to the public's and patients' interest.

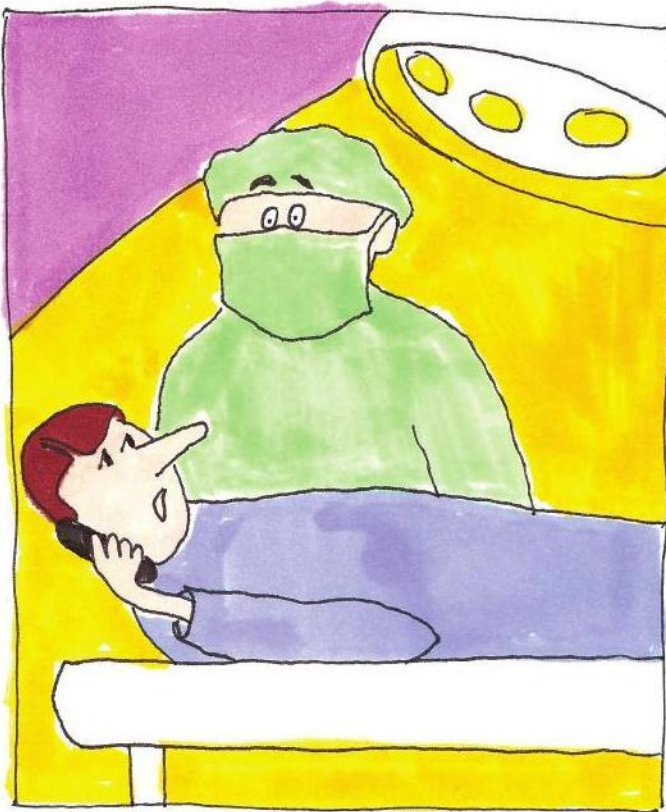
"The records show that the number of people world wide who downloaded a health app went up from 124 million in 2011 to 247 million in 2012," said Giokas. "That means the downloads nearly doubled in just one year!"

Numerous real-world case studies of mobile health successes were also on the conference agenda, including what the Innovation Acceleration Program at Boston Children's Hospital is achieving, presented by Naomi Fried, Chief Innovation Officer.

Joe Cafazzo, the engineering lead at Centre for Global eHealth Innovation in Toronto, told of what the Centre has figured out both physicians and patients can do best with mobile apps.

Three presenters unveiled to the conference how mobile devices have boosted productivity and care for mental health patients at the London Health Sciences Centre in London, Ontario. And near the end of the second day, Ida Sim, PhD, a professor of medicine at the University of California in San Francisco, revealed how she researched and then founded Open mHealth. It's an open-architecture initiative that conference moderator John Mattison believes will push device development beyond its current tipping point and make mobile healthcare truly pervasive.

"There's no doubt that, until recently, we have been living in the wild, wild west of mobile care, with a lot of snake oil and false promises," concluded Dr. Mattison. "But now we are beginning to see a number of very good apps rising above the others and really demonstrating their clinical, social, and financial value."



care today, we know that: 67 percent of Canadian family physicians now own smartphones; and 82 percent have used them for drug references; and 50 percent for clinical decision support. We also know that 30 percent of physicians now own an iPad with the majority of them, some 62 percent, using it for professional purposes," Giokas pointed out.

On the learning, social, and collaborative media fronts, Giokas reported that from their mobile devices: 52 percent of physicians have visited the website of Medscape (for news and continuing medical education credits); 44 percent of doctors belong to SERMO (largest physician exclusive online community); and the top downloaded apps by Canadian docs are Epocrates (drug interaction news and references), Lexi-Comp (pharmacology, dental, dosing, adverse reactions), MedCalc (clinical, bioscience calculator), Medscape (medical news, journals), and

# Bring Your Own Device: The wave has hit, and there's no going back

BY MARK FARROW

A tsunami of new technology is surging across all industries, including healthcare, and it's about to permanently alter the delivery of care. Cloud, big data, mobile and BYOD (bring your own device) are all creating a new paradigm, but it may be the last of these that requires our most urgent attention. BYOD refers to using a personal smartphone, tablet or laptop to do company work or access corporate applications.

As a mobile profession, physicians want access to patient information right at the point of care, and they don't want to use all kinds of devices. BYOD allows them to get to the information they need on a device of their choosing.

There's incredible demand for this type of computer usage. We even had one physician who travelled to Buffalo, N.Y., to get an iPhone before the devices were available in Canada.

At Hamilton Health Sciences, we couldn't predict the tablet and iPhone revolution, but we were ready for it. Luckily, we had already installed 1,500 access points across our five sites.

Now, we have 300 physicians who 'bring their own devices' and are connected to our network. We're expecting this trend will only continue.

Could this compromise the security and confidentiality of our corporate data? A key component to the BYOD program is putting in the technologies that will safeguard the data while allowing clinicians to use their own devices. This includes corporate policies surrounding access, as well as software policies that can be enforced onto the device, if needed.

At a minimum, hospitals and other healthcare organizations with a BYOD program should ensure the devices have password protection. As well, management should be able to track and/or wipe the device in the case of loss or change in employment.

Most of these policies involve common sense, but there are grey areas for policy makers, too. For instance, if you limit camera usage or non-work applications, you may infringe on personal freedoms and work styles. That may, in turn, lessen the appeal of a BYOD program.

Still, you don't want employees watching *Grey's Anatomy* while on the job – at least, not whole episodes! Not only should they be doing other things with their time, but such activities will eat up the available bandwidth on the network.

The good news is that technology is available today that can create flexible, mobile device management strategies. You can limit the way devices are used on the job without infringing on personal liberties. For example, allowing access to corporate data via Citrix will keep information in the data centre and prevent a footprint from being left on the device.

Creating a guest network in parallel to your internal network can also segregate the data, and in conjunction with tools like Citrix, can avoid issues of viruses or malware from entering the corporate network.

Today's firewalls and the ability to better route access can make this easier than most

would think possible. The tools also allow control of everything from the printing of data to being able to "geofence" locations, so that, for example, a smartphone camera may work in a limited fashion when within the network boundaries, and normally when the employee is away from work.

A word of caution, BYOD should also not be seen as a way of downloading costs onto the employee, but rather, as an incentive for both the employee and employer. Some groups in healthcare can benefit tremendously, such as physicians. No longer do organizations need to dictate

what device they can use and where. Instead, they can be provided with a safe and secure way to do their jobs on a device they were going to buy anyway.

Mark Farrow is Vice President & Chief Information Officer at Hamilton Health Sciences.

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## Dominic Covvey

CONTINUED FROM PAGE 10

Perhaps the most obvious example is related to something like influencing health system utilization behaviors. But other examples, like getting people to comply with a therapeutic regimen, or more generally, care for themselves if they have diabetes, are also good ones.

All of these require a system to have capabilities that motivate people. I see this need for motivation across much of the work that we do, especially related to patient portals focused on chronic disease management.

Motivation of the user to carry out behaviors is a significant challenge. Some-

times it isn't the technology itself that will be the effective agent, but things that are done around the system.

In one recent proposal I discovered that the effective agent was to be patient education.

While I have no doubt that education is an enabler of behaviors, most research indicates that education itself does not change behaviors, something proved by the military in its attempt to reduce sexually transmitted diseases.

Knowing about the disease and even seeing horrible pictures doesn't seem to have much impact. So, education may not be the central tool we need, although it can be helpful.

Unfortunately, experience with information systems in managing care and at-

tempting to influence care providers to follow clinical protocols indicates that there are problems. One example is that a relatively high percentage, even beyond 30 percent, of patients who initially use a system stopped using it for a variety of reasons. This has even been shown to be true when physicians are provided with reminders and they become inured to them and return to unguided behaviors. Because it is so difficult to keep users in the fold, this may explain why so many trials of systems have demonstrated minimal positive effects.

Dropouts mean that a system doesn't get to influence behaviors at all on a significant percentage of participants. But, even if users are kept engaged, motivation to follow a diet, use their medication properly, control their weight, and exercise is a fundamental challenge. A friend, a professor at the University of Waterloo, has spent a significant part of her career looking at how one can motivate people using systems.

The research that my friend did was originally focused on smoking cessation, certainly a difficult area. Later she began looking into topics like influencing patient engagement around surgery and the area of nutrition. I can summarize what has been learned from this type of research by saying that motivation is astoundingly difficult.

From these experiences I have learned a few things:

- If I am to expect an outcome, I have to perform specific interventions that can cause the outcome. Just having a system involved won't do it.

- I have to make sure that this intervention is applied to and used by anyone whom I expect to affect.

- I have to recognize that it is likely that a significant portion of the initial users of the system intended to provide direct patient care will cease using it before it achieves the desired effect.

- If the effects I desire require motivating the user, this is a special challenge and may

be the core challenge of the entire project.

- Where motivation is involved, we will need special expertise on our project team and likely have to involve colleagues from the psychosocial domain as well as natural language experts knowledgeable about motivation.

- While the central intervention is crucial, what I do around that intervention is extremely important. For example, it will do

**While I have no doubt that education is an enabler of behaviours, education itself does not change behaviours.**

no good to deal with the online care process if that process is not seamlessly integrated with the care process in the clinic.

If I am writing a proposal for funding, I must address all of these points if I want my project to be judged by my peers as worthy of funding.

What about the magic buttons?

One thing is to start at the desired outcomes and work backwards to create a causal chain that ensures the effects I target are connected to credible interventions that have the potential of producing them.

There is actually a second magic button, and that is to make sure that each of the funding agency's requirements and criteria are explicitly addressed in the proposal.

So, all of you who request funding, press on!

## Infoway certification gives consumers confidence

CONTINUED FROM PAGE 8

product from anybody else's. Canadians can use these products to make informed decisions with confidence."

Infoway is also fostering the rise of other innovative healthcare technologies for consumers.

"With the funding that we received from the federal government in March 2010, we invested in a number of consumer health solutions," said Jennifer Zelmer, senior vice president, clinical adoption and innovation, at Canada Health Infoway.

For the past year, Infoway has been sponsoring the ImagineNation Outcomes Challenge in order to support grassroots innovation across Canada and to spread the use of emerging applications.

"On the consumer side," said Zelmer, "we were looking for innovations in the areas of patient scheduling, such as being able to book your own appointment online or by mobile device. We're also looking at patient access to their own health information – such as being able to see your lab test results or to look up the complete list of your medications."

Significantly, a study commissioned by Infoway last year found that Canadians could save nearly 70 million hours if they were able to consult with their healthcare providers, access test results and request prescription renewals electronically. "Many of the solutions we invested in are now live, and we're seeing the impact on the ground," said Zelmer.

"And the solutions that people are most likely to use are the ones that connect them with their healthcare team."



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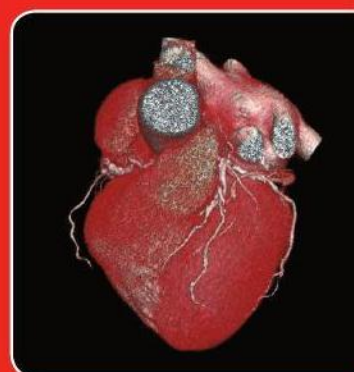
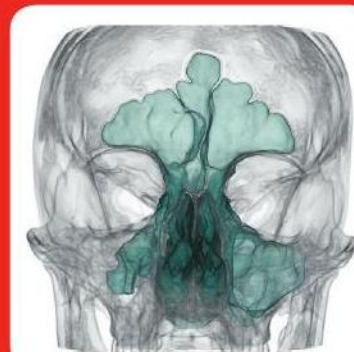
Venue: Stage West Ramada Plaza Hotel, Mississauga, Ontario  
5400 Dixie Road, Mississauga, Ontario  
To register, visit [www.toshiba.ca](http://www.toshiba.ca)

### "Topics-at-a-Glance" include:

- Experiences with Volumetric Imaging
- Microsievert Chest
- Liver Perfusion
- Dose Reduction with Volumetric Imaging
- The Role of CT in Oncology
- Cardiac Imaging
- Pediatric CT
- MSK Dynamic Joint Imaging
- Trauma CT – Ultra Helical
- Physics of Basic Helical vs. Volumetric Imaging

### Guest Speakers

- Professor Alain Blum – CHU Nancy, France
- Dr. Russel Bull – Royal Bournemouth Hospital, UK
- Dr. Marcus Chen – NIH, USA
- Dr. Catherine Coolens – UHN, Toronto
- Dr. Bernice Hoppel – Toshiba Medical Research
- Dr. Cheemun Lum – The Ottawa Hospital
- Dr. John Mayo – Vancouver General Hospital
- Dr. Narinder Paul – UHN, Toronto
- Dr. Daniel Podberesky – Lackland A F B, Texas
- Professor Patrik Rogalla – University of Toronto
- Dr. Steven Wolff – Lenox Hill Hospital, USA



**CHANCE TO WIN FREE TUITION FOR YOUR AIEC 2013 CE COURSE AND AN ANNUAL LICENSE TO MEDLANTIS.ORG**

Register for the 2013 International CT Symposium and have your name entered into a draw for one of two chances to win an all expense paid trip to Toronto to participate in an AIEC (Advanced Imaging Education Center) course of your choice (course tuition: up to \$7500.00 value). Your education package will include a one year license to Medlantis.org providing access to hundreds of hours of Medical Imaging educational resources, including the complete Thieme™ eRadiology and RadCases library. Applies to Symposium participants only. Free tuition applies to an AIEC course taken only during the 2013 calendar year.

**Draw Date:** April 12, 2013 (winner will be notified during the April 13th CT Symposium general session)



### Cardiac CT (41.5 CE Credits)

#### ADVANCED IMAGING AND EDUCATION CENTER, TORONTO

**SAVE THE DATE!** June 10-14, 2013 or September 9-13, 2013  
AIEC, Toronto General Hospital

The Advanced Imaging and Education Centre (AIEC) provides a state of the art educational environment. The AIEC is an initiative of the Joint Department of Medical Imaging, University Health Network, Mount Sinai Hospital, Women's College Hospital and the University of Toronto. AIEC offers interactive workstations, scanners and some of the best instructors in the industry to support clinicians in their continued pursuit of imaging excellence. This CE course is designed to provide a focused, comprehensive, and in-depth learning experience principally in CT coronary angiography.

- Principles of CT physics and image acquisition relevant to cardiac imaging
- Technical requirements for cardiac CT and dose reduction techniques
- Setting up a cardiac CT practice, taking all elements into account
- Real time work-up of live cases
- Artefact recognition and compensation



To register, please contact [ToshibaMedical@toshiba.ca](mailto:ToshibaMedical@toshiba.ca)

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