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Cindy Forbes

YOU: GOOD AFTERNOON, BOB. HOW ARE THINGS?

Bob: Very good, thanks. You: Any recent health problems or issues you want to bring up today? Bob: No, I’m all good. You: I’m really pleased to see you taking better care of your health these days. Bob: Uh …. thank you. How can you tell? You: Well, the fact that you’ve joined a health club for one thing. Not only that but all of that exercise equipment you’ve just purchased — you know, the bike, weights — must be starting to do some good. Bob: But, but … I haven’t told you about that. You: No need. Your credit card invoices show it quite clearly. Not only that, but the records the department store keeps are certainly extensive. Same with the supermarket and the bookstore. That’s how I know you are also eating a lot better and getting that “Better eating in two months” book — smart move. It’s starting to pay dividends as well. Bob: But you haven’t weighed me yet. You: No, but the sensors in the floor of the foyer at your office keep pretty good track of that. Great tool on your phone as well, to track your VO2 max. Pleased to see you haven’t been off sick for months either. Bob: (speechless)

The more information you have on your patients, the better the care you can provide for them. But you can imagine how uncomfortable you would be in Bob’s shoes in the above scenario. The reality is data is being gathered about all of us all the time in a number of ways and is being used to tailor how organizations and companies interact with us.

When this data gathering is conducted at a mega-level and anonymized, the product is known as ‘big data’. There’s a growing interest in utilizing the insights gained from viewing these billions of bits of information to better improve population health and the delivery of health services.

In this new world, physicians will be required, in ways they never have been before, to weigh the impact on privacy and quality of care as the two principles are coming increasingly into conflict.

Electronic medical records are key to the use of big data in health care because of their capacity to gather a lot of information in a standardized way that is amenable to rigorous analysis.

Physicians are central to finding the right balance between leveraging the advantages of big data for enhanced care, service delivery, resource management and commercial opportunities — all while protecting patient privacy.

Physicians are central to finding the right balance between leveraging the advantages of big data for enhanced care, service delivery, resource management and commercial opportunities — all while protecting patient privacy.

It is for this reason that the CMA is in the process of finalizing guiding principles for the optimal use of big data analytics by physicians.

These principles spell out the characteristics of safe and effective big data analytics services, characteristics you already see in groundbreaking initiatives such as the Ontario Medical Association’s Insights 4 Care (i4c) program.

Big data may hold the potential for revolutionizing patient care at the population level. But even though your online bookstore already knows the sorts of books you like to read and your web browser is pre-selecting sites you may be interested in, we as physicians must remember that — except in the most extraordinary circumstances — individual patient confidentiality remains paramount.

Dr. Cindy Forbes is president of the Canadian Medical Association.
A modern form for a modern era

CMPA provides new resource for online communications with patients

Pat Rich

THE CANADIAN MEDICAL PROTECTIVE Association (CMPA) continues to raise the bar by providing a useful resource for physicians who want to use modern technology platforms such as email or Skype to communicate with patients.

Last year, the CMPA published guidance on the use of social media that provided some of the most balanced information available for physicians considering using these tools and platforms professionally.

Now the organization has published a revised patient consent form for use by physicians who want to communicate by email or other electronic or digital channels to exchange information with their patients.

In an interview, Dr. Patrick Ceresia, CMPA chief privacy officer and managing director, eHealth, said the CMPA updated the form because “across the country, physicians are using all forms of electronic communications channels, in spite of the restrictions that might exist in their jurisdictional privacy legislation.”

He noted that, currently, violations of privacy legislation mandating that physicians use only secure communications channels to discuss medical issues with patients “are not uncommon and risk becoming ... routine.

“For example, if you ... look at the tertiary care environment (teaching hospitals) by the resident doctor population — if they were ever to apply the security and privacy requirements that privacy legislation demands — the tertiary care system would grind to a halt.”

He further noted that privacy legislation applies to fax machines as well as any other communication channel, yet there are few — if any — hospitals using secure fax.

Ceresia stressed that the CMPA is not counselling physicians to in any way violate privacy legislation, but wants to ensure that doctors and their patients are fully aware of the implications of using e-communication channels.

“These technologies are increasingly convenient and folks aren’t just going to walk away from them,” he said.

He described the current situation in Canada as a case of first-generation privacy legislation coming up against third-generation technologies, causing a disconnect between regulatory requirements and common practices.

Most jurisdictions make recommendations and reference to the security requirements of communicating with a patient about personal health information, said Ceresia, but Alberta goes further. He described that province as the only jurisdiction with “no wiggle room ...

“A physician in Alberta is blatantly violating privacy legislation if they are using unsecured communication about patient information.”

Ceresia said the CMPA has taken its pre-existing email consent form and expanded it to also cover all other e-communication channels, such as texting and Skype.

One change from the association’s earlier communications form is an acknowledgment that e-communication between physician and patient may not be encrypted.

While a 2012 article from CMPA noted “all emails and attachments should have adequate encryption,” the new consent document states “it is possible that communications with the physician or the physician’s staff using the services may not be encrypted.”

He said CMPA hopes that the initiative will cause physicians and their patients to consider the issues and potential risks of using these new channels and at the end of an informed consent discussion decide which (if any) will be used for physician–patient communications.

The new document is “a cafeteria list,” he said, whereby the physician and his or her patient can select which communications tools are relevant. The document also serves to remind physicians that they should use the form or another method of documentation to note in the patient record that the discussion has taken place.

Ceresia said it is incredibly rare for patients to complain about physicians using e-communication tools; the opposite is usually true. Patients expect it.

While stressing the CMPA’s educational role in this area and urging physicians to comply with existing legislation, Ceresia said his view is that privacy legislation should be assessed and updated to reflect current practices.

“Why is it that you and I as patient and physician can have an informed consent conversation about the most serious procedure — but under the legislation aren’t allowed to decide whether or not an email communication needs to be secure?”

The CMPA is actively engaged in providing advice to governments, physician organizations, and others regarding eHealth, eCommunications and privacy. The organization states that it remains committed to working with relevant stakeholders to assist in updating legislation so that privacy concerns are addressed, while at the same time maximizing potential benefits to patients.

Pat Rich is Editor of Future Practice.
Naylor brings ‘innovation through technology’ message to GC

Pat Rich

INNOVATION THROUGH BETTER USE of health information technology was a small but important part of the message when Dr. David Naylor presented his keynote address on the first day of General Council (GC).

Naylor headed a high-profile federal panel that had been asked to provide recommendations on how to bring innovation to the Canadian health care system.

The 126-page report of the Advisory Panel on Healthcare Innovation was released without fanfare by the government, but its recommendations have subsequently received wide attention from media.

Technological transformation through digital health and precision medicine was one of the five main themes outlined by the panel, and Naylor expanded on this during his address. Another theme was enhancement of patient engagement through better use of virtual visits and mobile health.

In his presentation, Naylor singled out Dr. Eric Topol, a leading United States physician scientist who has taken on a leading role as a “generalist futurologist” in describing the growing convergence of biotechnology and IT.

“Canada is a very long way from Dr. Topol’s utopian vision,” said Naylor, adding the panel was “forcibly” struck by the work yet to be done to realize the future Topol describes.

One of the panel’s core recommendations is the creation of a Healthcare Innovation Agency of Canada that would administer a national health innovation fund to enhance the quality and value of health care over the next decade.

Naylor said the panel envisaged that Canada Health Infoway would become part of this new agency once it had completed current projects.

As Infoway shifts its emphasis from helping develop the IT infrastructure in Canada to supporting innovative technologies such as mHealth, virtual care, telemonitoring and wearables, Naylor said it would be important for the organization to be part of the new, larger innovation agency.

While Naylor’s remarks at GC regarding health IT and digital health were limited, the advisory panel’s final report contains more extensive notes on tools ranging from patient portals to the use of big data in the public interest.

The report also underscored Canada’s slow progress in rolling out consumer health technologies to all patients.

And in a commentary aimed squarely at physicians, the panel report emphasized that effective use of electronic health records (EHRs) by physicians means optimizing these records to improve quality, safety and efficiency.

“EHR adoption is not just having a computer in the office, but knowing how to use it,” reads one quote taken from the consultation process and used in the final report.

The panel also highlighted the need for patients to have access to their own health records.
During the strategic session on seniors care, delegates strongly supported a call for the development of guidelines and standards for the use of telemonitoring technology to help seniors remain in their homes.

Dr. Jessica Otte, from Doctors of BC, brought forward the motion, noting that a robust response is needed to improve seniors care and that telemonitoring can improve care for the most vulnerable seniors.

Otte said home telemonitoring has the potential to be used for chronic disease and is an emerging patient-management tool that can produce accurate and reliable data, empower patients and provide early warning when interventions are needed.

A 2010 Cochrane Collaboration meta-analysis showed a significant reduction in all-cause mortality and hospitalizations when home telemonitoring and telephone follow up were used for patients with chronic heart failure.

Because the approach is relatively new, she said further research of efficacy and patient satisfaction is required and guidelines should be developed to ensure the technology is used safely and effectively.

The resolution calls for the collaborative development of guidelines by regulatory authorities, other medical organizations and vendors.

At another session, delegates endorsed a recommendation that “primary care telemedicine investments, policies and regulations support comprehensive and continuous patient-centred care.”

Doctors of BC President Charles Webb stated: “While there are very real benefits to the application of telemedicine in primary care, particularly in rural, remote and other underserved areas of provinces and territories, telemedicine also has the potential to result in fragmented and episodic care.”

When telemedicine is used, family physicians should continue to provide ongoing care and build on the patient–physician relationship, he noted.

Another resolution adopted at the meeting supported the “organization, centralization and management of cradle-to-grave health records for patients living in Canada.”

Dr. Peter Barnsdale, who brought the issue forward, said a national organizing structure is needed “that automatically receives the medical records when a patient moves and forwards the records to the next registered provider.” Such an approach is necessary, he said, to address concerns about patient records being lost when a patient relocates or when care is transferred to another provider.
THE OTHER DAY, A CELLPHONE probably saved a child’s life.

The child in question has a tracheostomy. On this day, he was having difficulty breathing, so the young attending hospital doctor performed an endoscopy. While he felt that everything looked normal, the doctor also recorded the procedure using his cellphone with a special adaptor. He wanted to send the video to a senior colleague, just to be sure he was right.

As it turned out, the patient was in trouble. The tracheostomy tube had caused erosion in his windpipe right next to a major blood vessel. Had the erosion progressed even a few millimetres, the child would likely have bled to death.

After reviewing the video, the erosion was detected and emergency surgery was done to repair the problem. Recording and sharing the video in a secure, compliant way — using a cellphone — likely saved that child’s life. What struck me was that as doctors we have been recording videos of these kinds of procedures for a long time. But we rarely share them. I was left thinking: “Thank goodness he had access to a recording device.”

VIDEO

With the advent of cellphones and YouTube we have become a society of over-sharers. Yet videos that have lifesaving potential are seldom seen by anyone who could actually make a difference. Why are cellphone videos of cats viewed millions of times, while those of surgery and other medical procedures — videos that are important — are generally seen only by the doctor who performed the event?

If a complication arose during your surgery, wouldn’t you want to know, to understand, to ensure that it couldn’t happen again? Wouldn’t you want the extended team of medical professionals who will care for you during your illness and recovery to know exactly what your physician knows?

EASE OF USE

Considerable effort is required to export and share videos captured using a
In hospitals and clinics, we generally use purpose-built medical imaging machines known as ‘endoscopy video towers’ — large, expensive tools that are not upgraded often. Although they work well where they’re installed, you will not find a video tower in every OR or clinic, meaning video may not be an option for many important procedures. If you do get to use one of these devices, moving the video recording device off the unit is cumbersome. It requires transferring the recorded video to either a DVD or USB drive, then uploading those images to a hard drive for storing, organizing and sending. All these steps pose a barrier to easy use.

A few years ago, it occurred to me that I was carrying around the power of a video tower in my lab coat pocket. My cellphone records HD video that I can very easily share with colleagues by email or text message. I reasoned that if I could find a way to connect that cellphone to an endoscope I could bypass the video tower altogether.

What I developed was an adaptor that easily connects these two pieces of equipment (Clearscope, Clearwater Clinical Limited). Now my colleagues and I use our cellphones to capture video from endoscopes, microscopes, otoscopes, even regular medical pictures and X-rays.

Because these are medical images, we must keep them private and treated as part of the patient’s medical record. This is easily solved with the use of a companion mobile app that encrypts, protects and backs up the images to a compliant health care cloud (Modica, Clearwater Clinical Limited).

Sharing and recording medical images via smartphone can increase the risk of a security breach, so caution is warranted. The camera app that comes with a phone is designed for consumers and not intended for medical use, so loss of the phone can result in data loss or breach of privacy.

Given the additional privacy risks inherent in mobile devices, experts recommend that explicit patient consent be obtained when using these devices for photo documentation — and that this consent be stored with any images taken on a mobile platform.

Encrypted data and devices should be used, and access should be protected by strong passwords.

Having addressed all the issues, we started recording — and more importantly, sharing — more video of medical procedures. We share with nurses, doctors, consulting physicians and our patients.

**IMPROVED COLLABORATION**

I recently shared a video with the mother of a patient on whom I performed a procedure that needed to be repeated several times over several months. Each time in the past, I had explained the procedure verbally, and each time she nodded. But on this occasion, I showed her a video of the procedure.

I was amazed by her reaction. She exclaimed, ‘I didn’t realize you were actually ...’ Now that she could visualize it, she understood the surgery, the need for repetition and the need for special postoperative care. This was an important lesson for me, and one I believe will also help the patient now that the primary caregiver better understands the problem.

In another situation, I recorded video while removing an esophageal foreign body, then showed it to the radiologist who had read the original chest X-ray. He was fascinated and requested a copy to share with the resident and to present at a conference of emergency room physicians. It took less than 10 seconds to get that video to him. This is not voyeurism. Rather, it is the important realization that, with video, dramatic improvements in understanding can be realized.

**CHANGING APPROACH**

While mobile phones may have turned a grumpy cat into a YouTube sensation, they are also poised to change how we approach certain medical procedures. Now that we can easily take and share endoscopy videos, we use them more. And the more we use them, the more value we realize from them.

These videos are an incredibly powerful teaching aid that helps us track improvements over time. They make it possible to consult with experts around the globe, and having video of a procedure means a patient may not need a second invasive procedure when the physician requires a second opinion.

Few things have offered the potential to change the face of health care, since I entered medical practice, that mobile devices do.

After observing the necessary safeguards, I believe many physicians would benefit from considering recording video of their procedures. Responsibly done, this single change could have a positive impact within your health care community.

You can participate in deepening the understanding of current practice, knowledge and attitudes toward mobile devices in health care by completing the following anonymous survey at: http://bit.ly/1UR0h7f

“Sharing and recording medical images via smartphone can increase the risk of a security breach, so caution is warranted.”

— Dr. Matthew Bromwich

Dr. Matthew Bromwich is a pediatric otolaryngologist based at CHEO and the Chief Medical Officer with Clearwater Clinical Limited.
Doctors and their apps:

App-titude: the joy of failing fast in health IT

Eric Cadesky

AS DOCTORS, WE ARE WELL-POSITIONED TO INNOVATE. WE’RE ON THE front line of health care, we are usually open to adopting new technology and, as mentioned in most medical school interviews, we like to help people.

For those who want to become more involved in health information technology, here are some observations on mistakes I made — and happy coincidences that arose — in the process of creating an app.

This is just my opinion; to hear about doctors with bigger ideas and more experience, check out Drs. Darren Larsen, Alexandra T. Greenhill, Doug Kavanagh, Stephen Pomedli, Joshua Landy and Jesse Pewarchuk, to name a few.

WHAT IS THE NEED?
The idea for MeKeeper — our “person-centred health” application — came from the frustration of hearing about patients’ suboptimal medical visits. As my patients travel through the health care system, their information does not always follow them. Emergency room doctors may be unaware of allergies. Consultants may duplicate recently ordered investigations. Patients sometimes return to see me before I know about treatment changes because a report has not yet been dictated, transcribed or mailed. To work around these problems, MeKeeper is a patient-controlled health record (PHR). It allows patients to update their health information in real time and share it with their health care providers. (For those unfamiliar with PHRs, they complement doctors’ electronic medical records — the difference being that in PHRs patients collect and manage the information. It’s like that piece of paper that some patients carry in their wallets, but it yellows and tears less often.)

WHAT IS THE WORST THAT CAN HAPPEN?
First, do no harm. Before making the world a better place, consider unintended consequences. For example, apps to help people track their moles and detect melanoma have received a lot of media and venture capital attention lately. However, studies show these apps have distressingly high rates of false negatives that can lead to avoidance or delay of life-saving medical attention.

WHO’S THE USER?
I was recently in a restaurant that billed itself as fine dining. Indeed, the food was cooked fresh from local ingredients. It was slow to arrive, but the quality was high, the presentation immaculate and the Greek-Bengali fusion was (of course) unlike anything I’d ever tasted. Not that it mattered to me, but the decor was
plain with flimsy pedestal tables, too-bright lighting, worn tile flooring and casually dressed staff. Who was the intended patron? Similarly, it’s important to know who will use your app: patients with particular diagnoses, parents, baby boomers, youth at risk, pregnant women, public health officials or doctors? What is their digital literacy level? Which colours, fonts and sizes are most appealing? Will they understand the medical terms used? Knowing your users helps you to design for them.

WHAT DO THEY WANT?
In medicine, we have moved past the age of paternalism. And in a world of over 100,000 health apps people will reject anything that isn’t readily applicable to their lives. For MeKeeper, we conducted hours of qualitative research with baby boomers, since they represented a group with increasing need to access personal and family health care information. All our decisions and designs flowed from their stated needs.

HOW FAST CAN YOU FAIL?
It took time to produce something functional, but it’s not complete. There are always limits to resources such as time, money and skill. Perfection is a moving target and success is more likely to come from iterative processes.

For MeKeeper, we asked users which functions they wanted most and then released a pilot version that tracked medications, allergies, providers and other personal data. It has a search function so you can check when you took penicillin and what reactions you had. But it doesn’t pull data from EMRs or link different people’s accounts. Those will come later, but the goal was to release something lean because we want to use crowd wisdom: get feedback quickly, improve the product, release a new version, and hit ‘repeat’. It can be hard for the Type A personality to be attached to something imperfect, but iteration leads to improvement.

WHERE CAN YOU GET HELP?
Few people are expert in medicine, user experience and coding — although new medical school curricula should help a bit with this. And, just as in medical practice, few can do it all. Attend hackathons, work your loose connections, watch for Meetups, reach out on social media — do anything you can to meet your future team. From our start coming together at Hacking Health Vancouver in 2014 to receiving some funding from the Vancouver Division of Family Practice, others have taught me so much about IT, funding and project management. And I’m grateful to my wife Erin for letting me skip out on evening diaper changes to attend meetings. Be prepared to ask for help — and embrace it.

WHAT AGREEMENTS DO YOU HAVE?
Doctors can be cheap — not you or me, of course — but good paper makes good friends. Spend the time to draft up agreements and spend the money to have a lawyer review them. Are there shares or options? Who owns what intellectual property? What happens when someone leaves the project? Listen to Kanye: for our startups we want pre-nups.

WHY ARE YOU DOING THIS?
About money … I haven’t made anything other than friends and experience from my work so far in health IT projects. Everyone on the team must have goals that align. It’s exciting to see the sale of Instagram for $1B and the IPOs of Facebook and Twitter generating millions, but that’s like saying you’ll just quit medicine to become a famous actress or a first-string quarterback. It’s easy to be envious, but we rarely hear from those who didn’t make it. At MeKeeper we have options to make the app sustainable, but we want it to be free for users. We’re focusing on quality for now, and the financial model will flow from that. First try to do good; doing well may follow.

Dr. Eric Cadesky (@drcadesky) is a full-service family doctor in Vancouver and a Doctors of BC executive board member. Find more information at www.mekeeper.ca.

(This is a great time to mention that MeKeeper is in beta testing, so download the app at https://play.google.com/store/apps/details?id=ca.mekeeper&hl=en, and encourage your patients to do so too. Then let us know how we can improve. We look forward to hearing your honest thoughts.)

(FUTU RE PRACTICE)
Because the equipment for hearing testing was typically expensive and complicated, there was little opportunity for teachers or parents to step forward and provide this service when the cuts came.

An estimated 3% of North American children and teenagers have some form of hearing impairment. The total economic impact of hearing loss in Canada is estimated to be $18 billion. Hearing impairments are associated with poor school performance and behavioural issues and can impact a child’s language, social and emotional development. It is critical that we find a way to reinstate childhood hearing loss identification in the places where we find children: home, school and the family doctor’s office.

CURRENT HEARING TEST PRACTICES

Early childhood may be the most critical point for hearing testing, due to the lasting effects hearing loss can have on development. However, this testing in children can be challenging and labour-intensive. Numerous physiological and behavioural tests have been designed specifically for testing children for hearing loss.

Conditioned play audiometry (CPA) is a standard way to test the hearing of children who are still too young for a conventional audiometry test. During CPA testing, the child is engaged in a listening game. For example, a child may be instructed to hold a toy and wait for the sound, then drop the toy in a bucket when the sound is heard. The game is intended to keep the child interested in the listening task for the duration of the test. CPA tests are traditionally conducted with the child (and possibly the parent) seated in a sound booth. This form of testing is both operator-dependent (audiologist) and time-intensive. Generally, only special clinics within large cities have audiologists who perform “play audiometry”.

ARE THERE ALTERNATIVES?

Apple’s iPad, as well as other tablet platforms, present a valuable portable medium to perform interactive tasks such as CPA. The tactile nature of interaction with the iPad enables children as
young as two years old to tap, swipe, draw, play and learn using an array of apps.

Over the past few years, our research group has developed a new way to test hearing. Simple tools are given to the patient to perform point-of-care testing, and the user seeks the sound stimulus through an interactive, intuitive platform. This is markedly different from the traditional reactive-type testing. While other automated programs have been developed on mobile platforms, none have the ability to test children as young as three years of age, nor have clinical diagnostic validity.

The iPad application, called ShoeBOX Audiometry (from Clearwater Clinical), enables children to perform a hearing test by playing an iPad game. The interactive testing method is new, can be driven by children themselves, is fast and age-specific. The application fills a void, as there is currently no automated hearing test technology designed for young children. The device is calibrated for use with standard audiometric headphones.

Previous clinical studies demonstrated that in children 3 to 13 years of age the test produces reliable testing in a screening setting. The negative predictive value is 98%, meaning that a negative screen is highly predictive of normal hearing. The positive predictive value of automated testing is 82%, indicating that additional manual testing may be required prior to treatment. Semi-automated play audiometry enables any adult to supervise the initial test.

HEARING TESTING GUIDELINES
Many national and international organizations have existing guidelines for hearing testing in schools. According to the American Speech-Language–Hearing Association (ASHA), hearing tests should be conducted upon initial entry into school and annually from kindergarten through Grade 3, and in the 7th and 11th grades. In addition, it should be conducted on all children who failed a previous screening, those placed in special education programs, children who repeat a grade and children with risk factors such as noise exposure.

This degree of monitoring is not present in Canadian schools. However, the main barriers appear to be equipment and personnel limitations. The deployment of simple, mobile, inexpensive technology may enable us to meet the rigours of established international guidelines.

Standard clinical audiometry takes a minimum of six minutes with younger children, usually closer to 15 minutes, and the total cost is approximately C$300. The iPad application, which is both entertaining and intuitive for children, takes between 45 seconds and five minutes. This interactive tablet audiometry promises to be a cost-effective, reliable testing method that could result in earlier identification of children at risk or experiencing hearing loss.

LESSONS LEARNED
It may seem onerous to establish hearing testing programs in Canadian schools, given the cost, administrative burden and audiological follow up required. However, in 2011 and 2012, our group conducted successful school hearing screening programs in Iqaluit and Uganda. For the latter project, we worked with a near-zero budget. This posed many challenges — from travel to equipment, food and treatment options — for those identified with hearing loss.

We were fortunate to receive a grant from Grand Challenges Canada and to work with the Uganda Hearing Health Care Program and Dr. Doreen Nakku from the Mbarara University of Science & Technology (MUST). With limited funds and a small presence in Uganda, we were able to plan and execute a mass school hearing screening program.

Over nine days, we tested hundreds of school children in Uganda for hearing loss. In total, 639 students ages 4–18 years were screened. Depending on their ability level, the testing was completed either independently by the child or with tester assistance. Children identified as possibly having a hearing loss were retested by a certified audiologist, and those with potential hearing losses were referred for medical follow up.

We identified 103 children with potential hearing loss. Most children used the app to test themselves, with minimal instruction or supervision. However, many challenges were identified when working in a low-resource environment: these included training, referrals and access to more comprehensive care. Background noise was an issue at every school. During break or lunchtime, testing was all but impossible, especially since students were drawn to the area where we were testing. It was hot, dusty and humid — but this never resulted in any problems for the testing or the iPads.

MOBILE TESTING IN CANADA
In January 2015, medical students at the University of Ottawa created an interest group called iHear. This group aimed to reach out to elementary students in Ottawa schools and provide free hearing testing using mobile tablet audiometry. The program, now in its second year, has visited eight schools and screened 251 students — detecting 12 students with previously undiagnosed hearing loss. School screening programs are now popping up in Quebec, Alberta, British Columbia and Nova Scotia.

WHERE DO WE GO FROM HERE?
One of the most amazing aspects of mobile hearing screening is the connected nature of the platform. Medically speaking, there are many questions that couldn’t be answered in the past due to lack of data. Now, with Internet-enabled mobile testing platforms collecting data from numerous sites, we are able to use medical informatics to analyze Big Data. This answers key questions about hearing loss, its prevalence and its impact in the real world.

We will also be able to better determine exactly what ‘normal’ is for every age group, validate new tests and learn about hearing loss in ways not possible before this technology. Interactive mobile testing promises to democratize access to screening and diagnostic audiometry and change how we think about hearing in Canada.

Dr. Matthew Bromwich is a pediatric otolaryngologist based at CHEO and the chief medical officer with Clearwater Clinical. You can learn more about mobile testing at www.shoeboxaudiometry.com.
Conference explores frontiers of medical education ... and beyond

Pat Rich

WHEN WHAT IS ARGUABLY THE MOST INNOVATIVE medical conference in North America turns its focus to medical education, you know it’s going to be lively, provocative and just plain interesting.
Such was the case when Stanford University’s much-acclaimed Medicine X (MedX) conference expanded to include a two-day session — called Medicine X | ED — featuring many of the leading thinkers on medical education in the United States, plus a generous helping of patients and medical students.

For the past five years, MedX has pioneered an approach that fully integrates the patient voice and new digital and social media technologies — both in subject matter and in the way it is presented.

By taking a similar approach to medical education, MedXEd was, in the words of organizer Stanford anesthesiologist Dr. Larry Chu, an attempt to “explore an area desperately in need of disruption …

“Medical practitioners are ill-prepared to meet the reality of practice,” said Chu as he introduced the conference. His remark was later echoed by Hungarian physician and futurist Dr. Bertelan Mesko, who said “a new wave of technological revolution is coming to medicine and health care and nobody is preparing you (medical students) to deal with that.”

Just how great a change is needed to reconfigure medical education to appropriately train physicians was the topic of considerable debate during two days of plenary sessions and panel discussions.

For some, the gap between teachers and medical students is insurmountable.

“Today’s learners have moved on. They are in a different environment than the instructors, the faculty, the people who are teaching them. When there’s that big a chasm between the two, medical education is not going to be truly successful,” said Dr. Rob Rogers, professor of emergency medicine at the University of Kentucky. “As the ‘no hairs’ and ‘grey hairs’ move on and retire, the new folks will be the ones ushering in the new standards of medical education.”

He and other panellists noted that while medical students are fully conversant in social media and the use of digital tools, many of their professors are still unaware of “this Twitter thing of which you speak.”

In a blog post about MedXEd, BMJ senior editor Tessa Richards noted medical students played a major role in the event and “made it clear that millennials (born between 1980s and early 2000s), whose use of social media is integrated into every other aspect of their life, are not happy with the educational status quo.”

Nisha Pradhan, medical student and chief social media manager of in-Training, an online magazine for medical students, lambasted unimaginative rote teaching geared to students passing exams. “Teaching should...
foster independent critical thinking and reasoning,” she wrote, and become much more interdisciplinary to reflect that fact that doctors now work primarily in teams.

However, Dr. Bryan Vartabedian, a leading commentator on the future of medical education and social media and a pediatric gastroenterologist at Baylor College of Medicine, questioned whether millennials as a group are really that active in changing medical education. Engaging millennials online “has not been real easy,” he declared in a panel debate, adding he’s “underwhelmed by what millennials are willing to do.”

Ajay Major, a fourth-year medical student at Albany Medical College and co-founder/co-editor-in-chief of in-Training, challenged Vartabedian about this. “You are not the audience,” he said, noting that medical students are more interested in engaging other students rather than their faculty.

In a plenary session, Major discussed in-Training’s role in the single largest collective action by US medical students in recent history, involving 80 medical schools and 2,000 students protesting the shooting of an 18-year-old unarmed African American by a white police officer on Aug. 9, 2014. “The online space has become the lens through which we view our lives as future physicians,” he said. “For many of us, our only interaction with the outdoor space is through the Internet.”

In his address, Mesko discussed the importance of social media and digital platforms in the education and future practice
for eight years, he has taught a course on social media and new technology that has been completed by more than 2,000 students. It is “filling the gap between what real life requires of them and what the curriculum can deliver.”

He argued that an approach to education that uses social media and digital platforms “is not a shiny new thing anymore — it is a must-have part of the curriculum.”

One point Mesko stressed is the need for students and physicians to communicate well with patients, and he noted proper communication skills and principles are the same online as offline for physicians.

The patient voice was heard prominently at MedXEd, as was the general sentiment that patients needed to be better involved in all elements of medical education.

“We have to get ‘med-speak’ out of the conversation and get ‘patient-care-speak’ into the conversation,” said Dr. Charles Prober, senior associate dean of medical education at Stanford, during a panel debate.

At Stanford, he explained, patients are involved in all aspects of the medical curriculum — starting with their participation in selecting medical students.

“The patients can bring their story, their emotion, their perspectives to the students in the early stage of their learning,” he said.

“The end game is connecting with the patient.”

Excerpt from Mired in MedEd blog post by Dr. Alex Djuricich, Associate Dean for CME and Program Director in Medicine-Pediatrics at the Indiana University School of Medicine in Indianapolis.
Telemonitoring still fails to clear the RCT bar

Pat Rich

ENTHUSIASM FOR TELEMONITORING AND TELEHOME CARE with patients who have chronic heart failure — one of the prime patient populations anticipated to benefit — must once again be tempered by the stubborn refusal of well-controlled clinical trials to confirm the benefits of this approach.
The most recent randomized controlled trial to appear in this growing list was the Better Effectiveness After Transition – Heart Failure (BEAT-HF) study for which results were reported at the American Heart Association (AHA) scientific sessions in Orlando.

In a late-breaking clinical trials session, a research team headed by Dr. Michael Ong, associate professor at the UCLA David Geffen School of Medicine, showed that recently discharged heart failure patients who received regular telephone coaching and telemonitoring of key vital signs failed to show a reduced rate of hospital readmission or mortality compared with those who received usual care.

However, despite widespread reporting of this study’s negative results, supporters of telemonitoring emphasized another key finding from BEAT-HF. It was that the patients who actually complied with the telemonitoring intervention did significantly better than others.

As Ontario Telemedicine Network (OTN) CEO Dr. Ed Brown wrote in an online discussion of the trial: “I think we are seeing more and more evidence showing that if we can engage, educate, empower and motivate people living with chronic disease to self-manage and make the lifestyle changes they need, we will see dramatic results.”

The OTN and other telemedicine networks in Canada have reported significant improvements in patients with heart failure or other chronic conditions who are monitored from home using ever-more sophisticated technologies.

However, the challenge has been that large-scale, randomized trials have failed to duplicate these findings.

In BEAT-HF, 1,437 individuals age 50 or older who were hospitalized in one of six academic health systems in California and receiving active treatment for decompensated heart failure agreed to participate and were randomized into the trial. The median age of patients was 73 years; 61.2% had New York Heart Association class III or IV heart disease.

Those in the study group had regularly scheduled telephone coaching from a nurse practitioner on managing their condition, as well as telemonitoring of weight, blood pressure, heart rate and any symptoms. These data were collected daily and reviewed by a nurse who notified the patient’s health care providers if any significant symptoms were reported.

The primary outcome measured was the 180-day, all-cause hospital readmission rate, with secondary outcomes of all-cause readmission and mortality being measured at 30 days.

No significant differences were seen between the two groups in the hospital readmission rates at either 30 or 180 days. At 180 days, the hazard ratio for those in the intervention group was 1.03 (95% CI 0.89-1.19).

Assessment of mortality rates at 30 and 180 days also failed to show any significant differences between the two groups. (Hazard ratio for 180-day mortality with intervention: 0.88 – 95% CI 0.67-1.15)

However, as part of the pre-established study protocol, the researchers also compared outcomes for those who were compliant with the study intervention versus those who did not complete the telephone coaching process or provide monitored data on a regular basis.

Readmission rates and mortality were significantly lower at both 30 and 180 days for those who completed more than 50% of the nine telephone coaching calls or were monitored for more than 50% of days over the course of the trial.

At trial’s end, 68% of those in the intervention group had completed half of the required coaching calls and only 51.7% had submitted more than 50% of the daily telemonitoring requirements.

In their conclusions, the researchers noted that remote patient monitoring has become more sophisticated since the trial was undertaken (2011–13), with implantable devices and tablets able to provide information more easily.

In an interview with MedPage Today, Ong said the study results showed telemonitoring is not something that should be used with all heart failure patients after hospital discharge.

Dr. James Januzzi Jr., the Roman W. DeSanctis Endowed Distinguished Clinical Scholar in Medicine at Massachusetts General Hospital, who was assigned as the discussant for the trial at the AHA presentation, noted in an interview that the telemonitoring approach “was most effective for people who stayed in the protocol.”

He also pointed out that there was a substantial dropout rate among study group participants, and these were the patients most likely to have adverse events.

“Patients who stay in the program are probably more likely to take better care of themselves,” Januzzi said.

“The trial confirms that telemonitoring may not be as useful as we hoped,” he said, adding that there’s a need to pay more attention to those patients who are less likely to look after themselves.

Ironically, the same week the BEAT-HF results were released, a blog post appeared by science journalist Paul Taylor on the popular Canadian health website Healthy Debate, with the title “Is remote-monitoring home care reducing ER visits?”

The post discussed the six-month telemonitoring program for heart failure patients launched by OTN in 2012. In the post, Brown is quoted as saying the program has reduced hospitalizations by 60%.

“The whole point of this kind of intervention is to engage, educate and motivate patients to improve their behaviours and self-management skills,” Brown added in the discussion section of the blog post.

Pat Rich is Editor of Future Practice.