Leveraging eHealth Ontario's Assets
Ontario Telemedicine Network
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Introduction
The Ontario Telemedicine Network (OTN) is pleased to have an opportunity to offer a perspective on the value generated by eHealth Ontario in its efforts to create the foundations for province-wide electronic health records. A modern, high-performing healthcare system requires providers to have safe, secure, and seamless access to patients' medical history and vital health information at their fingertips, as well as the ability to aggregate data for the purposes of better population health management and overall system management.

Virtual Care and eHealth
OTN's focus is telemedicine, also known as virtual care. This includes secure videoconference visits between patients and providers, remote patient monitoring and coaching, remote clinical collaboration between healthcare providers, clinical applications (apps) and other digital modalities that connect patients and healthcare providers. While eHealth focuses on the collection, sharing and use of clinical data, telemedicine involves the direct provision of care. There are strong synergies between telemedicine and eHealth that must continue to be pursued in Ontario under the banner of 'digital health'. As with eHealth, telemedicine is technology-enabled and is an inevitable and indispensable component of a high performing, integrated healthcare system.

OTN's Mandate
OTN is a not-for-profit organization funded by the government of Ontario. Its mission is to develop and support telemedicine solutions that enhance access to and quality of health care in Ontario, and inspire adoption by healthcare providers, organizations, patients and their families.

OTN enables better patient-centered care in three ways.

1. Managing a provincial telemedicine service that ensures all Ontarians can receive "health care anywhere". This includes: a secure clinical videoconferencing network, a collaboration tool that allows primary care providers to "ask a specialist a question" (eConsult), a remote home monitoring/ health coaching program that empowers chronic disease patients to manage their condition more effectively (Telehomecare), education and learning services for healthcare providers (eLearning) and supporting services like a provincial provider and program directory, event scheduling, and technical support.

2. Catalyzing the growth of virtual care through province-wide change management (CM) services at the provincial, regional, organizational and individual provider level, enabled by a business advisory service and an experienced field team that, in addition to CM, develops instructional guides and redesigns clinical workflows to help practitioners onboard priority programs.

3. Building and supporting a virtual healthcare innovation hub that offers healthcare providers and organizations a single point of access to tested virtual healthcare solutions, knowledge and resources to help them provide better care for their patients. This service ensures that proven, high-value digital healthcare innovations from Canada and around the world can be easily and securely accessed by physicians and other healthcare providers and makes it easy for clinicians to share proven, patient-centred digital solutions with their patients.

Please see the Appendix for more details on how OTN pursues these objectives and our accomplishments to date.

Working with eHealth Ontario

OTN and eHealth Ontario have an excellent, collaborative working relationship. Under Cindy Morton's leadership, significant progress has been made on a range of common objectives which leverage synergies between eHealth and telemedicine. Key current, emerging and future collaborative projects are listed below.

Current Projects

eHealth Ontario Asset/Service	How leveraged	Value
ONE ID	Ability of OTN member organizations to use their provincial ONE ID credentials to securely access the OTNhub	Consistent authentication with accelerated set up of OTN telemedicine services for new users.
Health Information Access Layer (HIAL)	Secure service interoperability between electronic medical records (EMRs) and OTN eConsult services.	Family physicians can use OTN's collaboration services to get rapid responses from specialists within their EMRs, via integration with eHealth Ontario's HIAL.
Provider Registry (PR)	Retrieval of practitioner profile information for OTN members.	The OTNhub Telemedicine Directory allows members to find each other, set up telemedicine events and enroll their patients in virtual clinics. Linking the Directory to eHealth Ontario's PR makes it easy to populate physician credentials from professional college databases.
Provincial Hospital Report	Secure clinical report	This allows family physicians

Manager (HRM)	distribution of Telehomecare patient results to family physicians.	to receive patient care reports and to be informed of their patients' progress in managing their chronic diseases.
Federation	Allowing users in large healthcare organizations to securely access OTNhub services with single sign-on using the same identity they use within their organization (i.e. without requiring an additional set of credentials).	Accelerated adoption and access of large user communities (e.g. ConnectingOntario regional clinical viewers) to OTNhub services with seamless and secure integration.

Projects under Consideration

eHealth Ontario Asset/Service	How leveraged	Value
Provider Registry (PR)	Expanded use of PR to include retrieval of profile information for all specialists in support of OntarioMD's provincial eReferral initiative.	Access to credentials from professional colleges with practitioner specialty information that qualifies members for OTN consult services. Ability to search and refer patients to specialists across the province, irrespective of which referral system the specialists are using.
Connecting Ontario and eHealth Portals	Secure single sign-on capability between OTNhub and Connecting Ontario regional clinical viewer(s) and eHealth Ontario's ONE Portal.	Improved user experience for clinicians with seamless access to relevant Electronic Health Record (EHR) information while using telemedicine services.
Provincial Client Registry Integration	Availability of provincial patient demographics information in OTNhub services, while maintaining confidentiality.	Improved patient identification to make it easier for clinicians to enroll patients in virtual health care services.

Opportunities
Looking ahead, as the provincial digital health assets are further developed, OTN envisages a number of important correlation points for eHealth assets and virtual care. These potential linkages would take place in the context of a regulatory framework, to be established by the Ministry of Health and Long-Term Care, that emphasizes privacy and security of personal health information and that is patient-consent driven.

Opportunity #1
Enable bi-directional secure information-sharing between EHRs and digital consumer health applications.

Issue
Patients who use digital consumer health applications are unable to access their own personal health information for use within the consumer applications.

Value
The OTNhub will allow healthcare providers to find, select, and in some cases "prescribe" digital health applications securely to their patients. Where appropriate, and with patient permission, these applications should be able to link, through the OTNhub, back to the patient's EHR so that the EHR is populated by relevant information generated by the patient application and so the application can access EHR data to support patient care.

Example
A digital smart phone diabetes application that helps a patient manage their condition could access HbA1C (the key blood test that measures long term control of diabetes) results from the patient's EHR and share patient-generated blood glucose results back to the EHR.

Opportunity #2
Leverage patient data to identify at-risk or candidate patients for virtual care-enabled self-management programs and digital therapies.

Issue
Patients would often benefit from services in disease management and virtual care that they may not be aware exist.

Value
Existing OTN programs such as Telehomecare (remote monitoring patients living with heart failure or chronic obstructive pulmonary disease (COPD)) or Teleophthalmology (retinal screening for diabetes patients) are achieving very positive patient outcome results and driving down the cost of care. Scaling these programs through identification of target patients will significantly increase the return on investment to the government of these programs.

Example
Physicians who have patients living with COPD could receive alerts and prompts, based on EHR data, recommending that they enroll patients in a proven coaching and remote-monitoring program designed to empower the patient to self-manage. Patients could also be directly contacted and offered enrolment opportunities.

The evolving eHealth landscape
OTN is aware that the government is actively assessing provincial-level and regional-level capacity in the eHealth space, including an assessment of the ongoing role and mandate of eHealth Ontario. OTN is very pleased with the effective and productive partnership that has been built between OTN and eHealth Ontario over the past few years to pursue the initiatives described above. While OTN has been able to make significant progress over the past decade, including work in user authentication and the building of a healthcare provider directory, our collaboration with eHealth Ontario over the past 18 to 24 months has accelerated the interoperability of our platform with the provincial eHealth assets, which we see as an important and positive development.

OTN is also aware that, under the leadership of the Ministry-led Digital Health Investment Board, there has been progress over the same period toward articulating a more comprehensive provincial eHealth strategy. The components of this strategy that have been shared to date look promising. OTN is eager to learn more about the plan and we are hopeful that the new strategy will provide the framework and impetus needed to advance and accelerate the provincial eHealth agenda.

Appendix: OTN's Role and Progress

Core Services
OTN members access our core province-wide services via OTNhub.ca. This includes a clinical videoconferencing network, a collaboration tool that allows primary care providers to "ask a specialist a question" (eConsult), a remote home monitoring/ health coaching program that empowers chronic diseases patients to manage their condition more effectively (Telehomecare), education and learning services for healthcare providers (eLearning), and supporting services like a provincial provider and program directory, event scheduling, and technical support.

In FY 2015/16, OTN facilitated 542,701 clinical telemedicine events across nearly every known specialty. This avoided an estimated 213 million km in travel for patients, 50.2M kg of carbon pollution, and more than $73M in Northern Health Travel Grant (NHTG) costs for the government. A June 2016 study in *Telemedicine and e-Health* indicated that, between 2008 and 2014, the median annual utilization rate was 52 video consultations over the Ontario Telemedicine Network for every 1,000 northerners living in rural areas.

Most clinical events involved a video event between a provider at one end and a patient at a facility at the other. However, this total also included about 13,000 video visits direct to patients' homes using their own personal devices, usually for mental health sessions or family practice follow-ups.

2015/16 progress:
- OTN, Local Health Integration Networks (LHINs), Canada Health Infoway, and the Ontario Ministry of Health and Long-Term Care partnered to deliver remote monitoring and intensive, motivational coaching via Telehomecare to 3,342 patients with congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) in 10 LHINs last year (more than 11,000 patients have graduated from the six month program since its inception). Patient satisfaction with this service exceeds 98% and an estimated 50-60% of hospital admissions and more than 40% of emergency department visits were avoided as a result.
- OTN's Telestroke program delivered emergency neurologist consultations to 1,201 acutely ill stroke patients in 28 emergency departments across Ontario.
- A total of 637,293 telemedicine patient services were provided last year.
- OTN's resources were used to deliver 24,394 education events to more than 303,000 participants last year.
- Nearly 5,000 primary care providers are enrolled in OTN's Teledermatology eConsult service which enables them to send patient photos to a dermatologist for advice. More than 10,150 consults were sent with an average response time of 2.1 days – reduced from an average of 4 months in-person wait time.
- OTN eliminated 30% of private network circuits last year, moving users who are not in remote locations to the internet, reducing the annual operating cost by several million dollars.
- OTN partnered with eHealth Ontario, OntarioMD, the Champlain BASE program, and Keewaytinook Okamakanak eHealth to deliver its services.

- At the end of the fiscal year, 21,390 healthcare providers were enrolled in OTNhub.ca, the secure, integrated, single sign-on to all of OTN's telemedicine and supporting services.

Catalyzing Virtual Care

OTN works closely with provincial, regional and organizational partners, along with individual healthcare providers, to drive awareness and growth of virtual health care across the province.

2015/16 progress:
- OTN worked with the senior management teams of five large academic health science centres to help them integrate virtual health care into their strategy and business plans.
- OTN worked with partners across the province to support the initiation of 60 new regional telemedicine-enabled clinical programs.
- OTN worked to support health system partners implementing key Ministry of Health and Long-Term Care initiatives, included working with five of the six Integrated Funding Model (IFM) projects. In addition, 11 Health Links have implemented virtual care.

Virtual Healthcare Innovation Hub

Many excellent virtual healthcare solutions, mobile health applications and devices have not been able to scale yet in Ontario for a number of reasons:
1. Providers are not aware of them or do not know which ones are credible
2. There are policy or business model challenges
3. Concerns over privacy or security
4. Inability for the public sector to procure quickly and reasonably
5. Challenges of implementing change in the healthcare system

OTN, working with several other organizations in Ontario, is driving accelerated virtual care innovation in Ontario to enable the healthcare system to take advantage of proven digital solutions that align with health system strategies. In 2015/16, OTN launched its virtual healthcare innovation hub to help healthcare organizations more aggressively implement virtual healthcare solutions and to help the best solutions scale across the health system.

The innovation program involves targeting significant health system problems and helping to broker relationships between suppliers, producers and distributors who have the solutions and healthcare providers who can put them to use. OTN's role is to identify the possibilities, broker the relationships and help overcome the barriers to scale. Depending on the circumstance, the process may involve formal evaluation, procurement of solutions on behalf of the broader public sector and/or assistance in scaling adoption of the application across the province.

2015/16 progress
OTN and health system partners launched three pilot programs to evaluate
1. A mobile health application for patients with type 2 diabetes that provides automated, real-time coaching for patients in the areas of activity, diet, medication dosage and behaviours. Partners include the diabetes education centres associated with St. Joseph's

Care Group (Thunder Bay), William Osler Health System, and North York General Hospital.

2. An application that supports people undertaking home peritoneal dialysis, rather than much more expensive hospital hemodialysis, led by clinicians at London Health Sciences Centre with sites that include Humber River Hospital.

3. An application and online community for mental health patients on waiting lists in Durham region and Toronto, led by partners Ontario Shores, Lakeridge Health, and Women's College Hospital, that enables them to share feelings, track moods, and take online courses – all moderated by mental health workers.

OTN is also working with the research group at Women's College Hospital Institute for Health System Solutions and Virtual Care (WIHV) that has created a rapid evaluation framework, as well as funding partners Canada Health Infoway and the Ministry of Health and Long-Term Care.

This year, OTN launched PracticalApps.ca, a mobile health application (apps) review site created in collaboration with researchers at WIHV. The site identifies one common health issue every two weeks and reviews apps that can be used by patients dealing with that issue to improve outcomes and activate them to self-manage.

Planning is also well underway for a regional consumer access (eVisit) initiative in the Central West region. The LHIN and William Osler Health System are playing key leadership roles in partnership with OTN to develop a model of technology-enabled coordinated care delivery that is designed to enable an entire sub-LHIN population of patients receive same-day access to clinical advice from their primary care provider or delegate.

Additional initiatives currently underway include improving transitions of care from the hospital to the community for surgical patients, supporting palliative care in the home and improving wound care in the community.

OTNhub Platform Evolution
The OTNhub is an online platform that enables providers to find and access telemedicine tools, clinical services and educational opportunities. OTN continues to evolve the platform to support the province's *Patients First Action Plan* by curating and simplifying access to credible consumer solutions, accelerating the innovation agenda by providing a distribution channel for virtual health care tools and enabling integration of virtual health care resources to key provincial eHealth infrastructure services. The value proposition for the OTNhub platform is threefold

1. *Accelerating Ontario's Emerging Consumer eHealth Strategy*
   - OTNhub enables virtual health care adoption – rapidly enabling the health system to bring the best virtual healthcare solutions and services to the people of Ontario
   - OTN is simplifying the landscape – curating solutions that are private and secure for patients and providers overwhelmed by too many choices

2. ***Accelerating the Innovation Agenda***
    - OTNhub will drive early results for innovative virtual care healthcare solutions to accelerate the introduction and availability, through vendors of record, of new digital/virtual care solutions to Ontario
3. ***Putting Ontario's eHealth investment to use***
    - OTNhub brings a secure, private and scalable platform for providers to access virtual care solutions federated to key provincial services including the ConnectingOntario regional portals