eHealth
CENTRE OF EXCELLENCE

Improving Care: The Present and Future of Digital Health in Ontario

eHealth Centre of Excellence

TABLE OF CONTENTS

Executive Summary

Recommendations

We must empower clinicians and their staff to make better use of our investment in Electronic Medical Records

- We have not realized the full benefit of existing Electronic Medical Records.
- It is necessary to shift our focus from funding technology to funding support for clinicians to make the most of the technology they already have.
- This will require building close, consistent relationships with healthcare providers through supporting them at the local level to ensure their needs and the needs of patients are addressed at the same level where decisions about our healthcare system are made.
- Local support for health care providers has been successful and there is good evidence that this type of support will improve preventative care, prescribing, and test ordering and lead to decreased illness and has the potential to decrease mortality.

We must focus on connecting existing systems rather than building new ones

- Tremendous success has been achieved by leveraging our existing assets. Acute Care, Community Care, Digital Imaging, and Laboratory data have already been made available for 3.5 million Ontarians in a secure, web-based viewer. This has recently been complemented by some drug data. Additional data sources including primary care data and immunization data need to be added.
- Significant benefits have been achieved by providing clinicians and their staff with this information, but more focus needs to be placed on more active and meaningful use of this data to fully realize the potential benefits.

Consumer Digital Health should be a focus and will foster an environment of innovation

- Consumers have the right to have their data.
- The solutions that we use in healthcare should freely publish ways to contribute to and use the data they house and support applications (apps) consuming this data. Patients will then be able to interact with their data. An environment needs to be established to facilitate this.

Accountability is necessary to ensure interoperability

- Organizations that are publically funded must procure technology that meets interoperability standards

The eHealth Centre of Excellence

The eHealth Centre of Excellence is an organization that works with health care providers and patients to deploy digital health tools to support patient care. The Centre's founding vision is one of innovation and partnership: to create a collaborative space in which to share knowledge, develop best practices and enable technology to support and enhance current clinical processes. For more information please see: ehealthcentreofexcellence.com

Empowering Clinicians and their Staff

What is working well today

The latest Commonwealth Fund Survey of Primary Care Physicians (2015) shows that electronic medical record (EMR) use has increased significantly in Ontario and Canada since 2006[i]. This has been a noteworthy accomplishment with approximately 77% of primary care physicians in Ontario having an EMR. However, use of electronic medical records in Ontario and in Canada still lags behind the international average. Furthermore, Ontario physicians and other clinicians use EMRs just like paper charts and do not leverage the data or efficiency that these multi-million dollar investments can provide. Ontario Physicians are less likely to use the EMR to understand the health of their patients or to help make decisions to care for them than their international counterparts[ii].

What can be improved

Optimizing EMR use is essential to achieve positive health outcomes at the patient, practice and population levels.[iii] According to the National Physician Survey (2014), despite an increasing level of EMR use, few primary care providers (PCPs) have achieved the EMR maturity that has been demonstrated to enhance patient care, improve management of chronic disease and lead to organizational efficiencies.[iv] The Commonwealth Fund findings show that Ontario has the opportunity to increase the use of these functionalities in primary care. Despite having the ability to do the following, fewer than 55% of PCPs in Ontario have been given the skills to use their EMR to[v]:

- Receive and review clinical outcomes (e.g. percent of diabetics with good control) (32.1%)
- Receive reminders for guideline-based interventions and/or screening tests (52%)
- Send patients reminders for preventive or follow-up care (32.3%)
- Receive alerts/prompts to provide patients with test results (36.9%)
- Track laboratory tests until results reach clinicians (34.9%)

This is well below the success achieved in other jurisdictions in these areas. Empowering PCPs with the knowledge and skills to make the most of the technology they already have will improve patient care[vi]. However, there are barriers to obtaining on-going training and support for PCPs including cost, time, lack of alignment of this training with patient, PCP and system benefit, and lack of available expertise. Support for PCPs is needed to provide the tools necessary to achieve the desired advancements in quality improvement, chronic disease prevention and management (CDPM), and information management. Care for those with a chronic disease is of particular importance because almost 80% of Ontarians over the age of 45 have a chronic condition. In Ontario, the economic burden of chronic disease is estimated to be 55% of total direct and indirect health costs[vii].

It is necessary to shift our focus from funding technology to funding support for PCPs to make the most of the technology they already have. There have been initiatives that have been very successful at increasing the meaningful use of EMRs and achieving significant clinical benefits for patients, which will lead to system savings. These initiatives have:

- Increased immunization rates for those with heart failure by 82%[viii]
- Increased appropriate prescribing of medications for those with heart failure by 10%[ix]
- Increased patient awareness of low blood sugar by 12%[x]
- Reduced the number of outstanding kidney tests for those with diabetes by 50%[xi] (diabetes is the number one cause of kidney disease and dialysis in Canada).
- Increased depression screening by 4%[xii]
- Helped identify patients with chronic disease in the EMR[xiii]
    - An additional 33% of type 1 diabetics, 13.5% of asthmatics, 11.9% of those with dementia, and 5.2% of those with chronic lung disease
    - This identification leads to opportunities for additional care to prevent admissions. Modeling this for the province has shown that there is the potential to lead to millions of dollars of savings every year.

The key characteristic of these initiatives were that they were led at the local level by Delivery Partners. When one is working with PCPs, one has to recognize that they are small business owners and it is important to understand their motivations and work in partnership with them. Local contact with PCPs ensures that their needs are understood. It is also extremely important to understand the needs of and support those that work with PCPs including administrative staff and other health care professionals. Empowering the entire team is critical to ensuring changes are adopted in a sustainable way. This has been shown with reminders for kidney function testing where physicians did not have time to act on reminders in the EMR, but when this was facilitated by a nurse, the gap on outstanding kidney function tests was reduced by 50% as noted above. Delivery Partners who support PCPs at the local level are able to successfully build close relationships with clinicians and their teams and help identify and remove barriers to adopting Digital Health technologies and processes.

Provincial standards, best practices, and EMR specifications are required to ensure we have a consistent approach across the province. However, this is not the level that support is required for meaningful use of EMRs on the ground. *Supporting PCPs through change management at the local level ensures that their needs and the needs of patients are addressed at the same level where decisions about our healthcare system are made*. Fully utilizing EMR functionality will support coordination of health care, the movement towards an integrated health system, and more effective and efficient use of the health system.

The current initiatives that support PCPs with resources at the local level have been limited in scope due to lack of funding, because funding is instead allocated to technology and resources at other levels and not deployment at the local level. However, the benefit of these initiatives is clear and one such initiative out of the eHealth Centre of Excellence was acknowledged by Accreditation Canada and Canada Health Infoway as a national leading practice[xiv]. There is an opportunity to expand these local initiatives that have shown significant benefit to the healthcare system, maximize the value of current assets, and do so in a less costly way than what has been done thus far. Additionally, support for programs at the local level can accelerate provincial initiatives. For example, a project in the Waterloo Wellington LHIN[xv] worked with provincial stakeholders, to develop tools based on the Ontario Renal Network's KidneyWise Clinical Toolkit that were embedded right into providers EMRs. The tool consists of a best practice template with clinical algorithms that PCPs can use to guide their decision-making, while also providing helpful reminders. This type of collaboration is a great example of how provincial clinical standards can be implemented at the local level. The scientific evidence strongly supports the use of technology in this manner. Decision support like this improves prescribing, preventative care (screening tests and immunizations), and test ordering (unnecessary imaging). Without leveraging decision support within the EMR it is very difficult for PCPs to use this with all relevant patients.[xvi] PCPs have greatly benefited from this support:

> *"The main issue with the EMR is that as physicians we often don't know what we don't know regarding the EMR system. The initial assessment by [project] personnel guided us to know what tools were available to aid in our everyday interaction with patients. Simple instructions that have* ***cut our technical time down has left more time for patient interaction****. For example, the Toolbar providing easy access to commonly used applications* ***reduces the time searching*** *for these necessary items and thus, reduces interruption to patient interaction. Also, custom forms direct our patient care to* ***evidence based medicine****. We can use this information to give* ***feedback to our patients*** *and their progress in chronic disease management. Prior to having eHealth Coach support, our EMR was mainly used for just recording patient encounters. I'm sure there is a wealth of more information that would help us to use our system to even greater effect."*
>
> **Primary Care Physician in Family Health Organization (FHO)**

The Connected Backbone – Connecting Systems

The following section discusses the broad cradle to grave electronic health record (EHR) that exists at the regional and provincial levels.

What is working well today

The connection of systems to form the broader EHR is well underway. The connecting South West Ontario (cSWO) program has been able to connect all 67 acute care hospitals, all 4 regional cancer centres, all 4 Community Care Access Centres, all South West Ontario hospital diagnostic images and reports, and all laboratory data from the provincial repository. Some drug data from the Digital Health Drug Repository has also been connected. This initiative has connected a critical mass of information for 3.5 million Ontarians (approximately 30% of the population of Ontario). Additional information from primary care EMRs, the provincial Digital Health Immunization Repository, and the Acute and Community Care Clinical Data repository (all explained below) is planned. This information is accessible by clinicians through a secure web-based viewer, the cSWO Regional Clinical Viewer, ClinicalConnect™. There are over 42,000 users including physicians, nurse practitioners, nurses, pharmacists, care coordinators, public health professionals, and midwives.

Similar to Electronic Medical Records (EMR) in clinician offices, the deployment and use of Electronic Health Records (EHR) requires relationship building with physicians and other health service providers and has been most effective through local level Delivery Partners (DPs). These DPs have been key to the successful meaningful use of the EHR with significant clinical and system benefit. No other entity understands the opportunities and constraints of each health service provider like DPs. This allows them to support health service providers in a unique and holistic way providing support where required. Smaller organizations in particular are in need of help as they do not have the internal resources to support all the requirements to access ClinicalConnect™ including privacy and security. Due to the effective deployment of ClinicalConnect™ through DPs, there have been substantial benefits to patients and the healthcare system. For patients with complex conditions receiving care in emergency departments, physicians' use of ClinicalConnect™ has avoided admission, reduced duplicate testing, as well as decreased blood transfusions. ClinicalConnect™ has been used by a psychiatric outreach program to decrease the risk of homelessness by using the information to inform an individual-centered care plan. As well, the use of ClinicalConnect™ to provide additional information about patients with early psychosis has significantly reduced the time to treatment so that patients can be seen the same day or the next day instead of some patients waiting over a month. For patients in need of secondary stroke prevention**,** information retrieved from ClinicalConnect™ enables the clinic to complete the necessary work to ensure efficient and timely access for patients to additional tests that inform important care decisions.

These benefits are the result of a strong local process to support clinicians with incorporating ClinicalConnect™ into workflow.

Ontario has a strong collection of Data Repositories. The Digital Health Drug Repository has drug data from the Ontario Drug Benefit database and will expand to contain all drug data for Ontarians. The Digital Health Immunization Repository has important data on immunizations for many Ontarians. The provincial Primary Care Data Repository and Acute and Community Care Clinical Data Repository have been built to store the province's data from those respective sectors. These repositories need to be populated with clinician and organizational data. For primary care, this will require substantial work with primary care providers to improve the quality of their free text data so that it can populate the data repository and be shared. Currently only 28% of physicians in Ontario can electronically exchange patient clinical summaries with those outside their practice, which is well below the international average of 55.6%.[xvii] There is work currently underway to support primary care providers improve the quality of data through the eHealth Ontario funded cSWO Primary Care Data Sharing initiative led by the eHealth Centre of Excellence.

Ontario also has other assets that it needs to continue to leverage, including a strong telemedicine network that provides consumers with virtual access to providers. Ontario also has Hospital Report Manager which is automatically delivering discharge summaries and imaging reports from hospitals to EMRs within hours.

What can be improved

Despite our success with connecting systems in some regions, we have not achieved this for all Ontarians. Efforts need to continue with a focus on connecting pre-existing systems.

We also need to provide access to more health care providers. Current data sharing agreements make it challenging for health care providers and smaller organizations to adopt our systems. Health care providers also need to be supported with meeting the evolving privacy and security requirements that are getting more and more complex without balancing the risks to consumers of withholding data that is required for providing care. Other jurisdictions, such as Denmark, have been able to achieve this balance[xviii]

Consumer Digital Health and Innovation

Consumers have the right to have access to their medical information. For the most part, we have failed to allow consumers to access their data and use it to more fully understand their own health. We need to establish a culture of excellence in engagement with consumers and providers around their needs that permeates into all of our information technology. Consumer must be able to schedule appointments, access services, and connect with providers in ways that are convenient. The role of government is to serve as a catalyst to support such an

environment. Every technology platform that stores consumer health and wellness data must allow for consumers to access this data and load it into apps. If we provide strong leadership this is within our grasp. For example, the electronic referral initiative in the Waterloo Wellington LHIN called System Coordinated Access will allow consumers and caregivers to access their referral information and find up-to-date information about available services (e.g. support groups and education, chronic disease prevention and management programs, etc.), complete with descriptions, map-based locations and wait-times. Consumers will also have the ability to book themselves directly into self-management programs and view current referrals along with details and instructions about appointments. This consumer digital health solution will be rolled out in the next fiscal year.

Innovation in healthcare starts with procuring solutions that meet the complex needs of consumers and providers. The System Coordinated Access system mentioned above used an innovation procurement model to procure a partnership with vendors to research and develop an innovative platform that will meet the needs of the healthcare system. It involved entering into a phased contract where there will be an opportunity to exit should deliverables not be met. This incents the vendor to meet the needs of consumers, providers and the system. However, if the project achieves success, the agreement serves as a foundation to establish a long-term collaborative relationship. The platform that is being developed is based on an open architecture that allows other systems to easily connect with it and apps to add extra functionality. This allows industry to participate, with the consent of consumers, to help the technology evolve to meet the diverse needs of consumers and providers. More initiatives need to leverage this approach and it should be the new standard which guides how we obtain technology in healthcare.

Accountability is necessary to ensure Interoperability

Currently, organizations can use public funds to procure any technology that they desire. This has led to a permissive environment where there is a proliferation of systems that do not interoperate. In addition to creating silos, this has required additional money being spent to build/rebuild interfaces to connect to other assets. There are national and provincial standards that provide both a technical and business framework for sharing information between service providers and across care settings. Organizations that are publically funded must procure technology that meets interoperability standards and these systems must integrate with all important Digital Health assets. This requirement must be reflected in accountability agreements that currently exist with these organizations

[i] *How Canada Compares: Results From The Commonwealth Fund 2015 International Health Policy Survey of Primary Care Physicians.* 2016, Canadian Institute for Health Information: Ottawa, ON.
[ii] ibid
[iii] *How Canada Compares: Results From The Commonwealth Fund 2015 International Health Policy Survey of Primary Care Physicians.* 2016, Canadian Institute for Health Information: Ottawa, ON.
[iv] Collier, R., *National Physician Survey: EMR use at 75%.* CMAJ, 2015. **187**(1): p. E17-8.
[v] *How Canada Compares: Results From The Commonwealth Fund 2015 International Health Policy Survey of Primary Care Physicians.* 2016, Canadian Institute for Health Information: Ottawa, ON.
[vi] Zelmer, J. and S. Hagens, *Advancing Primary Care Use of Electronic Medical Records in Canada.* Health Reform Observer - Observatoire des Réformes de Santé, 2014. **2**(3).
[vii] http://www.health.gov.on.ca/en/pro/programs/cdpm/
[viii] *An Exploration of the Value and Impact of Quality EMR Data in Primary Care*. 2016, Health Quality Transformation Conference.
[ix] *Using EMR Data to Transform Patient Care.* 2015, Association of Family Health Teams of Ontario Conference.
[x] Partnering for Quality. SWLHIN.
[xi] *An Exploration of the Value and Impact of Quality EMR Data in Primary Care*. 2016, Health Quality Transformation Conference.
[xii] Partnering for Quality. SWLHIN.
[xiii] *An Exploration of the Value and Impact of Quality EMR Data in Primary Care*. 2016, Health Quality Transformation Conference.
[xiv] *The National LEADing Practice Award.* 2015, Canada Health Infoway and Accreditation Canada.
[xv] *Using EMR Data to Transform Patient Care.* 2015, Association of Family Health Teams of Ontario Conference.
[xvi] Akbari, A., et al., *Canadian Society of Nephrology commentary on the KDIGO clinical practice guideline for CKD evaluation and management.* Am J Kidney Dis, 2015. **65**(2): p. 177-205
[xvii] *How Canada Compares: Results From The Commonwealth Fund 2015 International Health Policy Survey of Primary Care Physicians.* 2016, Canadian Institute for Health Information: Ottawa, ON.
[xviii] Protti, D. (2008). A comparison of how Canada, England and Denmark are managing their electronic health record journeys. In A. Kushniruk, & E. Borycki, Human, Social and Organizational Aspects of Healthcare Information Systems (pp. 203-218). Hersey: IGI Press.