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PHOTO: COURTESY OF HAMILTON HEALTH SCIENCES

IBM brings Watson Health to Hamilton

It's the first major deployment of Watson Health in Canada, and research & development projects using its machine intelligence are ready for take-off. Pictured at the launch event are: Ontario's chief health innovation strategist, Bill Charnetski; Hamilton mayor Fred Eisenberger; president and CEO of Hamilton Health Sciences, Rob MacIsaac; and Dino Trevisani, president of IBM Canada. **SEE STORY ON PAGE 5.**

Quebec hospitals to standardize on Cristal-Net EHR

BY JERRY ZEIDENBERG

Quebec is steaming ahead with its plan to install an electronic health record, named Cristal-Net, in every hospital across the province.

The computerized system is already used extensively by the CHU de Québec-Université Laval, which in early 2000 co-developed Cristal-Net in conjunction with the CHU de Grenoble in France. In October 2015, the CHU de Québec-Université Laval obtained the complete rights to the system and is now the sole owner and developer.

Health Minister Gaetan Barrette, who has publicly voiced his frustration with the inability of the patchwork of electronic records used in Quebec hospitals and clinics to inter-connect, announced the plan to standardize on Cristal-Net last December.

It came as a shock to many in the e-health industry, who assumed the move would displace the commercial systems being used in many of Quebec's hospitals – including some very new solutions with state-of-the-art software.

However, far from ripping-and-replacing the clinical solutions that are already installed, the plan is to keep what's working well, but to use Cristal-Net as a powerful integration tool to view and complete the clinical data for the patient. It will tie together existing systems that previously couldn't communicate.

> **Existing, commercial EHR systems that are working well will remain in place.**

As well, "many of the hospitals still don't have an electronic medical record, and Cristal-Net will be used as the EMR in those facilities," said Louis-Jacques Lalonde, Assistant-Director of Information Technology at the CHU de Québec-Université Laval.

He explained that Cristal-Net has numerous modules, including lab, pharmacy, Kardex, integration with the QHR (Quebec Health Record), oncology, and the ability to integrate with PACS and RIS.

"It has a lot of capabilities," said Mr. Lalonde. It's also user-friendly: "To create Cristal-Net, we worked closely with the clinicians, with doctors, pharmacists and nurses, to make the system useful to them."

He pointed out, however, that it doesn't have each and every capability – for exam-

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Quebec hospitals moving to install Cristal-Net EMR province-wide

CONTINUED FROM PAGE 1

ple, hospitals will still need to acquire imaging systems from outside suppliers. Other features that are add-ons include order sets and closed-loop medication management.

"We're leaving that to outside vendors," said Mr. Lalonde.

However, he noted that alerts and flags from these systems will be integrated with Cristal-Net, so that all clinicians will be able to see important patient information. "The idea is that you should never have to leave Cristal-Net to do your work if you don't need an access to a specific clinical system."

A team at the CHU de Québec-Université Laval is in charge of implementing Cristal-Net in hospitals across the province. It's currently a group of 26, which will soon nearly double to 50. "Our team of 26 was serving the CHUQ hospitals, but the game has changed now. We need more people to give quality services to the new users of Cristal-Net," said Mr. Lalonde.

The new staff members will include not just programmers and designers, but content experts like nursing and pharmacy experts. This way, they will be better able to converse with clinicians, to explain the system to them and, conversely, to carry back their ideas and needs to the development team.

While the plan is to have Cristal-Net up-and-running in all Quebec hospitals by 2019, there is a good deal of preliminary work that first must be done. Mr. Lalonde said that his team is creating a check-list for all hospitals, to determine what their current capabilities and needs are when it comes to electronic records.

Organizations will need governance committees and groups to establish the best workflows and standards. As an example, to promote interoperability within hospitals, regions and across the province, common terminologies are needed – for medications, tests, diagnoses and treatments.

As well, training will occur, to get the users ready for Cristal-Net. "We're going to train the trainers," said Mr. Lalonde. "They in turn will train their clinicians."

While the team in Quebec City will be training and supporting the users of Cristal-Net across the province, local hospitals and healthcare organizations will maintain their own IT departments and will stay in control of their systems.

Some hospitals are, of course, ahead of others, and installations of Cristal-Net will begin this year. "Everyone has already started, and some have more to do than others," said Mr. Lalonde. "But by 2019, everyone will be using it.

> **The Quebec City team produces a major upgrade of Cristal-Net each year, and smaller updates are made each month.**

"It is going to happen very fast."

The agenda for implementation is being created by a committee that reports to the Minister of Health. The task has been made easier by the sweeping healthcare reform that took place in Quebec in April 2015, when 182 health organizations were consolidated into 34. "It makes it easier to communicate," said Pascale St-Pierre, a Communications Manager at CHU de Québec-Université Laval.

Each of these provincial organizations will be able to grant permissions to clinicians to use Cristal-Net, and will be able to control how much of the patient record various care-givers can see. They will also be able to provide access to community physicians and clinicians, if they wish.

Mr. Lalonde, a software engineer by background, joined the Cristal-Net team in 2010. He has helped bring commercial software development techniques, like fast, agile production, into the organization.

The team now creates one major upgrade of Cristal-Net each year, with a smaller update each month. "That way, the changes are gradual, and the users have less trouble adapting," said Mr. Lalonde. The continual updates, moreover, help ensure the system is staying current with state-of-the-art technologies.

It also goes through rigorous testing. "In the last two years, we added more than 8,000 automated tests that are running each day to make sure Cristal-Net is bug-free" he said.

He said the system has all of the latest technological features – it is fully web-enabled, and authorized individuals can use it remotely, from anywhere when it's required in their job.

It also has innovative abilities when it comes to integrating a wide variety of clinical information systems, and presenting the relevant data to clinicians.

Mr. Lalonde said that many commercial, clinical systems are not "open", and it has proven difficult for hospitals to connect them together using their own resources. But Cristal-Net, he said, has powerful tools for integrating to existing systems.

The plan is to use Cristal-Net first to connect systems and departments within hospitals and to make the data easily viewable and usable to clinicians.

Next, Cristal-Net will be used to connect hospitals and health organizations across the province, so that clinicians in Chicoutimi, for example, can see what happened when their patients were treated in Montreal or Quebec City.

Cristal-Net can do this, said Mr. Lalonde, without the need for centralized repositories that collect and house data. Instead, the system pulls what it needs from existing repositories. "We don't want to duplicate information," said Mr. Lalonde. "We're able to use the information that's already stored."

Other provinces that have had trouble connecting their own clinical systems will be watching Quebec closely, no doubt, to see what can be learned.

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Medly app shows success in monitoring health of heart failure patients

BY JERRY ZEIDENBERG

TORONTO – The Centre for Global eHealth Innovation is on the verge of releasing a new version of its Medly app that can monitor patients with two or more chronic conditions. Medly was first designed and released for heart failure patients.

However, the system was designed as a general platform, and a single Medly app will soon be able to support patients with multiple chronic conditions, including chronic obstructive pulmonary disease, diabetes, hypertension, and chronic kidney disease.

"We know that over 50 percent of people who are 65 and older have two or more chronic conditions," said Emily Seto, an assistant professor at the University of Toronto, who chaired the Mobile Health Summit in January. The conference was held in Toronto and was organized by the Strategy Institute.

Seto works closely with the Centre for Global eHealth, and described some of the work being done there on monitoring chronic care patients through the use of apps to improve outcomes and to reduce costs and pressure on acute-care hospitals.

Patients using the apps typically take readings of various vital signs; in some instances, such as when they step on a Bluetooth weight-scale in the morning, the data is automatically uploaded via Bluetooth to the patient's smartphone. Data from the smartphone is then uploaded to servers.

In the randomized controlled trial, alerts about abnormal readings were sent directly to the patient's cardiologist via e-mail. The message included the patient's phone number, so the physician could simply click on the phone number to quickly get in touch.

"We didn't want them to have to open the electronic patient record to start searching additional clinical information and for phone numbers," said Seto.

A six-month randomized controlled trial of the Medly app that involved 100 patients was a major success. The patients were all enrolled in the University Health Network's (UHN's) heart function clinic, and compliance with the program was very high.

One patient even went to Florida for four of the six months and still took his measurements and uploaded them.

In the trial, many of the patients learned to modify their own diets and exercise. Some learned, for example, not to drink too much water, as it is not healthy for heart failure patients.

Overall, said Seto, the patients experienced improvements in quality of life and self-care. BNP fell significantly, and LVEF levels increased by notable amounts as found through a sub-group analysis.

BNP is a substance secreted from the ventricles or lower chambers of the heart in response to changes in pressure that occur when heart failure develops and worsens. The level of BNP in the blood increases when heart failure symptoms worsen, and decreases when the heart failure condition is stable.

Left ventricular ejection fraction (LVEF) is the measurement of how much blood is being pumped out of the left ventricle of the heart (the main pumping chamber) with each contraction.

Seto said that one reason the clinical trial was successful was that it had the backing of a clinical champion. Dr. Heather Ross, who heads the heart failure clinic, is a proponent of the Medly app and its benefits for patients and the hospital.

It's believed that up to 60 percent of heart failure patients could be kept out of hospital with better management.

By keeping closer tabs on HF patients at home, Dr. Ross and the creators of Medly believe they can keep them out of hospital.

Indeed, the most common reason for hospitalization in Canada and the United States is heart failure. There are 500,000 HF patients in Canada, and about 5 million in the U.S.

Moreover, up to 60 percent of the hospitalizations are preventable, with better patient management, said Seto.

While the clinical trial, with its 50 clinic patients, sent alerts right to the smartphones of cardiologists, it's unlikely that physicians will be ready and able to field these alerts and make call-backs in the future.

Seto: Finding funding models and managing workflow is the hard part of implementing remote monitoring.

That's because the plan is expand the use of Medly to thousands of patients, and to other hospitals. In fact, a remote monitoring program using Medly will be launched as standard of care to UHN heart failure patients in Spring 2016. An analogous remote monitoring program will also be launched this year to UHN chronic kidney disease patients.

"We envision a shift to nurse practitioners supervising the alerts," said Seto. Nurse practitioners will in some cases be able to handle the alerts on their own. They will also know when to escalate the problem to a physician.

The Centre for Global eHealth Innovation is now testing new ways of expanding the use of telemetry, apps and smartphones into the community. It is in partnership with Paramed, a visiting nurse and community healthcare company, and CellTrak, which devises software for visiting nurses.

However, it has proven harder to recruit patients in the community than at the UHN's hospital clinic. As well, nurses are not currently able to bill for their 'telephone visits' which is a barrier to implementation.

Nurses that did participate in a field trial of Medly in the community found, in addition, that it was difficult to get in touch with patient's physician when additional advice was required. "Physicians were often off duty, or busy with other patients," said Seto.

Seto and her colleagues are working on solutions to these problems. In the near future, the remote monitoring system may be more useful for patients tied to hospital cardiac clinics, especially those whose clinicians are salaried.

Still, the continually falling cost of medical equipment and phones makes remote management of chronic care patients easily affordable.

Moreover, new sensors are being developed that will make remote monitoring even more effective. Seto described a bandaid-like sensor that can be placed on the chest to take ECG readings. A headband that can monitor EEG waves is also being tested.

But Seto said that when it comes to apps and remote monitoring, technology is the easy part. "Implementation of the technology including finding funding models and managing workflow is the hard part," she said.

Reacts deployed by MUHC to improve the lives of ventilation-assisted

MONTREAL – Reacts has been selected by the McGill University Health Centre's National Program for Home Ventilatory Assistance (NPHVA), to enhance its overall telehealth services and improve remote support for its home-based ventilation-assisted clientele.

The NPHVA team is composed of ultra-specialized professionals who support patients and their families in their home settings, while complementing various local and regional healthcare professionals through a range of clinical, technical and training services.

In order to optimize the team's efforts, the McGill University Health Centre (MUHC) decided to replace their old telehealth platform with Reacts, a versatile technological solution providing unique interactivity.

"Reacts allows us to provide innovative remote support and care for patients in the comfort of their own homes, no matter where they are," says Lyne Noel, Coordinator of Respiratory Services, Adult Sites, MUHC. "With this digital video collaboration platform, we can really make a difference in the quality of life of patients and their families."

With Reacts, the NPHVA's professionals can use their own computers or mobile devices to interact with patients and caregivers, regardless of location. They can propose virtual home visits, organize collaborative sessions between healthcare professionals, provide remote training to patients and providers, all thanks to a variety of features such as audio-video exchanges, remote auscultation, and secure file transfers – such as respirator data.

The Reacts telehealth platform makes use of new technologies and runs on a variety of devices.

"The Reacts platform is easy to use, secure and focuses on collaboration, supervision, education and remote assistance," says its founder, Dr. Yanick Beaulieu. "It therefore meets the NPHVA team's many needs, and more importantly brings healthcare professionals and their patients closer together."

The NPHVA team introduced Reacts to its service delivery model in January of 2016. Implementation at the provincial level will continue throughout 2016. For more information about the Reacts telehealth platform, see: https://www.iitreacts.com/

IBM brings Watson to Canada in partnership with Hamilton Health Sciences

BY JERRY ZEIDENBERG

HAMILTON, ONT. – Hamilton Health Sciences and IBM Canada are partnering to launch a healthcare innovation centre in the downtown core of the city – a move that will help with Hamilton's transformation from Steel City into a high-tech hub. Teams from both organizations will soon move into what used to be a Stelco office building that's located in the downtown core.

"We're re-inventing Hamilton through healthcare," said Dino Trevisani, president of IBM Canada, who is himself originally from Hamilton. "We're going to make this a centre of excellence in Canada and for the world." Trevisani spoke at a well-attended event, held at Hamilton Health Sciences, to publicize the announcement.

Significantly, researchers at the new collaboration centre will be the first in Canada to make extensive use of IBM's Watson artificial intelligence software for healthcare.

Watson gained instant fame in 2011 when it trounced the reigning Jeopardy champion, Ken Jennings, in two televised matches. At that time, Watson required 10 racks of computers that filled a room; today, Watson software requires only a single server that's the size of the vegetable drawer in your refrigerator. And because of streamlined software, it runs 24x faster than before.

That, in itself, is an indication of how quickly computer technology is advancing. Hamilton Health Sciences, for its part, is a powerhouse in health technology and has pioneered, among other things, advanced applications in region-wide, patient decision support and a predictive analytics system called HEWS. This latter solution gathers data from patient monitors and medical devices and provides early warning of when a patient is running into trouble.

It's these two applications that will be the starting points for the teams from HHS and IBM. They will further develop the systems, both for use at Hamilton Health Sciences and for commercialization in Canada and around the world.

"With the integrated data system, six LHINs are already feeding data into the solution," said Mark Farrow, HHS's vice president of information technology and CIO. "We can see how patients are using the healthcare system. Now, we can take it to the next level using Watson."

The system could be a boon to managers and planners, enabling them to better match the resources that are needed at healthcare facilities with real-time demand from patients.

Similarly, the intelligence of Watson will be tied to the early warning system, further improving the predictive capabilities of the solution.

The president and CEO of Hamilton Health Sciences, Rob MacIsaac, noted the new centre will be both a physical and virtual work space. Through the web and teleconferencing, patients, start-up businesses and R&D staff at large corporations can all interact with technology developers at the downtown facility in Hamilton.

In addition to IBM's Watson Health, the team in Hamilton will also have access to IBM's expertise in cloud computing, super-computing, and many other technologies.

Researchers from nearby Mohawk College and McMaster University will also be participating in the project and will bring their own expertise and interests.

The innovation centre is designed to spur the development of spin-off companies and will act as a business incubator. The province of Ontario is involved in the centre through its chief health innovation strategist, Bill Charnetski, who helped broker the deal and make the project happen. Charnetski said the goal is not only to produce start-ups, but to see them grow to 10, 100 and 1,000 employees.

Barry Burk, IBM Canada's vice president of health, noted the new centre in Hamilton will be the first in Canada "where we've deployed Watson for human healthcare in a meaningful way."

PointClickCare Secure Conversations ensures clinicians receive messages

For more than 15 years, Toronto-based Responsive Health Management Inc. has sought ways to advance resident care and staff operations through integration of healthcare technology and mobile solutions.

Last year, the organization was faced with the challenge of ensuring secure, timely staff text-message communication between nurses and physicians in one of its homes. Responsive hadn't discouraged sending text messages in the past, but rather was looking for ways to make that action more secure and productive.

Senior Nurse Consultant Marion Godoy said that data security was a big concern; nurses were using unsecure texting to convey information to staff physicians in the Mill Creek Care Centre, where the average staff age is 28.

Moreover, when using conventional on-phone SMS texting apps, information would not always reach a physician or nurse in a timely manner, which occasionally led to delayed orders.

"For example, a nurse would send an email earlier in the day and have left work by the time the physician was able to respond," Godoy said. "And the evening nurse would not be aware of this message because it had been sent to a personal work email or phone."

Responsive implemented PointClickCare Secure Conversations, a medical-grade messaging application enabling healthcare professionals to create their own protected messaging network. Responsive has been using PointClickCare electronic health record (EHR) technology since 1995.

Secure Conversations helps about 100 staff members and clinicians at Mill Creek Care Centre securely communicate time-sensitive messages regarding laboratory results, medical histories, practitioner on-call notifications and resident-related questions.

By facilitating direct interaction between doctors and nurses at the Mill Creek Care Centre, PointClickCare Secure Conversations ensures better communications and response time and accurate decision-making. This, in turn, leads to quicker and more precise interventions and ultimately improved resident outcomes.

"The application is easy to use and the staff can securely communicate resident and non-resident information without the challenge of waiting for a call back," Godoy said. "Since most of the staff members were already very familiar with texting, they adapted well to this technology."

"Secure Conversations software has improved efficiency among physicians and eliminated delayed responses from them as physician mobile phones are now alerted when they receive a new text message," Godoy added.

Physician order transcription has also improved due to there being a record of a conversation and order. With the

Senior Nurse Consultant Marion Godoy.

PointClickCare Secure Conversations software, nurses and physicians at Mill Creek Care Centre can also track conversations on the facility's PointClickCare EHR home page and decide if a conversation needs to be part of the progress notes section of the EHR.

This avoids time-intensive duplicate charting for clinicians that is the case with smartphones' native SMS apps. Nurses can send pictures to the EHR via the software, a particularly useful benefit for when a nurse is describing a wound for treatment.

"Responsive staff can see a record of text communications from beginning to end," said Godoy. "This reduces errors and potential miscommunication between clinicians. We are seeing fewer errors on orders, fewer missed orders and staff is able to address the health concerns of residents in a more timely fashion."

Responsive initially implemented PointClickCare Secure Conversations with its registered nurses, management and physicians, but has since realized secure texting would be a tremendous benefit for the organization's personal support workers, especially because they carry iPods for documentation.

Godoy believes this will help streamline reporting, corresponding, notifying and exchanging resident and healthcare-related information. Once the implementation occurs, these workers will be able to use PointClickCare Secure Conversations to alert one another to help with a resident transfer and be better equipped to address early sign and symptom changes in residents.

"Like its EHR, PointClickCare's Secure Conversations software has proved to be very useful in getting key information to appropriate staff in a timely manner," said Godoy. "This means care can be delivered to the right person at the right time and right place, and in a secure way."

Saint Elizabeth uses SoapBox to spur innovation from employees

BY JESSICA WEISZ

Saint Elizabeth is leveraging its 8,000 employees to help drive innovation and improve healthcare delivery for the more than 18,000 people it visits daily. The social enterprise has become the first Canadian healthcare company to adopt SoapBox, a SaaS platform that flattens organizations by connecting leaders with the best ideas from frontline workers.

"Our front-line home care employees have the very best ideas for making things better for clients. SoapBox allows these ideas to come to life," said Shirlee Sharkey, President and CEO of Saint Elizabeth. "On the site, the ideas are broadly shared in real-time within the organization and because of our virtual work, this allows staff to collaborate with colleagues everywhere – many of whom, they never see in person."

The way that Saint Elizabeth handles SoapBox ideas cuts through the typical organizational challenges that get in the way of implementation and expands the innovation capacity of the organization.

"Ideas are framed around the client experience, which aligns to Saint Elizabeth's top priorities" said Sharkey.

When an employee shares an idea on SoapBox, their peers can view, comment, and vote on it. Once the idea receives 25 or more positive votes, a team of Innovation Partners at Saint Elizabeth review, evaluate, and respond to the idea by providing an "Official Response", a statement from the leaders that shares the status on the idea and next steps.

According to Brennan McEachran, CEO and co-founder of SoapBox, "official responses are critical to sustaining and increasing engagement in the community, as they close the feedback loop and demonstrate that leaders are listening."

As Saint Elizabeth is working to leverage technology in a number of ways, they were able to integrate ideas from SoapBox into their technology and mobile strategy. The organization recently initiated a major rollout of new tablets and smartphones to team members across the country.

For the first year of the rollout, Saint Elizabeth engaged its workforce to come up with ideas to derive value from their new devices. The ideas and suggestions led to optimization of the features, customizations, and which apps were most helpful.

As one example, SoapBox has been a significant source of insight into Saint Elizabeth's bereavement strategy. Saint Elizabeth uses SoapBox to tap into employee insights around bereavement and supportive conversations. More than 100 employees have commented, voted, and shared techniques and best practices from across the country to help support both the family of the client and members of the healthcare team.

Recently, best practices generated in SoapBox around bereavement were incorporated into a guideline to support nurses with bereavement visits and also helped to inform program enhancements. Saint Elizabeth re-launched the bereavement visit process for nurses, as well as a Guide for Leaders on supporting staff with grief.

> **In one instance, Saint Elizabeth used Soapbox to refine its delivery of bereavement support.**

When Saint Elizabeth launched Elizz, a new brand dedicated to all things caregiving, the company leveraged SoapBox and the wisdom of its employees to inform the development of new services and resources for caregivers.

As home care providers, Saint Elizabeth staff work alongside family caregivers every day and bring a unique understanding of their challenges and needs. The Family Caregiver Challenge generated more than 100 ideas about ways to support caregivers and make a difference in their lives. For example, suggestions regarding a virtual social network where caregivers could anonymously share their experiences and connect with others in similar situations are being brought to life through Elizz Group Support.

In 2016, Saint Elizabeth plans to further engage its workforce with an exciting roster of Challenges. These Challenges will focus on tying ideation to strategic projects or initiatives the organization is working on from the early planning stages, so that the employee voice can really have an impact on execution.

The organization is also teaming up with Radboudumc's REshape Center to launch a SoapBox to their network of global health care innovators. Their objective is to create a people-powered healthcare system, improve the methodology of healthcare innovation, and to identify and break down challenges to innovation in healthcare

"At Saint Elizabeth, we see possibility everywhere," said Sharkey. "With our employee SoapBox, our aim is to harness the passion and imagination of our mobile, national workforce – all eight thousand of them."

Jessica Weisz is Chief, Client Success Office, at Soapbox. Please visit the website: https://soapboxhq.com/

Web innovator offers unique, personalized health information

LAS VEGAS, NEV. – A U.S.-Israeli start-up company – with substantial Canadian ties – has created the world's first "personalized health information service." The web-based solution pushes information about the latest medical research and treatments to subscribers and tailors that information to match their particular medical conditions.

Called Medivizor, the system combs a wide variety of sources, including medical journals, for the most recent research findings, and also alerts subscribers to clinical trials that may interest them.

In March, Medivizor exhibited at the HIMSS conference in Las Vegas, which attracted over 35,000 attendees from around the world.

If you have certain type of skin cancer, for example, Medivizor will keep you posted – weekly or even daily – on the latest medical findings and treatments. And knowing your approximate location, it will also tell you about the newest clinical trials in your area.

"It's perplexing that health information has not been personalized before," said Tal Givoly, CEO and co-founder of the company, which has been offering its service for the past two years. "We're all unique, shouldn't our health information be?"

Indeed, the more detailed the information that a subscriber provides Medivizor about the person whom is coping with illness, the more precise and pertinent the resulting information will be.

And while some might be put off by the thought of entering highly personal information, no names or personal identifiers are required. "You don't need to enter a name, address or phone number – all you need is an e-mail, so we can send you the updates," said Givoly. Subscribers are able to use email addresses that have no personal identifiers in them.

So far, tens of thousands of subscribers have signed on, said Givoly, who prefers not to divulge precise numbers.

At the moment, the service is available only in English, and it has become popular in the United States, Canada, the U.K., Ireland, Australia and New Zealand. The company is mulling its next languages, and says it is deciding between Spanish and Mandarin Chinese.

A large portion of software development for Medivizor is conducted in Vancouver. Overall, the company is a global enterprise – its headquarters are in Israel and New York, software development is concentrated in Vancouver, business development is in Atlanta, it's lead blogger works in Boston, and dozens of contributors are located in a variety of countries, including Ireland and the U.K., in addition to Canada and the United States.

While most medical research papers are written for medical professionals and contain highly technical language, Medivizor's team of contributors around the world convert them into easily readable English for the layperson.

"They're digestible, 300-word summaries," said Kim Carbonara, director of business development. "Medical papers are incomprehensible to most people, so we turn them into readable summaries, like Cliff's Notes."

Finding and converting the papers into accessible English is accomplished through a mixture of computer algorithms and human effort. Carbonara said the company has several dozen reviewers around the world. "Each adheres to the same editing and writing process," she said. "We call it 'one voice.'"

Medivizor is a free resource for individuals, but it is also being marketed to healthcare organizations, who pay a fee and can then provide it to patients, doctors, and staff.

In these cases, the system can be connected to the facility's electronic health record, which then populates the Medivizor record. In that way, the information sent to the individual become highly relevant and specialized.

The platform can also aid pharmaceutical companies find patients who might be ideal participants for clinical trials.

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VIEWPOINT

3D apps for diagnostic imaging improve medical education and patient care

Virtual reality is being used to teach anatomy, improving upon the traditional methods.

BY DR. SUNNY MALHOTRA

Diagnostic imaging has always been a key part of making a medical diagnosis. Constantly improving medical imaging has enabled medical students and practitioners to gain a wider and deeper understanding of the human body. The technology has also improved workflow and productivity, allowing physicians to make accurate and earlier diagnoses. Lastly, it has enabled the sharing of important information among healthcare professionals.

Medical students are steadily increasing their use of technology for studying and learning the intricate details of human anatomy.

The use of 3D technology in anatomy classes and self-directed studying has disrupted the traditional medical education format. There are multiple platforms and companies that have developed 3D technology for medical students through the use of apps and practical classes.

Commonly used apps that can be downloaded on Apple and Android devices are Human Anatomy Atlas, Essential Anatomy 5 and BioDigital Human. The social use of mobile apps includes such products as Figure 1 and InsightMedi to display medical images for educational purposes.

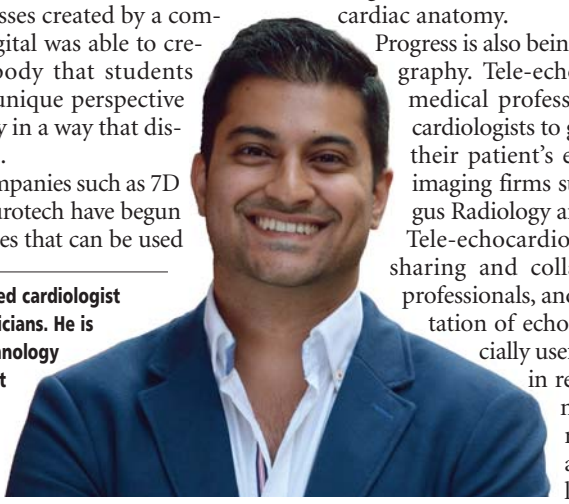
BioDigital Systems, a visualization firm based in New York City, created BioDigital Human. BioDigital creates virtual human replicas of multiple body systems for anatomy education, and includes simulated diseases and conditions.

The founder of BioDigital, John Qualter, hopes that one day this technology can also be used in a clinical setting to help physicians illustrate conditions to their patients. Recently, BioDigital used their technology at New York University School of Medicine in their anatomy labs to give students a 3D interactive experience.

> **The use of 3D technology in anatomy classes and self-directed study has disrupted the traditional medical education format.**

With the use of 3-D glasses created by a company called Nvidia, BioDigital was able to create a simulated human body that students could dissect by giving a unique perspective into living human anatomy in a way that dissecting cadavers fails to do.

Similarly, developing companies such as 7D Surgical Navigation and Ourotech have begun to create real-time 3D images that can be used in hospitals during operations and surgeries. The companies hope this technology will aid surgeons in operating theatres and make surgeries more time efficient.



Dr. Sunny Malhotra is a US trained cardiologist working at AdvantageCare Physicians. He is an entrepreneur and health technology investor. He is the winner of Best in Healthcare – Notable Young Professional 2014 and the national Governor General's Caring Canadian Award 2015.

The use of medical imaging in cardiology has always been crucial to make a rapid and accurate diagnosis. In electrophysiology, imaging the inside of the atria has been done with less fluoroscopy over the years to reduce radiation exposure. "Cardiac Mapping" is like a GPS system to navigate the inside of the heart and find dangerous heart rhythms. Topera Medical is a system with a Rhythmview workstation and FIRMap catheter that opens up with a wired ball with sensing electrodes along its surface.

Carto and ESI are systems that use endocardial electrograms to correlate with local electrogram and cardiac anatomy.

Progress is also being made in tele-echocardiography. Tele-echocardiography allows for medical professionals to work alongside cardiologists to gain a specialist reading on their patient's echocardiograms through imaging firms such as USARAD.com, Angus Radiology and Real Time Radiology.

Tele-echocardiography allows for rapid sharing and collaboration among health professionals, and facilitates rapid interpretation of echocardiograms. This is especially useful for clinics and hospitals in remote locations that could not have echocardiogram readings done immediately on location due to limited staff.

Healthcare apps should be treated like over-the-counter meds

BY PUNEET SETH, MD
AND DORIAN MURARIU, MSC

It can be daunting for clinicians, who are already overwhelmed with patient-care responsibilities, to now screen and manage an entirely new modality – the mobile 'apps' that run on smartphones and tablet computers.

However, the potential for improving outcomes and reducing system costs is significant through the use of mHealth apps. On the other hand, patient harm is also a real possibility, through inappropriate use or through the use of apps with false claims. With the presence of mobile devices in society increasing and the growing number of mHealth consumer apps, clinicians will inevitably be crossing paths with patients who seek advice about mHealth apps.

How then, should physicians interact with patients using or asking about apps? What approach should they take to learning about the best or most appropriate apps? We present some solutions in this article.

mHealth apps can be categorized based on the intended user, being healthcare providers and patients (who are termed as 'consumers' of mHealth apps). With respect to consumer mHealth apps, a survey of 2000 app developers from around the world found these applications are being used diversely to monitor fitness data (e.g., steps, speed, HR, hydration, calories, mood), patient vitals (e.g., BP, blood oxygen, glucose, temp, medicine adherence, brain waves, posture), and medical exams (e.g., respiratory rate, EEG, ECG, blood test, US, urine test.)

Fitness and wellness apps are currently the most commonly used, but developers agree that apps targeting chronic illnesses will gain a larger share of the market in coming years.

Among the most common disease-specific apps are those targeting diabetes, obesity, hypertension and coronary heart disease, and to a lesser extent asthma, depression, and cancer.

Surveys of healthcare providers and industry developers have revealed a sense of optimism about the potential of mHealth apps to change healthcare for the better. Many industry developers believe that mHealth apps show great promise and potential for improving healthcare delivery and health outcomes.

According to one survey, the major ways in which this will happen include improved prevention and education, reduced or slowing down of healthcare costs, and improved interaction between patients and doctors.

> **Just as they are asking about over-the-counter meds, patients will quiz doctors about apps.**

As the demand for health information and health services increases, mobile health apps will take a more prominent place in healthcare. However, this demand should be met with some sort of regulatory or certifying body in order to protect consumers, and, on the other end, to allow physicians to be aware of which apps to comfortably recommend to their patients.

Before apps are adopted in practice it is necessary to determine their safety and effectiveness. According to one industry report, over 300 clinical trials using mHealth apps were registered on ClinicalTrials.gov in 2015, representing a huge leap forward in their validation.

Regulatory bodies such as the US FDA will play an important role in testing these apps by defining whether they are "medical" or "wellness" apps (the latter will be exempt from some regulations). Similarly, Health Canada has expressed intent to have a regulatory process for "higher risk" medical apps; however what defines this remains to be seen and only a handful of mHealth apps can be found through Health Canada's website.

The Canadian Medical Association in 2015 released a policy report to help guide physicians on recommending mobile health apps to patients.

CONTINUED ON PAGE 15

Expect more intelligent machines and smart computers in healthcare

BY JERRY ZEIDENBERG

LAS VEGAS – At the latest HIMSS conference, in early March, one major theme was artificial intelligence and its application to healthcare.

A session on The Rise of Machine Intelligence in Healthcare, led by Kenneth Kleinberg, discussed how far artificial intelligence has come and speculated on how much better it will probably get.

We're now seeing smart anesthesiology systems that can replace anesthesiologists. There are robots, like the guided vehicles at Humber River Hospital, in Toronto, that can carry medications, open elevators and warn people to stand back. And soon, there will be radiology and pathology systems that can spot diseases as well as human doctors.

"The world is far from prepared for what is going to happen," said Kleinberg, who has monitored AI and machine intelligence for decades.

One indication of this occurred when the floor was opened to questions and comments. One participant told the audience that he foresees the day when robots will demand their own equal rights amendment. Instead of Isaac Asimov's three rules of robotics, which protect humans, robots and computers may develop the consciousness needed to demand protection for themselves.

One of the leaders in machine intelligence is IBM. Who would have thought that it could build a computer that would defeat two Jeopardy champions? Executives at IBM came up with the notion in 2006, and for the first few years, the results were abysmal. But after stumbling, rapid progress was made. By 2011, they had a high-functioning system called Watson that trounced the Jeopardy champs.

And that's a microcosm of what's occurring, in general, in machine intelligence. A kind of self-sustaining take-off has happened, where very quick progress is being made. That's why Kleinberg says we're unprepared for the future.

At HIMSS, the IBM Watson Health group showed the work it is doing on several projects. One of them, code-named Iaso, is looking through the medical records of patients to discover which of their conditions were unreported. When the unreported pieces are put together, they can paint a picture of a serious condition – like an aneurysm.

Radiologists or cardiologists, when looking for specific conditions in diagnostic images, may not report ancillary problems. Or they might simply miss them.

"Unfortunately, this happens more than you might think," said Dr. Tanveer Syeda-Mahmood, Chief Scientist for the Medical Sieve Radiology Grand Challenge project in IBM Research. Iaso, however, can spot these conditions in records and images. It can then create a more comprehensive report – one that could save your life.

Right now, Iaso is a work-in-progress, but IBM plans to soon apply for regulatory approvals in the U.S.

Another Watson project, code-named Qibo, can act as a physician's assistant by automatically combing through diagnostic images and records to produce a summary of the most important pieces of information.

This task is sometimes assigned to residents, and it may take 15 minutes or more to compile. Qibo, by contrast, can do it in seconds.

"It acts like a smart assistant," said Syeda-Mahmood. Qibo extracts structured and unstructured reports, and can use pattern analysis on numerous types of imaging studies, such as echocardiograms and CT scans. Iaso and Qibo are meant to be used as tools in the hands of physicians. They are not designed to replace physicians, but rather, to enhance the accuracy and speed of the physician's work.

"If I had a serious illness, I'd always want a doctor looking after me, with Watson as an assistant," said Robert Merkel, Healthcare & Life Sciences Leader within IBM Watson Group.

QoC helps healthcare innovators turn ideas for apps into real-world solutions

The company is working with creators in the public and private sectors in Canada and abroad.

BY DIANNE DANIEL

You may think you've invented the next great, transformative healthcare app. And maybe you have. But when it comes time to move your idea beyond your test group so the entire hospital, community, province or country can benefit, what then? Do you have the foundation and resources to navigate your way through the complexities of security, privacy and interoperability that follow?

As easy as it is to build mobile health products and services, scaling them is an entirely different story says Raymond Shih, co-founder and president of Toronto-based QoC Health.

"Every week you see or hear about a pilot app being tested at a hospital and there's always the promise that if it's validated, and people use it across the healthcare system, it's going to save money," says Shih. "But very rarely do you see that article a year later that says everybody's using it."

One of the first healthcare-related companies to join the growing global community of Certified B Corporations, sustainable companies in business for the greater social good, QoC Health is on a mission to change that scenario. Founded in 2010, the fast-growing company is bridging the gap between innovation and scalable products for a diverse group of healthcare clients.

Leveraging a highly skilled in-house team of healthcare experts, IT professionals and entrepreneurs, QoC Health has developed a cloud-based platform it says provides all of the functionality required to rapidly prototype mobile healthcare solutions. It also provides the underlying infrastructure to scale those solutions across multiple stakeholder groups and jurisdictions, all for the purpose of supporting others.

As Shih explains, the company isn't in the business of coming up with game-changing ideas. Rather, its job is to ensure those ideas don't end up on a shelf, collecting dust.

"We don't want to be a healthcare company that's just making money," he says. "We really want to be a company that tries to improve the overall quality of care in the system."

Obtaining B Corp certification is one way to demonstrate that commitment. B Corp companies are routinely evaluated on many levels to ensure they meet rigorous standards of social and environmental performance, accountability and transparency. One of the core principles is that a B Corp is "purpose-driven and creates benefit for all stakeholders, not just shareholders."

Collectively, B Corporations are leading a growing global movement of "people using business as a force for good." Individually, each one aspires to use its business power to solve social and environmental problems.

QoC Health's self-declared B Corp mission is to reimagine the patient care experience by shifting care to the community, reducing healthcare costs and improving access to care. Its cloud-based platform-as-a-service and infrastructure-as-a-service offerings do that by helping to create and grow electronic circles of care, applying the company's technology to securely connect patients, providers and other community support services in a way that fosters stronger collaboration and ultimately improves patient outcomes.

Healthcare apps spring to life in a variety of places. It might be a researcher in a lab, a physician in a clinical setting or a service provider in the community who comes up with the notion; no matter where the idea originates, the creators eventually reach a point where their idea is proven in a small test group or pilot project and it's time to roll out to a wider population.

That's when the complexities of privacy management, interfacing to legacy systems, seamlessly integrating with an electronic medical record (EMR) or adhering to strict regulations can prove challenging.

"There's a temptation to go it alone and that typically doesn't end well," says Shih, noting that each jurisdiction has its own set of requirements.

That's where QoC Health steps in, partnering with innovators to expand their ideas by adding the foundational layer beneath. "We provide all of the components out of the box so that healthcare providers are spending their time, effort and resources on improving their tool, doing rapid iterations and testing rather than spending a year building something that's already been built," he explains.

Some of the core components provided by QoC Health's Cloud Connected Platform include profile management, multi-directional collaboration, HIPAA/PHIPA compliance, analytics and business intelligence, and turnkey EMR integration.

Each building block is white labelled, meaning how a customer applies the technology will be unique to their solution. The underlying infrastructure required to scale, supported by secure data centres in Canada, the U.S. and U.K., is already in place and managed by QoC Health.

By leveraging that foundation, customers are free to focus on what their app might look like and who it might connect, says QoC Health co-founder Sarah Sharpe, who is responsible for Healthcare Analytics and Quality Improvement and works hands-on with clients to evolve their ideas. "What we try to do in any discovery process is to imagine the ideal scenario because it actually may be possible," says Sharpe.

For most clients, the starting point involves conceptualizing a circle of care: Who needs to be connected to who and what do they need to do? From there, QoC Health helps to establish a framework for moving forward, including objectives, timeline and cost. Several development methodologies are used, from experience-based co-design to research-based design.

"We can look at any scenario and say, 'Here's where you need help. Here are the points where you're strong. Here's where we can step in and actually help you through the journey of actually developing an app, making sure it's evaluated and sustainable,'" explains Sharpe.

Sometimes the electronic circle of care is already well established and the mobile app is proven. All that's required from QoC Health is the expertise to grow.

Robyn Henderson, founder and CEO of The Uncomplicated Family, a progressive organization based in Alberta, approached QoC Health in the fall of 2015. Her company's revolutionary technology called Teleroo, developed in 2011, is a collaboration tool designed to create efficiencies in the way essential services are managed and delivered to children with complex needs.

"Our goal is to un-complicate things so that people can enjoy the best quality of life," says Henderson, who at the time, was looking for a technology partner to help scale the product.

The idea for Teleroo was born from Henderson's desire to make a difference in the lives of families. The mobile app is permission based and designed to be used by anyone in a child's circle of care, including parents, speech/language pathologists, occupational therapists, physical therapists, behavioural consultants, physicians or teachers. One of the most engaging features is a video library that enables users to capture and securely store behaviours or events on a mobile device as they occur in a child's natural environment. The company has written a ground-breaking algorithm to blur everyone else out of the frame so that the videos can be shared without compromising privacy.

For example, one family used Teleroo to film a peculiarity in their child's gait. After waiting six months to see a specialist, when the appointment finally came, the doctor was unable to assess the child due to behavioural issues. Using Teleroo, the parents shared the video that had been captured and the doctor was able to provide treatment.

"The whole point is to build local capacity," says Henderson. "If a speech/language pathologist has an excellent idea for how to work with a particular child

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ILLUSTRATION: LINDA WEISS

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CANADIAN Healthcare Technology

Teamwork key to improved quality of care, especially with patient hand-offs

Dr. Tepper is a Toronto physician who still practices when away from his quality improvement agency's desk – both with the St. Michael's family health team and in the North York General Hospital's emergency department. But he also bristles with high level health care management smarts and wide experience including a stint as the province's first assistant deputy minister responsible for providing Ontarians with the right mix of health care providers. Keen on marginalized populations, Dr. Tepper has been active with groups addressing inner city health and rural healthcare. His academic credentials include a degree in public policy from Duke University, an MBA from Western University, and a Master of Public Health from Harvard. Dr. Tepper spoke recently with CHT contributor Andy Shaw.

CHT: Dr. Tepper, we're always curious to know how the medical leaders we talk to got to where they are now. So what led you to being Health Quality Ontario's leader?

Dr. Tepper: I think it was the chance to combine my frontline experiences as a physician and take a system level approach to addressing better quality care. You know, every day hundreds of thousands of people go to work in the healthcare system with a deep commitment to providing the best possible care for their patients. So the mandate of Health Quality Ontario is to give those people better support in doing their work. For me, it is a very important opportunity.

CHT: As I understand it, you provide support largely in the form of more and better information, so you are essentially an advisory agency. But do you ever wish you could instead just crack a whip over people's heads and say, "Do quality improvement this way, now!"?

Dr. Tepper: Well, one of the things we know from our experience is that we are tackling very difficult quality issues every day. We also know that people are working hard at them already. So, I really believe it's best to support them by giving them better information, but also better tools by creating 'communities of practice'. Overall our approach is to support people where they already have a strong desire to go in providing the highest quality of care. I don't hear anyone in healthcare, saying, "We don't want to participate in better quality care." Rather we hear, "Can you help me get there?"

CHT: You have had just over two years leading Health Quality Ontario. How well do you think you've done so far?

Dr. Tepper: First, it's not about what I have done but rather about what the remarkable group of people here at Health Quality Ontario and the many partners we work with in the healthcare system have done. Quality is, after all, a 'team game'.

But I do think there are areas where Health Quality Ontario has demonstrated success. In the area of surgery, for example, we are helping Ontario to adopt the National Surgical Quality Improvement Program (NSQIP). We are also working hard to support primary care-givers. To do that, we take measures of their key clinical practice and every few months send them a confidential personalized report showing them how their performance compares to their peers. We also combine that with giving them practice tips and tools they can adopt if they see from our reports that there is a particular area they can improve on.

As well, are very pleased to be co-leading a program called Adopting Research to Improve Care (ARTIC). This program takes proven examples of best practice in one part of the system and helps other organizations adopt the same approach.

As you may know, the Ontario Ministry of Health and Long-Term Care has developed something called Health Links, which are virtual communities of practice, focused on quality improvement and targeting that one percent of the population that is the most unwell. Health Quality Ontario provides support to more than 80 such Health Links across the province.

Finally, every year we collect formal 'Quality Improvement Plans' from more than 1,200 healthcare organizations across the system. We then provide feedback and share the ideas of new and innovative ways of doing things that we spot in those plans. This initiative started with about 160 hospitals, but now we also have participation from primary care, home care, and long-term care facilities. So it's fair to say that Quality Improvement Plans have really had an impact on our provincial healthcare

CHT: How do those Quality Improvement Plans get shared?

Dr. Tepper: One way is that we post all those plans on our (hqontario.ca) website. The second way is to re-shape the plans into broader themes and findings reports,

Adopting Research to Improve Care (ARTIC) takes proven examples of best practices and helps with their adoption.

which we send back out to the managers and caregivers on the front lines. And, of course, many healthcare organizations put their Quality Improvement Plans on their own websites.

CHT: Are there other models for you anywhere else, or is what you are doing at Health Quality Ontario pretty much unique?

Dr. Tepper: There are other health quality councils in Canada and other parts of the world. Each one is a bit different in how they are structured and their mandates. But what truly sets us apart is we have a mandate to look carefully at the evidence surrounding new interventions and technology in healthcare, and then make recommendations to government about funding them. We're very aware that just because something's new and shiny doesn't necessarily mean it works well or is cost effective.

Also, on February 10, we launched our new Quality Standards program. We are working with experts, providers, patients and families to create a set of concise standards for the best evidence-based care possible given to patients with selected conditions.

Tepper: providers want to know how to improve.

CHT: Is there one thing among Health Quality Ontario's accomplishments under your direction that you are most proud of?

Dr. Tepper: I think that people in the organization take pride in the very broad range of accomplishments that occur each year. However, one new area of activity that I think has been critically important in our work is the way we involve the full spectrum of patients, families, caregivers, and the public.

CHT: How do you involve patients, exactly?

Dr. Tepper: First, we make sure that we have patients on our committees; they share their experiences in our reports; and they give us guidance on what we should look at next. We also have caregivers on our Board and have set up a provincial Patient and Family Advisory Council (PFAC) as well as a wider reaching Patient and Family Advisory Network (PFAN). So, increasingly patients and care providers are active participants in our work. That's a pivotal shift which has been really good for us. If what you are about is improving the quality of patient care as we are, then you need to involve patients in order to benefit from their experience and wisdom.

CHT: So what now are your priorities going forward through the rest of 2016 and beyond?

Dr. Tepper: We are committed to keep on improving our reporting activities at the provincial, regional, facility and even – where appropriate and possible – the individual level. This information sharing is a critical part of quality improvement. People and organizations need to know how they are doing and how their performance is improving over time. Accordingly, we are looking to significantly enhance our online reporting and allow people to find information more easily.

We've also launched a new 2016-2019 strategic plan for Health Quality Ontario – Better Has No Limit: Partnering for a Quality Health System – which sets out our priorities and goals for the next three years.

CHT: In that plan do you address such top-of-mind healthcare quality issues as high rates of drug, surgical and other medical errors? And what about innovative tools such as checklists? Can they reduce errors?

Dr. Tepper: Last year, we participated in a national report called 'Never Events for Hospital Care in Canada'. It was the first report of its kind in Canada on things that should never happen in Canadian hospitals. Working with the Canadian Patient Safety Institute we developed a 'never' events list that includes errors like doing surgery on the wrong body part, or on the wrong patient; conducting the wrong procedure, or giving wrong tissue, biological implant or blood product to a patient, or leaving behind an unintended foreign object in a patient.

As for checklists, yes, there's a large body of evidence showing that checklists can be remarkably effective in increasing patient safety. There's also evidence showing that checklists are no more than a tool and not a 'magic bullet' or solution. As such, they have limits. You need to embed them in a larger effort of cultural and structural change. Just dropping in checklists into the healthcare system will not necessarily lead to improvement.

CHT: Aside from greater patient involvement, what are the other human factors at play in quality improvement?

Dr. Tepper: Collaboration and teamwork are paramount. We tend to think of things like medical errors and safety as being very local and specific to one hospital. But what thing we need to do is think more broadly and collaborate regionally, provincially and even nationally on these issues because the same challenges are everywhere.

The other opportunity for teamwork is to focus on local systems and the entire care journey a patient might experience. Quality risks and gaps occur most often when people are moving between sectors: from hospital, to homecare, to primary care, to community services, to rehabilitation hospitals and back. We need a better integrated system for all that movement and you need effective teamwork to produce it.

CHT: Getting back to your 2016-2019 strategic plan, how will you measure Health Quality Ontario's own performance?

Dr. Tepper: I think it's very important that we just don't report on other parts of the healthcare system but also hold ourselves accountable. So we have developed a number of performance indicators that measure our own ability to deliver on our strategy. Once they are finalized we will share them publicly.

CHT: Is there anything about quality improvement that maybe we haven't touched on, Dr. Tepper – something you would like our readers to take away with them?

Dr. Tepper: Yes, and it's this: quality improvement should never be about blaming and shaming. Rather it should be about creating a culture in which everybody is committed to providing excellent care today and then committed to finding a way to be a little better tomorrow. Quality improvement is about creating a culture that improves care continuously. We want the highest quality care to be the job, not just part of the job.

Sansoro Health wins Venture+ Forum pitch competition at HIMSS16

LAS VEGAS – Sansoro Health, of Minneapolis, Minn., has been named the winner of the 10th annual Venture+ Forum pitch competition for startup companies in the healthcare technology industry as part of the 2016 Healthcare Information and Management Systems Society (HIMSS) Annual Conference & Exhibition.

"The HIMSS Venture+ judges picked Sansoro for its innovative solution, strong business plan, and value proposition for customers and investors," said Venture+ Forum Founder and Moderator Howard Burde, Principal of Howard Burde Health Law, LLC.

"Sansoro represents the leading edge of EMR integration," continued Burde. "The commitment of the U.S. Department of Health and Human Services and major electronic medical record vendors to open Application Program Interfaces (APIs) represented an important announcement. More important, Sansoro does that hard work now. We believe it earned the HIMSS Venture+ Forum victory by providing the solution that meets the commitment."

Sansoro Health's innovative software, Emissary connects any software to an EMR through an open API model. Using this rapid, scalable, and secure approach, health system customers easily deploy consolidated patient records from multiple EMRs, mobile healthcare applications for physicians, real-time analytics tools, and improved patient medical record portals.

Third-party developers benefit from Emissary's standardization by avoiding the complications of integrating with multiple EMR systems.

Sansoro's solution helps with interoperability between systems. HIMSS has highlighted this as a major issue.

"The Venture+ Forum award recognizes Sansoro as an innovator in the dynamic healthcare IT startup community," said Jeremy Edes Pierotti, CEO of Sansoro Health. "We are thrilled to be seen as one of the most promising investments that a healthcare customer or healthcare IT investor might make. That reflects the strength of Sansoro's business plan, our vision for seamless EMR integration, and of course the outstanding work of our entire team."

"Experts and leaders all across our industry, from federal government to the private sector, have highlighted the need for open APIs to share EMR data. Sansoro Health's Emissary software fulfills that need today by providing open APIs that are both proven and deployed across health systems, creating better experiences and outcomes for physicians and patients," said Dave Levin, MD, CMO of Sansoro Health.

Sansoro Health's team includes experienced health IT executives, EMR experts, and sought-after software engineers. The company's Emissary software is currently used at some of the leading healthcare systems across the United States, and is continuing to expand its presence.

The Venture+ Forum spotlights top innovative early and growth-stage companies and provides business-building educational resources and networking opportunities for innovators with leading dealmakers, investors and health industry partners. Over 60 companies applied to participate in the Venture+ pitch competition. Sansoro Health was selected as the winner from the final four companies that had delivered live presentations to an expert panel of healthcare industry leaders and investors.

According to the company, Sansoro Health transforms healthcare information technology by providing robust web services integration across the major electronic medical record (EMR) platforms. The Minneapolis-based company's award-winning software, Emissary, embraces a rapid, scalable, and secure approach to provide a bi-directional, proven set of EMR-agnostic, open APIs.

QoC helps innovators turn ideas into real-world solutions

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– or even across children – it can be shared with all practitioners, for example."

Kids with autism make up 80 percent of Teleroo's current user base in Alberta. The company has successfully demonstrated improved efficiencies in its local community and is now widening its reach to span across Canada and the U.S. Earlier this year, it received an education grant from the Ohio Department of Education to roll out a cloud-based version of Teleroo to benefit hundreds of thousands of school children in the Ohio area. QoC Health is playing an instrumental role in making sure the technology will scale as needed.

"We had been vetting different platforms to help us achieve that goal and they were just a beautiful fit for us," says Henderson, noting that the two companies are well aligned. "We're not just building cool technology. It needs to be built based on what kids and families need."

The Uncomplicated Family is an example of how a private sector company is benefitting from QoC Health's scalable platform and white-label approach to building mobile solutions. Innovations from the public sector also stand to benefit.

One example is the Women's Mental Health Program at Toronto's Women's College Hospital, where psychiatrist Dr. Simone Vigod has launched an important decision aid for women faced with deciding whether or not to use anti-depressants during pregnancy. Roughly one in 10 pregnant women will suffer from depression. While there can be a negative impact when the illness is left untreated, since it often leads to drinking, smoking or general disregard for personal care, there are also theoretical risks to the baby when medication is prescribed.

"That really leaves women in a Catch-22 and some of our earlier work had shown that even when these women come from specialized clinical care, they still don't know what to do about this situation," says Dr. Vigod.

As lead for the hospital's Reproductive Life Stages Program, Dr. Vigod decided to create a patient decision aid to assist women in making the best decision for their own set of circumstances. Prior to reaching out to QoC Health, she performed a comprehensive needs assessment to first validate that pregnant women facing the choice of whether or not to take antidepressants do indeed have very high levels of decisional conflict, and second, to better understand the barriers to making an informed decision.

Dr. Vigod could have gone the route of developing a paper-based decision aid, but in today's connected world, an electronic solution made more sense. Once her research was complete, she partnered with QoC to start development.

She says QoC Health was able to work within the boundaries of strict International Patient Decision Aids Standards and offered impressive ideas to help grow the product. "In a lot of ways, they gave us a leg up because by the time we applied for funding, we had a prototype," says Dr. Vigod. "We couldn't have done it on our own. We provided the content, the patient steering committee to go over the various iterations; they were the ones who provided the frame for doing that."

Public and private organizations often have good ideas for apps. The challenge is in creating them and scaling up.

The resulting decision aid is accessible by phone, tablet or PC, and accessed via a secure login.

Users peruse information about why or why not to take antidepressants, what other treatment options are available, and an overview of the risks associated with treatment versus non-treatment. As they read each benefit or risk, they assign it a ranking. In the end, they are presented with a summary that reviews everything they read, how they valued it and what pieces they feel they're struggling with.

"The idea is they go back to their doctor and sit, having done this, and make a more timely and effective decision," says Dr. Vigod. "Because it's one of those situations where as a physician, I can't say for sure that it will be better if you take antidepressants than if you don't."

Dr. Vigod's patient decision aid is currently being piloted by a group of 50 women. It has also gained the attention of the National Health Service in the U.K. and QoC Health is helping to scale a version that is applicable to women there as well.

Healthcare apps

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The document, however, provides only basic high-level recommendations and lacks a useable approach that can be applied to practice.

Navigating the ever-evolving space of mHealth apps can be a challenge for both the clinician and the patient alike. As patients further turn to their healthcare providers for advice and information regarding the use of such tools, it will become critical for providers to have a practical approach towards making such recommendations. This is particularly true in this transition period where there is no centralized regulation or evaluation of these applications.We propose that clinicians evaluate and treat mHealth apps with a very similar framework to the way OTC (over-the-counter) medications are treated. Conceptually, both groups of "interventions" share many similarities: they don't need a prescription for usage; patients will still approach clinicians and other healthcare providers for advice on their use; they carry potential risks and benefits that need to be weighed to the individual patients and there is a broad selection of uses, as well as a growing market of companies selling the products that can make selection difficult.

Just as a clinician may have a preferred choice of over-the-counter medications that they may recommend, clinicians through experience, research and sharing within their networks can begin to develop a list of their "preferred apps" for specific therapeutic conditions and purposes.

Clinicians can begin to develop a list of their preferred apps for specific therapeutic purposes.

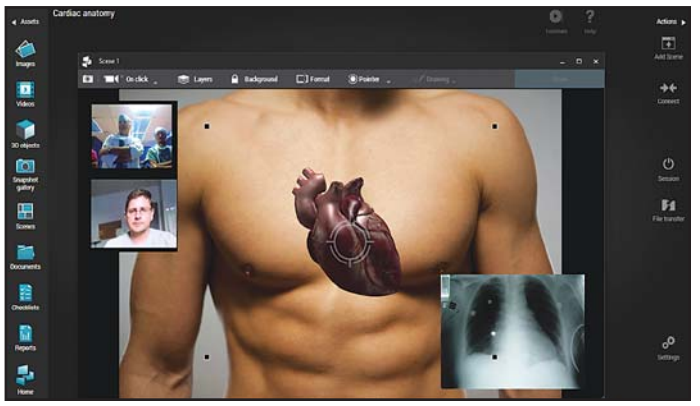
There needs to be more work at multiple levels of the healthcare system to approach this topic.

Medical associations and the Ministry of Health need to continue to develop a robust and agile framework for screening and categorizing such apps, and provide material to educate both patients and healthcare providers alike.

Medical schools and residency programs need to incorporate topics around health information privacy and mobile health applications as a standard practice. Until then, frontline clinicians must take the responsibility for developing their own lists of 'preferred apps' and sharing them within their networks and associations, and ensuring time is allocated to discussing this important topic with patients.

Puneet Seth, MD, is a practicing physician in Ontario and is Chief Medical Officer of InputHealth, an award-winning digital health company connecting patients and providers through the Collaborative Health Record. You can follow him on twitter @psethmd. Dorian Murariu, MSc, is a Clinical Research Coordinator in Ontario and a co-investigator on clinical studies in diverse fields including head and neck surgery, cardiology, medical education, and global health.

Reacts – a digital collaborative platform that brings remote interaction to the next level through “hyperpresence”.



In their day to day clinical environment, health care professionals constantly need to interact with their patients and colleagues, wherever they may be. They need to share knowledge and expertise, reassure their patients, train and assess the competency of their students. What they need is a tool that allows them to remotely interact in a dynamic, engaging and user-friendly way. Reacts was created with this perspective in mind.

Reacts (“***R**emote **E**ducation **A**ugmented **C**ommunication, **T**raining, **S**upervision*”) helps improve access to care, decreases costs, and improves efficiency and satisfaction among both patients and health care professionals. It has been designed to meet the highest performance and security standards of the medical industry.

Reacts is a feature rich, integrated solution that allows you to:

- Communicate face-to-face using high quality secured video calls, either peer-to-peer or between multiple remote sites
- Share virtual pointers to direct attention to anything on live streams
- Connect and stream multiple video feeds simultaneously, using any medical device that has a video output
- Securely share your applications or your desktop screen
- Share instant messages, files and documents easily and securely
- Manage your files and multimedia elements from your Reacts library
- Store and retrieve files centrally, with 2 GB of cloud storage per licence
- Perform virtual guidance by superimposing semi-transparent images, 3D objects, or live video streams onto a remote user’s live stream
- Take snapshots or video recordings, and add annotations to any image, video, or asset
- Create checklist and report templates to ensure a standardized approach to care or to document your virtual encounters
- Use Reacts in simulation sessions to capture and record multiple video feeds that can then be reviewed offline for briefing/debriefing purposes

Reacts goes beyond the medical world. It can be used in several other fields such as education, field services, public safety, business, and any other area in which interactive, multimedia collaboration is needed.

Reacts provides a highly secured virtual environment and allows you to interact with colleagues, patients, clients or friends in an unparalleled way. It will make you rethink the way you communicate.

Welcome to hyperpresence.

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