CREATING ELECTRONIC HEALTH RECORDS... What's taking so long?

A professional engineer involved in leading the independent agency working to chart the way forward for electronic health-care records believes there is an opportunity for all engineers to show leadership in this key sector that will ultimately improve the quality of life for all Canadians.

By Lynne Zucker, P.Eng.

Information technology is already being used to the benefit of the health sector. So why is it that health-care information services are lagging in their ability to take advantage of digital technologies?

Typical questions put forth by patients and other clients include:

- If I can make an appointment for a haircut online, why do I have to use the phone to arrange to see my doctor?
- Why can't my test results be moved easily from my doctor to my specialists?
- Why can't I look up my child's immunization record online?
- Why can't the hospital look up which medications I'm taking?

The quest for a shared, interoperable electronic health record to improve care for Canadians has been a goal since 2001, when the federal government, the provinces and the territories jointly created Canada Health Infoway. This is the organization that is charged with creating a blueprint and the standards necessary to make digital health a reality.

Similar to the challenges faced by global financial institutions to facilitate the exchange of data behind the scenes so consumers can execute seamless transactions at ATMs or trade on global stock exchanges, the vision for the electronic health record is to enable the secure movement of patient data across the health system.

Having a health record in the right place at the right time not only improves quality of care and saves money, but it most definitely saves lives.

With industry successes as a model and a solid business case that shows both financial and health benefits, most Canadians support digitizing our health records. But completing this task is likely still a decade away; and while progress is being made, it is frustratingly slow. To many technology professionals, this slow pace is hard to understand. What is standing in the way of progress?

THE CHALLENGES

Technologically, there is no magic here. Networks that were once expensive and proprietary are now much easier to create and manage. The technology to support the exchange of data from disparate systems can be acquired "off the shelf." Computers, tablets and smart phones are everywhere and inexpensive.

Despite this, there are a couple of big challenges to achieving a truly connected digital health blueprint.

First, as a country we decided to create a couple of "big data" repositories in each province to facilitate data exchange. Not everyone agrees with this approach, but like building physical infrastructure, this will provide a platform that enables a ubiquitous capability to share information across the health-care system. The problem is that this work is completed in some provinces, like Alberta, but in others it will take a few more years to finish.

Also, the sheer number of points of care in the health-care continuum contributes to the difficulty in bringing the effective sharing of this data to life. Private companies, hospitals, independent physicians and pharmacy retailers are expected to invest in and maintain systems that participate in this new electronic record ecosystem. However, these organizations and individuals use hundreds of different software products. The challenges and expense of aligning these products has not been insignificant and the benefits don't always accrue to those making the investment.

It's not difficult or uncommon to successfully connect one hospital with the doctors in the local community or for one private laboratory company to send results directly to a specific medical record system at a doctor's office. But the grand scale involved

to ensure that the medication instructions from a hospital visit in Toronto are available to a pharmacist in Sudbury is more challenging.

There is another big challenge that is often used as an excuse to slow down progress. How can we be sure we can protect an individual's privacy? We, the consumer, have a right to control who can view details of our health-care history and plan. Enabling select professionals to have secure access at the appropriate time is acceptable to most Canadians, but this can become quite challenging as organizational lines are crossed, and context, not just qualifications or roles, is applied.

On the clinician side, professionals must revisit all aspects of their workflow with new sources of patient information and new ethical and legal implications, like digital signatures.

HALF PAPER, HALF TECHNOLOGY SYSTEM

The practice of medicine has also been accused of being slow to change. Again, this is less about individual willingness and more about getting everyone to move in the same direction at the same time, so that the value of digitizing the processes and data can be fully realized. The half paper, half technology-based systems are more time consuming, more costly and may even result in a higher risk to patient safety.

In 2012, the journey toward an effective digital health ecosystem is well underway, but it is by no means complete. More than 50 per cent of family practitioners are using computer-based systems and getting rid of the "wall of files" that used to take up space in their offices. Clinicians in hospitals routinely order and view test results electronically.

Canada Health Infoway recently collaborated with the engineers on the Healthcare Human Factors team at University Health Network to develop design guidelines surrounding clinical data coding using systematized nomenclature of medicine clinical terms (SNOMED CT). Although it's crucial for electronic medical record software to leverage standardized codes, it's also critical that software engineers consider usability aspects to make it easier for clinicians to adopt the coding.

Canada Health Infoway has also partnered with a number of companies to create a suite of software products, including an open source application programming interface called Message Builder, that makes it easier for engineers to implement specific health interoperability functions, like electronic prescribing, using pan-Canadian messaging standards.

There are many excellent examples of how the data from disparate systems is being combined and made available to other clinicians. An example, Clinical Connect, helps to exchange data among more than 20 hospitals, community care centres, provincial data repositories and family practitioners in the Kitchener-Waterloo, Hamilton and Niagara regions. Similar projects are growing in both scale and functionality.

The promise is huge. An accessible, shared medication record for every Canadian will make for a safer health system–one that can provide clinicians with secure services to facilitate electronic prescribing and consumer conveniences like the ability to request a medication refill online.

Even more exciting, this environment will create a great platform for innovation.

The explosion of applications for consumers and health-care professionals has already started. For example, when you can get phone access in the late afternoon to the results of a lab test you took that morning, or book an e-consultation with your doctor to discuss and review the complex medication history of an aging parent with their pharmacist, we will have arrived.

In the meantime, as consumers, you should encourage your health professionals to get engaged and to participate in the hundreds of electronic health initiatives underway in Ontario.

As engineers, find opportunities to innovate and bring leadership to this important sector that will improve the quality of life for all Canadians. Σ

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