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INSIDE:

FOCUS REPORT:
ANALYTICS
PAGE 6

A CIO's experience

Glenn Lanteigne served as CIO of the South West LHIN in Ontario for three years. During this time, the region successfully implemented leading-edge projects and Lanteigne says the approach used could be emulated across the province.

Page 4

Real-world analytics

Vendors are now building analytics and business intelligence into a variety of systems. We profile new solutions for hospital management, radiology departments and dictation and transcription.

Page 6

Obamacare's errors

The ill-fated healthcare.gov website in the U.S., which was supposed to enable Americans to easily register for health insurance, failed not for technical reasons but through its management style.

Page 8

Radiological refinements

New technological advances were unveiled at the RSNA conference last December in Chicago. Chief among them were fast, full-organ CT scans without the need for



breathholds, along with CT exams with greatly reduced requirements for contrast agents.

Page 12

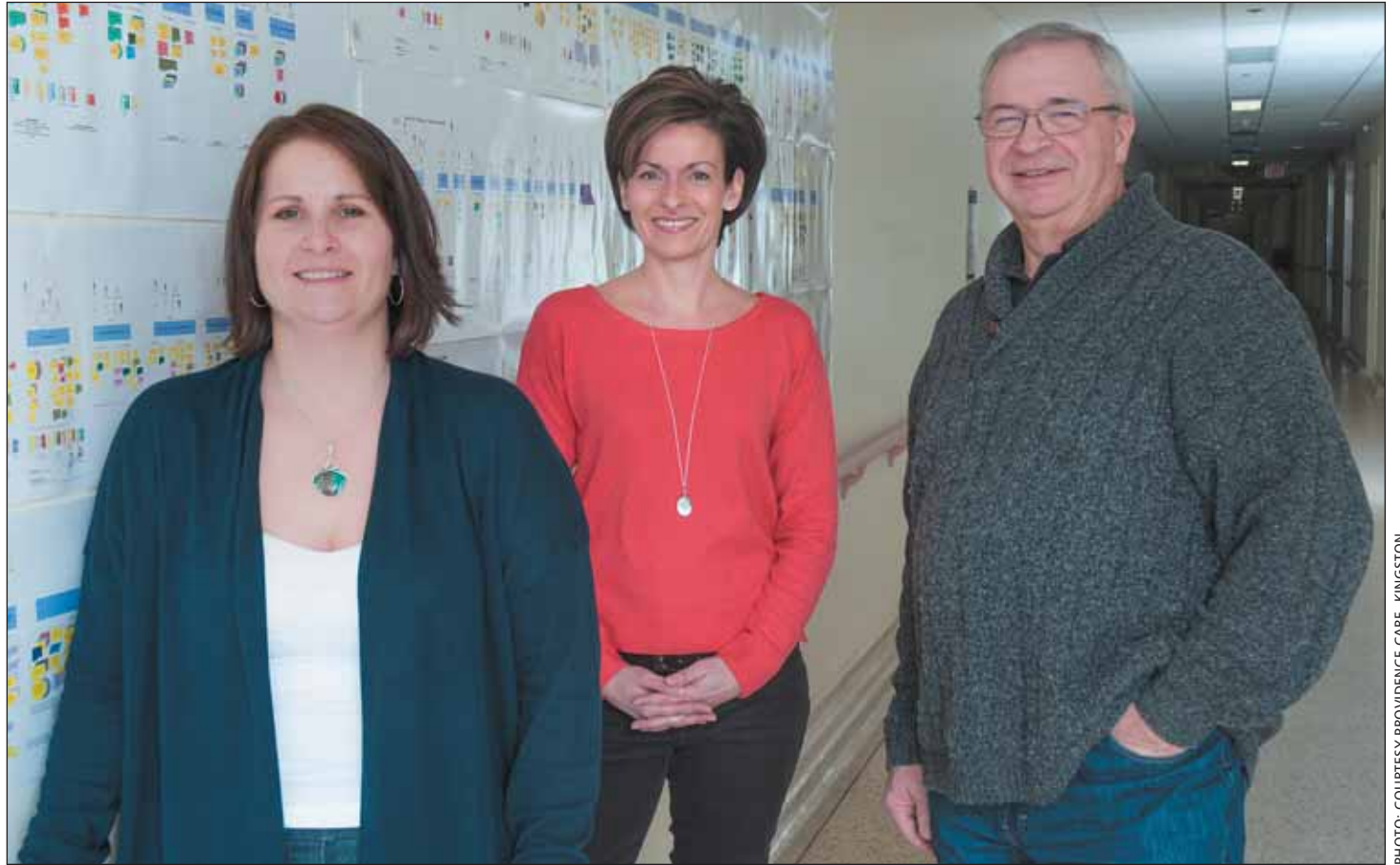


PHOTO: COURTESY PROVIDENCE CARE, KINGSTON

Not only has Providence Care, in Kingston, Ont., joined forces with Kingston General Hospital and Hotel Dieu Hospital to create a shared electronic patient record system, it has also implemented a re-engineering methodology called PaJMa to improve processes and patient flow. Pictured above are: Robin Saunders, Shari Brown and Mike McCabe, members of the team who lead the project. **SEE STORY BELOW.**

Shared EHR connects three Ontario hospital systems

BY JERRY ZEIDENBERG

KINGSTON, ONT. – Providence Care, a multi-site provider of aging, mental health and rehabilitative care, has joined a shared electronic patient record (ePR) system with Kingston General Hospital, an acute-care facility, and Hotel Dieu Hospital, which specializes in ambulatory services.

The shared system runs from a data centre at Kingston General Hospital, and with the addition of Providence Care, the joint electronic record covers perhaps the widest spectrum of activities among regional EHRs in Canada.

“The new ePR contains of a very wide mix of services – acute, mental health, community care, complex care, palliative and rehab,” commented Gillian Price, national director of projects for QuadraMed Canada,

The shared electronic record system runs from a data centre at Kingston General Hospital.

the company providing the clinical software. “It’s unlike anywhere else in Canada, and it’s quite an amazing story.”

For its part, QuadraMed was recently ac-

quired by Harris Corp., which is in turn owned by Constellation Software of Canada. Harris also owns MediSolution, which is contributing its financial, ADT and procurement software to the solution in Kingston.

In joining the shared solution, Providence Care is switching from a Meditech electronic record to the Quadramed system, which is also used by the other partners in Kingston.

“Over 90 percent of the patients at Providence Care also have a relationship with Kingston General and Hotel Dieu Hospitals,” said Dan Coghlan, Vice President Operations & Chief Financial Officer at Provi-

CONTINUED ON PAGE 2



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PHILIPS

EHR connects Providence Care with Kingston General and Hotel Dieu

CONTINUED FROM PAGE 1

dence Care. "And the majority of our physicians also practice at Kingston General Hospital and Hotel Dieu Hospital."

Coghlan said it would boost patient care and efficiency for all of the organizations if they used a shared electronic record. "Just think of the example of an emergency or trauma patient who can't speak for himself," commented Coghlan. "If we can access his record, the information can reach the hospital even before the patient gets there. That's the kind of thinking that was involved in our decision-making process."

Coghlan added that this scenario could be accomplished with other electronic records, but the integration wouldn't be as seamless.

Guy Bujold, account executive for QuadraMed, noted the regional system means the major healthcare providers in Kingston all share a common platform, which will offer physicians and other clinicians quick access to the latest information about their patients. "The chart travels electronically," said Bujold, saving time and trouble for patients and providers

when data about previous tests, medications and encounters are needed.

Overall, the shared ePR is expected to provide multiple benefits:

- The right information at the right time, for the right person, in the right format.
- Reduction in medical errors, due to better access to accurate and up-to-date information.
- Reduced need to transcribe orders, also resulting in improved patient safety.
- Better aggregation of data for management decision support.
- Increased patient satisfaction through improved quality of care.

Providence Care went live with the shared solution in October at its St. Mary's of the Lake site, which delivers complex care, specialized geriatrics, palliative care and rehab. A second site, specializing in mental health, was scheduled to go live in January 2014.

The mental health facility, noted Price, had been keeping records on paper, so the transition to electronic charts will be a major change – one that is expected to produce major gains in productivity and improvements in patient care.



Dan Coghlan, VP Operations & CFO.

A major component of the ePR is computerized provider order entry (CPOE), which means the mental health facility will automatically move from 0 on the HIMSS Analytics EMRAM ratings scale to 4. In comparison, most Ontario hospitals are at the HIMSS Analytics 2.5 level, and have yet to implement CPOE.

The HIMSS Analytics Electronic Medical Record Adoption Model measures EMR or EHR adoption and usage on a 0 to 7 scale.

The goal for the Kingston-area hospitals is to reach the highest HIMSS levels, 6

and 7. "That's where they will see the real gains in productivity," commented Price.

Clinicians using the shared solution at Kingston General Hospital and Hotel Dieu Hospital have been pleased with the system, which gives them easy access to patient data while working at either site. Many of the clinicians are cross-appointed at two or three different organizations, and the common platform means they can obtain the information they require, when they need it.

Interfaces have also been built to outside physician clinics, enabling referring physicians to gain access to test results and other information about their patients. An expansion of this secure system is expected in the future.

The shared system could easily accommodate additional regional or provincial partners, as the software is scalable. Some organizations have already made inquiries about joining the shared platform, to obtain lower IT costs and improved functionality through a joint solution.

By adopting a common platform, clinicians throughout the region will be able to standardize many of their practices, creating commonly accepted terms and standards of care. Standardization is also expected to raise quality and productivity.

In addition to CPOE, the electronic charting system includes nursing documentation and assessments, physician access, and clinical decision support.

Interfaces to third-party solutions have also been built, as the system makes use of Sunquest and LifeLabs for laboratory information, Nuance for dictation and transcription, Computrition for dietary services, and MediSolution (which itself acquired Ormed) for financial and inventory control applications.

MediSolution's Virtuo MIS AR is integrated with the ADT for accounts receivable processing and OHIP billing. "We are pleased to be an integrated technology partner of Providence Care, offering solutions that automate and streamline administrative workflow," said Michael Conn, national account manager for MediSolution.

Advanced financial tools, available to all of the partner organizations, will enable them to perform improved case costing. It's expected that the Ontario Ministry of Health will in the future require more extensive case costing information from all healthcare facilities.

Price observed that the consolidation of electronic systems in Kingston wasn't mandated by any government or health authority, but came from the partners themselves to improve the delivery of care.

CONTINUED ON PAGE 14

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Former CIO says south west Ontario's success should be emulated

Tank commanders have a knack for seeing opportunities for engagement and the obstacles that lie in their way more sharply than others. That's just how Glenn Lanteigne saw things when first graduating from the Royal Military College in Kingston, Ontario as an Armoured Corps officer. But after a budget planning stint at Canadian Forces Headquarters in Ottawa, he rolled into the private sector, healthcare first, with what was GE Medical Systems, becoming a Six Sigma Black Belt.

Those quality control techniques and his leadership skills stood him well through a number of other private sector posts, ending with Senior Director, Healthcare for Telus, based in Toronto. For the past three years, he's been recognized for his innovative, make-the-best-of-what-you've-got-first approach to being the CIO of Ontario's South West and Waterloo Wellington local health integration network (LHIN).

CHT: Glenn, tell us more of your story.

Lanteigne: In the three years I spent as CIO, I saw a lot of good things happening with e-health in Ontario and across Canada. e-health is seeing some very positive results, and they all deserve visibility. Transparency is always important in the public sector, but I think it's especially important in e-health because we need that public trust to strengthen confidence and keep e-health moving in the right direction.

CHT: So, what then would you say were your greatest successes over the last three years?

Lanteigne: When I came on the LHIN in London three years ago, the perception of e-health as a "brand", if you will, was low. Success resulted from a coherent policy framework and a set of operating standards that ensured the most effective use of funds. We leveraged current investments; stakeholders were actively engaged and listened to through a wide variety of channels including social media, and there was open and transparent collaboration with the private sector. The shift from being focused on projects and technology to programs and governance was critical. The situation called for change: transformation and growth as well as a sound e-health strategy supported by good governance. So in this way, and through the efforts of many, we've been part of Ontario's climb back to being recognized as a national leader.

CHT: Tell us about how that good governance worked.

Lanteigne: It was based on the "cluster model" of development, which was created initially to better suit the scale of e-health in Ontario. Having an organized cluster allowed us to leverage our current investments in technology; it enabled us to start innovating the way we delivered and sustained healthcare.

CHT: In that approach, can you give us an example of technologies already invested in that were put to better use? And what roadblocks your team faced in the process?

Lanteigne: Some of the technologies that we built on included ClinicalConnect, as the viewer for cross-continuum patient in-

formation; Information Decision Support (IDS) as the data and analytics platform; the South West Interface to Regional EMRs (SPIRE) that enabled download of hospital records to physician EMRs, and eSHIFT, a mobile platform that supports care in the home, as well as thehealthline.ca, a system navigation tool for patients and providers.

In addition to e-health record technologies already developed by the province, one group of technologies we targeted were those that help keep our patients in the home using home sensors. The major hurdle we faced was in getting the healthcare system comfortable with funding technologies for the home.



Glenn Lanteigne

CHT: One other major hurdle, which I know you've spoken about before, is procurement.

Lanteigne: It's an issue not only in Ontario, but right across Canada. Procurement has been made so difficult it has slowed innovation and delivery. Vendors, for example, who want to engage in the procurement process find it very costly, complicated, and time consuming as a result of healthcare institutions over-managing risk. But that's changing. Health system leaders are encouraging procurement agents to exercise common sense; procure only when needed; leverage current investments to ensure value for money; and be more open to col-

laboration with the private sector. Over the past three years, we held numerous private sector engagement and innovation sessions led by the South West LHIN.

CHT: What was it like to be a CIO after the e-health scandal, when LHINs were also getting a fair share of scrutiny? How did you handle the situation?

Lanteigne: It was a challenge, no doubt, championing e-health in a LHIN after the summer of 2009. I think that coming from the private sector and serving as an officer in the military helped me there. With that kind of approach, you conduct a current state assessment; create a strategic plan; set up a framework with operating standards; implement the tactics; create contingencies; form alliances; have good intelligence and communication; and act with integrity, consistency, and fairness. The result was a complete turnaround that produced a sustainable, cultural change and gave us results we could measure against our financial and resource constraints.

CHT: How does leadership and team building come into play here?

Lanteigne: Well you definitely need a team around you if you are going to take that approach. In order to implement a strategic plan, you need people and they need to operate with the esprit de corps of a high performance unit. You also need a sense of purpose and a clear vision of where you're going. The culture we fostered of a winning, can-do team drove our results. We were dedicated and committed to delivering on our commitments ensuring that all of us were aligned with the strategy and our mandate.

In e-health, you need to set the tone right from the top and lead the governance as well as be accountable. My approach was also to be very people-focused. I was honoured to be ranked as the #1 leader in the last staff survey conducted before I left.

CHT: What would you say really happened with the Ontario diabetes registry?

Lanteigne: That's a hot potato, but let me answer it directly. It wasn't really the diabetes registry itself that was the problem; it was the approach of making it a centrally delivered service. In a province of Ontario's scale, that's an unachievable feat, especially without local delivery structures in place. Also, there were a lot of other regional and local technology solutions out there that were already managing diabetes and other chronic diseases. So a large centralized system was obsolete at the outset. It's a main reason why the project took so long, and in taking so long it lost its vital momentum. When you lose momentum, everyone loses interest.

It is an important lesson however, because the same issues will challenge any provincial initiative that ignores the strength and sustainability of local delivery. I think that the delivery mechanism set up in South Western Ontario to deliver the electronic health record (EHR) and other associated e-health projects should be looked at closely as a new way of implementing provincial initiatives at the local level.



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Analytics and workflow improvement the big stories at RSNA 2013

BY JERRY ZEIDENBERG

CHICAGO – Some of the most interesting and significant product announcements at the recent RSNA conference, held in December, weren't about the traditional imaging modalities, like CT and MRI. Instead, they involved eye-popping improvements in process management and analytics.

Agfa HealthCare, for example, was the talk of the McCormick Place convention centre with its new TrackStar, a system that combines RFID tags with analytics. A new generation of tiny, battery-powered tags can be attached to everything that moves through hospital – medical devices, surgical equipment, staff and patients.

As in other RFID systems, you can then find out where everything is at any time. It's all tracked on a visual floor plan of the hospital, and a Google-like search for various items shows where they are throughout the hospital. This has all been done before in RFID systems, but what's new is the combination with business intelligence and analytics. TrackStar also measures

who is doing what, and how long things are taking to be accomplished.

"You can see, in real-time, that one room is taking 60 minutes to perform tests, while another is doing the job in 45 minutes," commented Jim Thornhill, Agfa HealthCare's North American director of service marketing. "You can then find out why one is faster than another, so you can improve patient flow in the hospital."

Tiny tags can be attached to all surgical equipment, including sponges, so that nothing is ever left inside a patient – which is a real problem in healthcare today, despite the efforts made by OR physicians and nurses using checklists. The miniscule tags are already commonplace in the retail industry – Walmart and others have been using them to track inventory and analyze business trends.

Agfa demonstrated a nifty application for hand-washing compliance at their booth, showing how the system is alerted when a person washes their hands at a particular station. Andy Hind, vice president at Agfa HealthCare, demonstrated by walking over to a Purell dispenser and washing up. The system recognized the tag he was wearing, and the episode immedi-

ately showed up on the computer screen 20 metres away.

The real-time system can be used enterprise-wide, showing who is washing their hands after meeting with patients, and who is not. "No care-giver will want to be seen as not washing his or her hands," commented Thornhill. "Because they

Tiny tags can be attached to all surgical equipment, including sponges, so that nothing is ever left inside a patient.

know stats are being collected, they're more likely to wash their hands. It's self-modifying behaviour."

Thornhill commented on the seriousness of hand-washing in hospitals. "We know there's only 10 percent to 36 percent compliance with hand-washing in hospitals. At the same time, there are an estimated 200,000 deaths a year because of hospital-acquired infections."

Not only can you chart which individuals are best – or worst – at hand-washing, you can also see which departments are

most compliant. Setting up competitions for the highest compliance rates is an effective way of boosting hand-washing in a good-natured way, giving bragging rights to the high-achievers.

Agfa has partnered with American RFID Solutions, a leader in the field, to create the new solution. Testing has been under way at Resurrection Surgery Center, in Chicago.

TrackStar can visually show the location of equipment, patients and staff, all in real-time. That's a useful tool for locating clinicians in an emergency situation; it is also helpful for finding needed equipment – like pumps and wheelchairs.

It can graphically slice and dice all kinds of information, showing how a patient spent his or her day. "You can track and trace how long the patient was in different places," said Thornhill, who showed the length-of-stay for a patient in a coronary care unit, ER, geriatrics, physiotherapy and psychiatry.

The system can also monitor bed turn-arounds; the system can notify staff as soon as a bed is vacated, so it can be readied for the next patient. "It's based on real-time events, not when a staff person remembers to make a phone call," said Thornhill.

TrackStar can be used as a performance

Mihealth extends patient-doctor communications, includes pharmacies

BY ROSIE LOMBARDI

Patients are clamouring for more personal medical data and better communications with their doctors – and the healthcare sector needs to find a secure way to do that. One solution that is gaining traction is called mihealth, a messaging and personal health record (PHR) system which has been operational since 2011. The system was developed by Dr. Wendy Graham, founder and CEO of Toronto-based mihealth Global Systems and a family doctor with over 20 years practice experience. Today, several thousand patients are using mihealth in hospitals and clinics across Ontario and beyond.

Mihealth has first-class security credentials. Both the Privacy Commissioners of Ontario and Alberta have accepted the system, and Infoway granted the company Consumer Health Certification in 2011 after an extensive examination of its privacy and security framework. "Patients want and expect the same controls and convenience they get from banking systems in their healthcare systems," says Dr. Graham.

The system is designed to empower patients with the information they need to take better control of their health. Mihealth allows patients to maintain their own personal health records, with medical information that has been validated and downloaded by their physicians. This data is stored on the patient's smart phone or computer so they can review and display their information anytime they need it. And it offers a secure messaging system that allows bi-directional communication between doctors and

patients for scheduling appointments, downloading lab results, and queries.

The company is currently extending its capabilities in several key areas. "We've added specialist doctors and several major drug stores to the circle of care in which patients can exchange information. We already have a Shoppers Drug Mart in Scarborough, Ont., that's using mihealth with patients," says Dr. Graham.

Mihealth has also introduced features to allow patients to download biometric data from medical devices such as blood pressure cuffs and glucometers. "All this data can be stored in mihealth now. And we're integrated with BodyGuardian, which is a 30-day cardiac monitoring patch."

While many EMR systems and medical institutions already offer patient portals that provide some of these features, they only connect to one provider in most cases. What distinguishes mihealth is that it allows patients to knit together a complete, longitudinal record from multiple providers and PHRs.

"We're not competing with other portals, we're complementing them. So if you go to doctors A, B, C or hospitals X, Y, Z in different places and countries, you'll take all your data with you as opposed to just having access to one EMR and one portal," says Dr. Graham.

Mihealth recently entered into a partnership with Microsoft to use their HealthVault platform in conjunction with their system. While the two may appear to be competitors at first blush, they actually complement each other, says Peter Jones, industry lead for healthcare at Microsoft Canada.

"The spirit of HealthVault is to allow a number of PHRs to connect and leverage that platform to share information. There are multiple PHR vendors that will sit on top of HealthVault to gain access to over 300 medical applications developed by Microsoft and its partners. Patients can also connect with over 200 biometric monitoring and medical devices, such as glucometers."

HealthVault's relationship with PHR providers brings reciprocal benefits, as they're responsible for building connections with EMR vendors, he adds. "HealthVault doesn't connect to any specific EMR unless a partner builds that connection. So we extend our offerings

Mihealth has introduced features to allow patients to download biometric data from medical devices.

via our PHR partners, and in return, they add those connections back into HealthVault."

In like fashion, mihealth will be building a secure connection to Microsoft's Skype. "Users can then leverage Skype for video conferencing and real-time communications," says Jones.

The partnership with Microsoft allows a smaller player like mihealth to extend its geographic reach and access more data, as many portals are starting to use HealthVault as their data repositories. "So say you're in the UK and you have EMR data in mihealth from Ontario, and then a UK provider inputs more data about you into HealthVault.

That data can be pushed into mihealth from HealthVault and accessed anywhere when you travel," says Graham.

These features bring convenience and peace of mind to Louise Lugli, a retired school teacher who travels extensively despite her medical issues. "Because I live in North Bay, I've had my hip replacement done at Mount Sinai Hospital in Toronto, my spinal stenosis done at Scarborough General, and my lungs looked at by a thoracic surgeon in Sudbury. But I have my whole medical history on my iPad if something happens when I'm in Mexico. And my daughter has the permissions needed to access my mihealth record too," says Lugli.

Mihealth is involved in a pilot program to study how doctors and patients can make best use of the system. About 200 patients are using mihealth in conjunction with the multidisciplinary members of the Stratford Family Health Team.

While people with complex chronic conditions are obvious candidates for mihealth, a surprising finding is that a significant percentage of people who sign up are not in this category, says Dr. Graham. "The person that wants to use it is usually female, between the ages of 25 to 65, about 60 percent of the time. The really high-end users are the sandwich generation who are looking after the medical needs of their children, elderly parents and spouses."

Uptake of the service has been rapid at the Stratford Family Health Team, one of mihealth's clinic clients, as patients are eager to make use of mihealth's convenience. "Patients are keen to be partners in their health," says Dr. Graham.

monitoring system – it shows by department and staff member who is spending the most of least time with patients. Management can decide whether that’s a good thing, or whether improvements are necessary.

You can also establish a ‘patient frustration index’, showing the wait times for various tests and procedures, by department and caregiver. “You can then say to various caregivers, everyone else is doing it in 10 minutes, and you’re doing it in 30. Why?”

Also on the analytics front, ABS Systems of Toronto, demonstrated its business intelligence solution for radiology and cardiology departments at RSNA ‘13.

ABS has a long history in business intelligence, and for the past five years has provided Toronto’s University Health Network and its joint imaging department partners

With easy-to-use analytics, physicians and staff can spot bottlenecks and determine what to do about them.

at Mount Sinai Hospital and Women’s College Hospital with its analytics solution.

“We’ve developed an easy-to-use analytics system,” said Oren Chervinsky, executive VP of ABS. “Doctors didn’t go to medical school to learn analytics, so we’ve created a very intuitive system for them.”

The system provides basic reporting, with some 20 pre-defined reports. It also has more advanced features, like time-series analysis, cross tabs and correlations, enabling doctors and administrators to quickly spot problem areas.

“They can see if there’s a bottleneck in one room as opposed to another,” said Chervinsky, or whether one site at a hospital is performing better than another. “But the software also helps them figure out what to do next. Even more importantly, it helps them solve problems like, ‘why am I spending more in one room than in another?’”

According to Chervinsky, the software allows users to find answers in minutes. That compares with the days or weeks that are often needed to analyze trends in hospitals. What’s more, he says the system is much easier to use than BI systems that are traditionally used in hospitals and other organizations.

ABS recently scored a big win by signing a contract with Alberta AIM (a multi-stakeholder organization in Alberta); the Toronto company will provide its solution to the Alberta healthcare quality improvement program, so that healthcare teams can analyze how they deliver care and make improvements accordingly.

A contract with hospitals in northern Ontario is also on the horizon; ABS will soon supply a number of hospitals in northern Ontario with a business intelligence system for their shared information system. Chervinsky noted that ABS has created a special version of its solution, one that has been tailored to the needs of the northern hospitals.

He observed that the next big wave in BI for healthcare won’t be technological, as powerful algorithms and concepts already exist. Instead, it will involve the benefits derived from comparing practices and outcomes across multiple sites. “You can then compare what’s being done and attain a set of best practices,” he said.

M*modal, a large dictation and transcription company based in Franklin, Tenn., demonstrated recent innovations in adding intelligence to D/T. In particular, it’s offering a new version of its radiology product with analytics, quality-improvement and workflow capabilities, said chief scientist Dr. Juergen Fritsch.

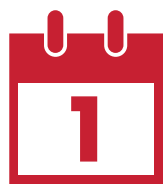
For example, “A side-panel [on the screen] presents additional information

that comes from the EMR and other sources, including oncology and pathology,” said Dr. Fritsch. In this way, the radiologist can see what happens to the patient as he or she continues his or her journey through the hospital.

“A radiologist often doesn’t know whether his diagnosis was right,” he said. “This shows whether he was right or wrong, and enables him to score himself.

It’s a feedback loop that results in a smarter worker.” M*modal won a huge D/T contract in Canada at the end of 2012; it was the winning bidder on a deal to supply all of the health authorities in British Columbia’s lower mainland with its solution. The cloud-based system was selected as the sole dictation platform to be used by 10,000 physicians in 38 hospitals and medical centres.

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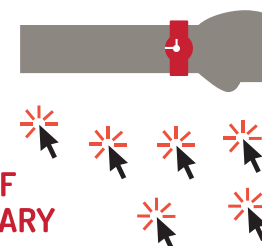
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On India, industry, and attaining quality in healthcare delivery

Problems of quality persist in healthcare in both India and Canada.

BY RICHARD IRVING, PHD

I am currently writing this column from Hyderabad, India, where I am teaching in the Schulich MBA program for eight weeks. During my visit, I was invited to a conference at the Indian School of Business and attended a session on healthcare. The general discussion would be familiar to most of you, though the problems faced in healthcare in India are orders of magnitude more difficult than we face in Ontario.

The quote I heard most often was that you went to a private hospital to get better and went to a public hospital to die. I hope that this is an exaggeration, but given that doctors receive a very low wage at public institutions in India, most of them do spend the bulk of their time and effort in the private sector.

One speaker I found to be of particular interest was Dr. Santam Chattapadhay, who is the CEO of Nationwide Doctors, an organization that focuses on primary healthcare. He spoke about quality and how to incentivize doctors to provide quality care. He first addressed the question of how to measure quality in primary care. When Dr. Chattapadhay spoke with patients he discovered results that may strike a chord with you. The patients' main concerns were getting better, about long wait times and wanting to be heard by the doctor. Interestingly, those same concerns were described by the CEO of a private US clinic who spoke at a conference I attended last winter.

Dr. Chattapadhay went on to discuss the issue of changing behavior. Measuring concerns is one thing, addressing them is more difficult. Nationwide Doctors believes that the way to change behavior is to change the remuneration model. Nationwide has created a re-

muneration scheme whereby a doctor receives a 25 percent bonus if the patient is satisfied, based on exit interviews, and follow-up appointments that measure waiting time, effectiveness of treatment and the degree to which their concerns and complaints were heard and dealt with.

Patient satisfaction is only one dimension of quality healthcare; however it is an important one for pri-

Making return appointments for additional issues at the doctor's office amounts to re-work, and it takes a significant toll on healthcare resources.

ivate systems and should be a concern for public healthcare systems as well.

A second speaker at the conference, Dr. Stephen Samutt, the co-chair of the Wharton healthcare program, also addressed the issue of quality of healthcare. His conclusion was that the cost of poor quality is very high. While he did not allude directly to Total Quality Management (TQM), his comments were in line with the principles of TQM and Lean Systems. Some of these

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principles are beginning to appear in healthcare in Canada. I see articles and case studies about re-designing workspaces to make clinical care more efficient. Examples include restructuring laboratories and clinical spaces to reduce movement and handling of patients, samples, and information.

One element I have not heard discussed is the issue of 'rework' or defects. In manufacturing, defects are variations from specifications and such programs as Six Sigma are designed to either eliminate rework and defects or reduce them to a vanishing small percentage. In healthcare, we all hear about the dramatic events of a botched surgery, inappropriate drug prescriptions and so on. I think a bigger issue is a different form of rework.

When you go to see your physician about a complaint, wait 20 to 60 minutes, and then while seeing the physician voice another complaint, what do you

hear? Often, it is to make an appointment and come back. This is essentially rework, and I believe that it is taking a significant toll on healthcare resources as well as your time. This of course ties into physician remuneration. So your homework is this. What has to change in how we pay doctors, how we schedule patients and how the basic healthcare system is organized to achieve TQM, Six Sigma and Lean Systems? Consulting studies and government reports have their place, but until the frontline healthcare professionals embrace these principles, I doubt much will change.

REBOOTING eHEALTH

Obamacare, eHealth skill sets, and questions, questions, questions

BY DOMINIC COVVEY

I am sure that many of you have been following the debacle of the Obamacare website. Officially known as the Affordable Care Act, Obamacare is one of the greatest advances in healthcare financing in the United States since the introduction of Medicare. Many Presidents and Congressmen have tried and failed to do something like it. To realize its importance, one must recognize that health care in the U.S. is extremely expensive – though not proportionally effective – and that over 40 million Americans lack any form of health insurance.

I have had the opportunity to work with hospitals in the U.S. and to visit both Medicare clinics and emergency departments during my consulting career in the 1980s and 90s. Even when care can be accessed, facilities are unbelievably crowded

and care is often very impersonal. I have often reflected that a dog or cat will be treated better than a human lacking proper insurance.

The demand for affordable insurance guaranteed that Obamacare's healthcare.gov enrollment portal would need to handle high-volumes of enquiries. You probably heard through CNN or other media that, when registration first started, virtually everyone who signed onto the Obamacare website failed to get access. I believe fewer than several thousand succeeded in the first month.

You may be of the political view that Obamacare is inappropriate. Certainly many Republicans in the United States believe that is the case. There are even Democrats who object to the introduction of yet another socialized system, especially one with financial implications as great as this one. Or, you may recog-

nize the desperate need for healthcare of a frail sector of humanity living sometimes in third world conditions in a first world country. I will not take a position here as my interest has nothing to do with politics.



Dominic Covvey

My interest is in the domain of eHealth. We all need to recognize that eHealth goes beyond supporting the clinical and operational aspects of the healthcare system, and includes the administrative side of this crucial service on which we all depend.

The first thing I want to assert is that creating the Obamacare website is definitely an eHealth intervention.

Further, it is a crucial eHealth intervention! Millions of people need to find some way of getting care that is consistent, high quality, humane and accessible. This website is their primary means of accessing the opportunity to get this kind of care. Well, folks, we purveyors of eHealth blew it! Given the importance of this intervention, I think we need to ask ourselves some serious questions. I'd like very much to get answers from you or just your thoughts about how this could have been done better. But, first, some questions.

What in the name of god caused a bunch of intelligent people to put a website into operation without doing end-to-end testing? Were all of these people simply too busy to recognize this crucial step? Were they all incompetent? What was going on in their minds?

I hope there is a study done of

CONTINUED ON PAGE 9

Dominic Covvey

CONTINUED FROM PAGE 8

what occurred and that we get to read about what actually happened and learn some very important lessons. However, all we can do now is visit the accident site...and there is no NTSB to help us.

Assuming the team was intelligent, was not incompetent and was of adequate complement, there are other occurrences that could explain things. For example, political pressure: “you’ve got to get it done, no matter what (key a Dilbert scene here!)” Or maybe it was a failure to estimate the likely volume of simultaneous users? Frankly, I find that hard to believe, but I guess it’s possible. Even a quick, back of the envelope calculation with a number of assumptions would convince someone that millions of people would want access and they would likely do it during the daytime or evening hours and modeling could surely be done to determine loads. Was this done? If not, why not?

I don’t think there has been an eHealth event since the Ontario eHealth catastrophe, which set us back several years, that has bothered me as much as this situation.

I have no doubt that political pressure played a part. Let’s explore that one. It would seem that we learned nothing

What in the name of God caused a bunch of intelligent people to put a website into operation without end-to-end testing?

from the Challenger disaster that ended up in extinguishing the life of Christa McAuliffe and six other astronauts. In this case, management put pressure on the engineers asking them to “put on your management hat” and allow the rocket to fly despite freezing temperatures and previous knowledge of the failure of seals to work properly. Then there is the almost daily reality of ‘get-home-itis’, where pilots, particularly in small planes, just can’t wait to get home and blunder into storms or run out of fuel and find themselves at the scene of a crash and their own demise.

Why didn’t someone in the team say: “We aren’t ready; put a hold on this and let’s do it correctly”? Why not? As professional engineers, pilots, eHealth Professionals, or anyone who holds people’s lives to some degree in their hands, we have to be able to say “No!”, “Stop!”, or even “I quit!” Somebody MUST blow the whistle!

Often, in interviews, when I played the role of recruiter, I would ask people how to deal with a certain high-conflict situation, like a project that was going awry. They would first answer with some basic solution. I then asked them what if that didn’t work? They’d usually give me a more detailed and somewhat more resourceful answer. Then I asked them what if that didn’t work? And I’d keep asking them that question: “And what if that didn’t work?” There were only a few who would say, then I’d resign. Man, that takes real courage – heroism even! And the Obamacare website team apparently had no heroes!

While we were fascinated with technology, while we were advancing our careers, while we were building up our curricula vitae, while we were schmoozing with the

uppity ups, eHealth became central to life itself. People became dependent on it! They came to need it to make good decisions and to properly care for people. Businesses, like hospitals and providers offices, now can be damaged by eHealth failures, incompetence, and, perhaps most importantly, our inability to say “We are not ready!”, to say “Stop!” and to stand firm (and sometimes alone) on our well-founded convictions.

The Obamacare website is now slowly recovering. It has cost around \$1 billion.

It has at least begun to be able to carry the load and to address the challenge for which it was created. But, its initial failure has served as a means for politicians who would abolish the entire program [d1] to possibly have their way. For millions of Americans, that is damned serious! Why the hell can’t we absorb the message that our work is central to the future of health care, is depended on by millions, deserves even better consideration than rockets filled with astronauts or planes with their pilots!

We need to be convinced of eHealth as a life-support system and we need to be heroic in achieving competence, giving ourselves to our work, and making sure that we never put our jobs ahead of our commitment to excellence and our obligations to those for whom we are doing this.

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Peer review projects in radiology aim to improve the quality of reporting

Efforts are under way in British Columbia and Ontario to increase safety through automated checks.

BY DIANNE DANIEL

No matter what perspective you take, Canadian radiologists are poised to benefit from automated peer review. As long as the focus shifts from a culture of blame to one of continuous process improvement, that is.

That's the consensus as efforts to implement peer review systems forge ahead across Canada. In Ontario, the Integrated Department of Diagnostic Services at Hamilton Health Sciences (HHS) and St. Joseph's Healthcare Hamilton (SJHH) have deployed a city-wide peer review implementation that's billed as the "first-ever cross-institutional, cross-system, prospective peer review platform." And just a few months ago, Ontario's health minister, Deb Matthews, announced that peer review for radiologists will, in the future, be conducted across the province.

In British Columbia, the first wave of a comprehensive, province-wide endeavour is set to go live this spring, involving six different PACS, over 100 hospitals, and more than 250 radiologists.

The approaches may differ, but the goal is the same. By giving radiologists access to automated tools designed to facilitate the review process – both in real time and historically – a general increase in quality and reduction of errors or discrepancies is expected.

"The purpose of such a system should not be that heads will roll, but that minds will blossom," says Dr. John Mathieson, medical director, medical imaging, Vancouver Island Health Authority, borrowing a quote from the authority's chief quality officer. "If we can identify factors that lead to errors or lead to lower quality, less useful reports, and then identify methods by which those things can be improved, that's when we'll have long-term benefit to all patients," he says.

Announced by the Ministry of Health in December, 2012, the B.C. project is implementing McKesson Corp.'s QICS for Radiologist Peer Review to conduct cross-facility peer review of diagnostic imaging reports. In an ideal scenario, says Mathieson, two radiologists would review the same study before issuing a report. At this juncture, however, that goal is proving to be a challenge for the BC project.

"One trade-off is that you risk delaying the report," says Kirk Eaton, Ministry of Health Services' director, diagnostic imaging, noting that although it's possible to filter automated sampling so urgent reports are excluded, the implementation is technically challenging due to the breadth and depth of the province-wide approach. "It's something we'll revisit down the road," he says.

Instead, the B.C. peer review system will initially focus on automated, random sampling of recently completed reports. It will also enable radiologists to capture their own review efforts when they call up previous reports to compare with follow-up images and will maintain a record of instances when they sought a second opinion.

Looking at prior studies is something many radiologists do on a daily basis as part of their normal

workflow. What's lacking, says Dr. Mathieson, is a way to hold on to that work and use it to inform the quality improvement process moving forward. With B.C.'s automated peer review system, radiologists will be able to save historical comparisons, giving them the advantage of learning from hindsight.

The ultimate goal is to close the loop on peer review by studying cases to which answers are known; in other words, cases that either went on to surgery, pathology or autopsy with a specific result. "We can then show people how well they scored in finding those things and making the correct assumption," says Dr. Mathieson. "... I would really like to know about all of the ones I missed because they were small and subtle so that I can figure out a way to learn."

The strategy is one used by the airline industry and U.S. military, he adds. By applying root cause analysis to airplane crashes, for example, the airline industry discovered that the "up" and "down" switches on some aircraft were not only side by side, but also had a similar appearance. Altering them to look completely different eliminated the problem.



"Rather than saying this is pilot error and leaving it at that, they made huge strides," he says.

In Hamilton, HHS and SJHH are using DiaShare Quality from Real Time Medical, a context-aware, workflow management and quality assurance software platform designed from the ground up to support cross-system implementations. Initially, the pilot involved 11 radiologists, two separate PACS, two different radiology information systems (RIS) and PowerScribe, a voice recognition system, with the intent of increasing to 65 radiologists early this year.

The HHSC project is the first successful, cross-system deployment in North America or Europe to successfully perform peer review before diagnostic reports are finalized, a workflow process Real Time Medical calls prospective review versus retrospective review. Instead of looking back, prospective peer review looks forward. A sampling of cases, typically between 3 percent and 5 percent, are automatically submitted for peer review and the response comes back within hours, prior to a report being finalized and sent on to the ordering physician.

If there's agreement over the findings, the report is finalized. If there's a discrepancy, the originating ra-

diologist can choose to amend the report, consult with the reviewer (maintaining anonymity), or forward the review to a third party for another opinion.

A retrospective review process, on the other hand, relies on comparing current exams with prior exams, which may have occurred months or even years earlier. Its main shortcomings are that it relies on the existence of prior exams and if discrepancies are found, it may be too late to take corrective action or make a difference for the patient.

While their system is capable of both prospective and retrospective peer review, Real Time Medical pioneered cross-system, prospective peer review as a means of catching errors before diagnostic reports are issued, hence in time to make a difference for the patients affected while also serving as peer review feedback to radiologists. Learnings are not merely after the fact, but the patients sampled also benefit. "In this way all stakeholders benefit, physicians, patients and the health care system in general since diagnostic results drive what happens next in the care continuum, including what resources are used and which will be

the most effective for the patient," says Ian Maynard, CEO and co-founder of Real Time Medical. The company's diagnostic sharing platform, DiaShare, addresses these limitations, as well as others. For example, some legacy systems don't support automated sampling. Rather, radiologists are free to decide which cases to send for peer review, removing any level of objectivity. Also, reporting radiologists and reviewers are not anonymous, leaving room for human bias to affect results.

With DiaShare and QICS, sampling is random and reporting radiologists and reviewers are anonymous. "For us, complete anonymity of participating physicians was a must," says Maynard. "It allows radiologists to fully embrace peer review as an objective learning experience as opposed to a policing, non-objective exercise."

Another problem identified by early approaches to peer review is that radiologists don't always have access to a peer with the same sub-specialty, particularly in smaller centres or remote locations. Or, there are so few radiologists that it's impossible to achieve an appropriate level of anonymity as people who work together become familiar with one another's reporting styles.

Cross-platform solutions like DiaShare and QICS address that dilemma using intelligent rules-based engines to control workflow across geographic boundaries. Reviewers may be in the same hospital, at another site down the road, in another city or even in another province. As long as they have the gateway software connecting them to the intelligent platform, they can become part of the peer review network.

"One of the key issues we recognized with legacy approaches is they did not address the need for geographic and emotional separation between reviewers and reviewees," notes Maynard.

DiaShare was "born out of necessity," he adds. Developed to support the company's radiology collaboration service for participating sites, it needed to dy-

namically manage service levels in order to balance workloads for radiologists while also ensuring rapid report turnaround and the fulfilment of service level commitments. In particular the system actively monitors and reassigns cases to ensure that urgent cases are reported quickly, particularly important when dealing with time sensitive diagnosis such as the 2-4 hour stroke window. Applied to the peer review process, this feature removes the fear of a report sitting in limbo by matching needs to availability in real time, enabling reviews to be completed in a matter of hours subject to radiologist availability. The McKesson system in B.C. also uses an intelligent engine to check who's logged in and available, speeding the review process and optimizing workflow but does not feature active workload balancing and service level management of cases.

Dr. Jacques Lévesque, president of the Canadian Association of Radiologists (CAR), says there is a need to implement peer review across the country, in part because so much has changed over the past decade. It's an important, although sensitive, subject area, but one he believes will ultimately lead to better patient outcomes.

"These kinds of tools should be used for continual professional development of radiologists; it shouldn't be a punitive kind of thing," says Dr. Lévesque. "If I look at the vision for the next two to three years, peer review will be widely accepted in Canada ... As a national association with an orientation for quality guidelines and safety for the patient, it is clearly on the agenda."

One of the key recommendations from CAR is that "if we implement peer review, it must be done in such a way as to improve care rather than track individual radiologist's discrepancy rates."

DiaShare, for example, can be customized per user, per exam, giving radiologists the ability to increase sampling rates for specific exams types of greatest concern.

The peer review system in B.C. isn't designed as an outlier identification project, but it will be able to detect error trends that are outside the mainstream. Before jumping to conclusions, however, the first step will be to increase the particular radiologist's sampling rate to ensure the trend is valid as opposed to a statistical variation, explains Dr. Mathieson.

If three out of 300 cases show a discrepancy, it's a 1 percent error rate. But if those three cases happened to be sampled consecutively, it would skew to a 100 percent error rate and could lead to inappropriate conclusions.

"Some jurisdictions are saying they will pull a licence of someone they sampled incorrectly. That's astonishing and a good way to ensure nobody will ever tell the truth," he says. "We've observed things that happened in places that implemented this against people's will, without buy-in, without anonymity and with some sense of a punitive nature towards it. What they ended up with was garbage in, garbage out. People didn't like it and only paid cursory attention to it."

Instead, the B.C. Ministry of Health is working hard to make opponents of the peer review process into proponents. "Rather than telling them they're wrong and bulldozing over them, we've actually tried to bring them in and make them a part of the

process," he says, noting that their critical eye can lead to system improvements.

It is also fostering support by making the system easy to use. QICS will interface to whichever PACS is already in use at the sites included in the pilot. There's no separate log in required and the look and feel will be familiar. The same is true of the Real Time Medical System DiaShare Quality solution which drives the local PACS viewer that the

radiologists are accustomed to using. As both projects continue to roll out, expectations are high that the improved collaboration will lead to improved outcomes.

"We're only scratching the surface of this," says Dr. Mathieson in B.C. "Right now radiologists view themselves as being in a gold fish bowl ... but errors occur everywhere. We are lucky in that we can do things about quality improvement that

others would find more difficult." Dr. Greg Butler, chairman and co-founder of Real Time Medical, adds that, "Forward looking radiologists are embracing the opportunity to do peer review right. It is possible to do peer review in a manner that benefits patients, physicians and the system and resources we all share, while addressing legacy issues that have to date, prevented large scale adoption of peer review."

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New diagnostic imaging technologies announced at RSNA conference

CHICAGO – When it comes to diagnostic imaging, technology companies often keep their latest developments under wraps until December. That's when the innovations can be unveiled before the 50,000 attendees who visit the Radiological Society of North America's annual meeting, held each year at McCormick Place.

FOR ITS PART, GE Healthcare had 16 new product introductions. Chief among them:

THE COMPANY ANNOUNCED ITS REVOLUTION CT, which is currently awaiting government regulatory approvals. The machine has captured a motion free image of the human heart in just one beat.

This innovative technology enables clinicians to non-invasively visualize the human heart more clearly than ever before, says GE Healthcare, and to diagnose more patients with erratic or high heartbeats. According to published literature (the British Journal of Radiology), more than 60 percent of patients referred to cardiac CT today were found to have heart rates higher than 60 beats per minute, and some are turned away from being scanned. With the Revolution CT, clinicians can clearly see specific areas of the heart that were previously compromised either by a patient's movement, high heart rate, or a child's inability to hold his or her breath.

GE HEALTHCARE ALSO INTRODUCED the Invenia Automated Breast Ultrasound System (ABUS), which is designed to detect cancer in women where mammography alone may be insufficient, due to their greater breast density. Featuring new automated compression tools for enhanced workflow, the system provides physicians a new way to look at dense breast tissue that can allow them to improve breast cancer detection by up to 35.7 percent over mammography alone, GE said.

The Invenia ABUS features advanced automation technology and is designed for reproducibility, ease of use and both patient and operator comfort. With new tools like Compression Assist and Reverse Curve, healthcare providers can quickly and comfortably capture whole breast, 3D volumes of clinical images in less time compared to previous versions of the technology.

LEVERAGING THE 'INDUSTRIAL INTERNET' to better impact patient outcomes, GE Healthcare announced the launch of Centricity 360. The system streamlines clinical collaboration among unaffiliated caregivers and patients to help reduce duplicate testing, avoid unnecessary patient transfers and lower diagnostic imaging distribution costs.

"In our digitally wired world, a 12-year-old can share images and information instantaneously, but your doctor lacks the tools to do the same," said Jan De Witte, president and CEO, GE Healthcare IT and Performance Solutions. "With Centricity 360, your doctor can liberate the information he or she needs to exchange patient data and images with your care team, who in turn can make fast care decisions, regardless of location."

Centricity 360 is a professional online collaboration tool for clinicians. Through a suite of on-demand medical imaging applications, distributed care teams can collaborate on patient cases in near-real time. Because the applications and the collaboration tools are available through an enterprise-grade cloud services platform, there is no upfront investment required from clinical users, patients or integrated delivery networks.

MEANWHILE, PHILIPS HEALTHCARE had announcements of its own to make. The company announced two major technologies: its Vereos PET/CT fully digital positron emission tomography/computed tomography (PET/CT) imaging system, and its IQon Spectral CT spectral detector-based computed tomography (CT) imaging system.

VEREOS PET/CT. PET scans are three-dimensional images that provide insight into what is happening inside the body at the molecular and cellular level. A small amount of radiotracer is injected into the patient prior to the exam, which accumulates in the body's tissue and organs, and decays. The PET detector captures photons that are emitted from the body during this decay process and forms the image. Based on Philips' proprietary 'Digital Photon Counting' technology, the Vereos PET/CT is the first PET/CT sys-

tem built from the ground up for spectral imaging. It uses colour to identify the composition of an image without involving time-consuming protocols. In the same way that white light is made up of a spectrum of colors, the X-ray beam used in CT scanners also consists of a spectrum of X-ray energies. With the development of a fundamentally new spectral detector that can discriminate between X-ray photons of multiple high and low energies simultaneously, Philips' IQon Spectral CT adds a new dimension to CT imaging, delivering not only anatomical information but also the ability to characterize structures based on their material makeup within a single scan.

TOSHIBA ANNOUNCED its newest and most advanced CT system yet, the Aquilion ONE ViSION Edition, winner of the prestigious 2013 Aunt Minnie prize for Best New Radiology Device. The new system is the second generation of the groundbreaking Aquilion ONE 320-detector-row scanner.

Toshiba's goal for the Aquilion ONE ViSION Edition is to offer a CT scanner that enables the platform's wide 16 cm coverage to be used in a more extensive range of environments, including obese patients or those with high heart rates.

The Aquilion ONE ViSION offers a rotation speed of 0.275 seconds, a wider gantry aperture of 78 cm and table sup-

port for patients up to 300 kg (660 lb). The Aquilion ONE ViSION Edition includes Toshiba's third-generation iterative dose reconstruction software, AIDR 3D, which significantly reduces radiation dose while enhancing image quality.

TOSHIBA ALSO INTRODUCED its Adaptive Diagnostics CT technology. Available on the Aquilion ONE, Aquilion ONE ViSION Edition and Aquilion PRIME, Toshiba's Adaptive Diagnostics includes:

- SURESubtraction, the ability to remove bone and calcium from data sets while allowing clinicians to view tumors or arteries at risk. Currently available for brain, bone, carotid and coronary artery (pending FDA clearance) exams.

- Metal Artifact Reduction (availability in Canada pending Health Canada license) removes streak artifacts in images due to metallic implants in the body.

- SURECardio Prospective with arrhythmia detection is a unique application that dramatically lowers patient dose during coronary CTA exams using a helical acquisition technique to provide one continuous image instead of multiple images. It automatically detects and adjusts to patients with irregular heartbeats, providing quicker, more conclusive exam results.

- Variable Helical Pitch (vHP) has the ability to automatically change an ECG-gated to a non-ECG-gated acquisition, reducing IV contrast and radiation dose. vHP can significantly reduce radiation dose over the use of a single-gated pitch setting.

- Dual Energy uses two energies during one CT scan, providing clinicians with more data to help quantify and characterize anatomy and lesions. As a result, exam times and radiation dose are both reduced.

TOSHIBA IS ON THE FOREFRONT of radiation dose tracking and management. At RSNA '13, the company demonstrated its ability to track X-ray skin dose exposure in real time during interventional procedures with Toshiba's Dose Tracking System, an application soon to be available with Toshiba's Infinix-i cardiovascular X-ray systems for use in pediatric and adult cardiac and abdominal procedures (availability in Canada pending Health Canada license). The new technology is Toshiba's latest advancement in optimizing dose management to improve patient safety.

Toshiba's Dose Tracking System displays live and cumulative radiation exposure through an intuitive, color-coded indicator on a 3D visual representation of the patient. The display shows where the radiation is being administered on the patient's body in real time. This alerts the clinician throughout a procedure to make quick and necessary changes to distribute the skin dose and minimize the potential risk of locally concentrated high exposure.

ON THE MR FRONT, Toshiba introduced enhancements to its Vantage Titan MR prod-



Toshiba's new Aquilion ONE ViSION Edition CT is designed to accommodate a wider range of patients and exams.

tem in the industry to use innovative digital silicon photomultiplier detectors instead of traditional analog detectors, resulting in a step change in performance that includes approximately 2 times increase in sensitivity gain, volumetric resolution, and quantitative accuracy compared to analog systems. These improvements can ultimately be translated into high image quality, increased diagnostic confidence, improved treatment planning and faster workflows.

IQON SPECTRAL CT. Philips' second RSNA introduction – its IQon Spectral CT system – is the world's first spectral-detector CT

port for patients up to 300 kg (660 lb). The Aquilion ONE ViSION Edition includes Toshiba's third-generation iterative dose reconstruction software, AIDR 3D, which significantly reduces radiation dose while enhancing image quality.

The Aquilion ONE ViSION Edition has been designed to enhance safety and maximize returns, the company said. It is able to image the entire brain or the heart in a single rotation, capturing both anatomical and/or functional data.

Researchers are already finding new uses for the scanner. For example, a study published in Radiology in January from

uct line. The new technologies improve workflow, image quality and patient comfort. And while MR acoustic noise is one of the major complaints of patients and medical staff, Toshiba's patented Pianissimo technology significantly reduces the noise in and around the MRI environment, making exams more comfortable and easier to complete. With Pianissimo, MRI no longer needs to be loud and disruptive, the company said. The gradient coil is vacuum sealed, which significantly reduces acoustic noise used in every exam and sequence.

Flexible Coils: The high-density, 16ch Flex SPEEDER coils conform closer to the patient's anatomy, improving signal-to-noise ratio for enhanced image quality. The light-weight coils are available in medium and large sizes and are ideally suited for general orthopedic and body imaging.

SIEMENS HEALTHCARE had a major announcement to make regarding CT. The company introduced SOMATOM Force, its next generation in Dual Source computed tomography. According to Siemens, the system enables considerably faster imaging, more precise diagnoses, and the possibility to achieve unparalleled dose reductions for even more groups of patients, including patients who are very young, suffering from renal insufficiency, seriously ill, or obese.

Patients suffering from renal insufficiency can benefit from imaging on the SOMATOM Force, which has the potential to allow radiologists to use significantly less contrast medium. SOMATOM Force negates many aspects of CT that until now have limited its application. For example, the administration of contrast medium that proves problematic for many patients can be greatly lowered.

According to the national Centers for Disease Control and Prevention (CDC), more than 10 percent of adult Americans – over 20 million people – have renal insufficiency due to chronic kidney disease. Contrast medium containing iodine can also place an additional burden on the kidneys of older patients – particularly those with chronic illnesses. Initial research examinations on SOMATOM Force show that it is possible to conduct chest studies with between 25 and 35 mL of contrast vs. the commonly administered 90 to 110 mL.

This reduction is made possible by the two Vectron X-ray tubes in SOMATOM Force, which enable routine examinations at very low tube voltages of 70 to 100 kilovolts. This low tube voltage increases the contrast-to-noise ratio and can reduce the amount of contrast medium accordingly.

According to Siemens, SOMATOM Force has the industry's fastest acquisition rate of 737 mm per second, so an entire chest and abdomen study can be performed in just one second, meaning that patients do not need to hold their breath. Because of the acquisition speed, even patients with high heart rates can be imaged without disruptive motion artifacts.

IN THE AREA OF INTERVENTIONAL RADIOLOGY, Siemens introduced a new angiography system optimized for broad clinical utilization. The Artis one is designed for routine interventions, including revascularizations of peripheral arterial or venous occlusions, functional tests of dialysis

shunts in patients with kidney failure, diagnostic angiographies of narrowed coronary arteries, and pacemaker implantations.

Despite being floor-mounted, the Artis one is similar in positioning flexibility to ceiling-mounted systems and requires substantially less space; the new system occupies only 269 square feet, compared to the traditional 484 square feet required by ceiling-mounted systems.

TORONTO-BASED CLARON TECHNOLOGY, a leading developer of software for advanced visualization and analysis of medical images, demonstrated its enterprise-class NilShare and FDA-cleared diagnostic NilRead viewers.

New for both viewers is efficient DICOM file streaming supporting integration with multiple DICOM archives in a high efficiency cache-less configuration.

The data streams seamlessly from the remote PACS or VNA to Nil, presenting the user with the images as they are transferred. Streaming provides a consistently fast and responsive user experience for on-the-fly image access.

Nil also introduces support for the recently approved RESTful DICOM web services (WADO-RS, QIDO-RS, and STOW-

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Shared EHR

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“There is a special spirit of collaboration among the partners,” said Price. “It wasn’t legislated. It was born out of a common commitment to improving service delivery throughout the continuum of care.”

While the project involved a considerable investment, Coghlan noted that change management and staff training has been critical. That’s to ensure the sys-

tem is well-understood, and used effectively, by clinicians.

In conjunction with implementing new software, Providence Care also went through an extensive re-engineering review, using a methodology called the “PaJMa” models. Short for Patient Journey Modeling Architecture, the methodology was obtained from the University of Ontario Institute of Technology; Providence Care is one of the first institutions to use it.

“PaJMa has enabled Providence to map out the workflow of various departments,

and to identify areas where things could be changed for the better, and where they should remain the same, commented Robin Saunders, Director of Decision Support and Director of the ePatient Record Project. The models show who a patient interacts with, when and where healthcare professionals obtain patient information, how it is recorded, and whether paper, fax machines, telephones or computers are required in the process.

Saunders pointed out that by involving staff in the creation of huge process maps,

they could help spot the bottlenecks and help management improve many processes. They also gained a better understanding of the bigger picture – of how patients should ideally move through the organization during a stay, from admission to discharge.

As well as seeing the big picture in the abstract, staff members could also see it right on the wall. “The models were printed out on paper, documenting the patient journey,” said Coghlan. “The maps were posted on the walls of various units, outlining the steps in the patient journeys. When we started, some were 15 feet long. When we finished, they were considerably shorter.”

He said some units have kept the older maps up on the walls, just to remind themselves of how cumbersome and involved some of the older processes were.

Importantly, the new and improved steps and processes are being built into the workflow of the new software as it is rolled out through Providence Care’s facilities. “The process re-design is proving to be as valuable as the hardware and software,” said Saunders.



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New diagnostic imaging technologies at RSNA

CONTINUED FROM PAGE 13

RS). These services provide efficient protocols to connect unrelated hospitals’ medical systems utilizing the Web, and are expected to play a major role in cross-enterprise communications for the next several years. With the ability to stream either from existing DICOM or through the new DICOM RESTful services, Nil viewers continue to expand connectivity options.

“Both NilRead and NilShare are increasingly being integrated with a variety of archiving systems within the healthcare enterprise,” says Claudio Gatti, co-CEO for Claron. “We set out to streamline this integration, while maintaining our commitment to providing an extremely user-responsive experience. Eliminating the temporary archive used by competing vendors simplifies management of the configuration, minimizes hospital network traffic and guarantees that available data is always up-to-date.”

CARESTREAM ANNOUNCED NEW X-RAY IMAGING SOFTWARE that has been designed to minimize anatomical distractions to assist physicians in the diagnosis of chest pathology. The new software is FDA 510(k) pending in the United States.

“Ribs and other bony structures often impair viewing of organs and soft tissues in the chest. Our new software will generate a specially processed image from an original chest X-ray to allow better visibility of these areas without requiring a separate X-ray exam for the patient,” said Diana L. Nole, President, Digital Medical Solutions, Carestream. “This is more convenient and beneficial for patients, and will help reduce radiation dose by minimizing the need for additional X-ray exams.”

The new software will include a reporting capability that collects and distributes dose information from Carestream X-ray imaging systems to a healthcare provider’s radiology image management system. This new feature is intended to help healthcare facilities streamline the collection of radiation dose information for each patient.

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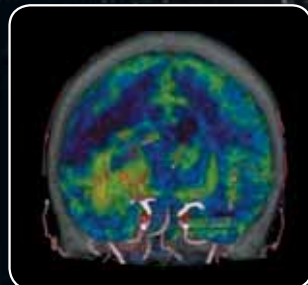
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