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### ClinicalConnect Portal: Improving Patient Care and Efficiency



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Beginning in 1996, hospitals in the Hamilton, Ontario, Canada area started coming together to form Hamilton Health Sciences (HHS), a family of seven hospitals, a cancer centre and an urgent care centre, serving more than 2.3 million residents of Hamilton and South Central Ontario, Canada. HHS is the second largest hospital group in Ontario, and serves as a regional referral centre for cardiac, stroke, burns, trauma, neurosurgery, paediatrics, digestive diseases, high-risk obstetrics, cancer, orthopaedics and rehabilitation services.

With this merger activity came different Health Information Systems, so centralising patient health information within HHS quickly became necessary. A common Hospital Information System for HHS was developed in order to best serve patients and recognise operational efficiencies. The need to make this information available to physicians outside of HHS but within the patient's circle of care, particularly community providers, was identified.

#### ClinicalConnect: A Secure Web-based Portal

Enter ClinicalConnect, a secure webbased portal that provides physicians and clinicians with real-time access to their patients' electronic medical information from a variety of data sources, not just their own Health Information System. Since its inception in 2005, ClinicalConnect has changed the way healthcare is being delivered. ClinicalConnect has grown from integrating HHS-generated health records to including real-time patient data from regional hospitals, oncology centres, provincial data repositories and Community Care Access Centres (CCACs; also known as Homecare), which gives health service providers a more complete picture when treating their patients. The primary goal of ClinicalConnect is to increase efficiency for healthcare providers, enhance workflow, and improve patient safety by having access to the right patient information, at the right time.

Today, 10 years since it was first created, ClinicalConnect is connecting physicians and clinicians practising well beyond the Hamilton area. It's being used by a wide variety of health service provider types, who are benefiting by having access to their patient's records for treatments performed across South West Ontario. In 2013, ClinicalConnect was selected as the Regional Clinical Viewer for the connecting South West Ontario (cSWO) Program, a regional integration initiative funded by eHealth Ontario. Regional integration initiatives (connectinggTA [cgTA], connecting South West Ontario [cSWO] and connecting Northern and Eastern Ontario [cNEO]), are enabling the province to achieve an electronic health record (EHR) solution for all Ontarians. ClinicalConnect is being leveraged and used as the viewer to aggregate patient health information from all 67 acute care hospitals, four CCACs and Oncology Centres across South West Ontario (at the time of writing).

ClinicalConnect also aggregates data from the Ontario laboratories information system (OLIS), an eHealth Ontario repository that connects hospitals, community laboratories, public health laboratories and practitioners to facilitate the secure electronic exchange of laboratory test orders and results; the Southwestern Ontario Diagnostic Imaging Network (SWODIN), another provincial repository for diagnostic images for tests performed at hospitals in South West Ontario, and Canadian Health Outcomes for Better Information and Care (C-HOBIC) nursing assessments.

HHS continues to own and operate the ClinicalConnect portal, and is responsible for tasks including, but not limited to, user authentication, bringing new integrations to fruition and managing ongoing maintenance of the portal in collaboration with the vendor.

#### Identifying Patients with the Greatest Needs

Another recently added feature is the integration of a flag to identify patients with the greatest healthcare needs, known locally as Health Links patients. Health Links is a new model of care where all providers in a community, including family care providers, specialists, hospitals, long-term care, home care and other community supports, are charged with coordinating plans at the patient level. Eventually the flag in ClinicalConnect will link directly to these care plans so that physicians and clinicians not normally treating the patient, for instance if they have an emergency room visit, can review the complete details of their care from within ClinicalConnect.

#### Users

As of September 2015, there were more than 31,000 ClinicalConnect authorised users, representing physicians, nurses, clinical support staff, who have been sponsored by physicians with accounts, CCAC care coordinators, pharmacists, social workers and midwives, just to list a few of the types of ClinicalConnect users spanning the continuum of care. These users work at facilities in almost all healthcare sectors – acute care facilities, CCACs, family health teams, long-term care homes, community support services, mental health and addiction centres, community health centres and public health units. There is no subscription fee associated with using ClinicalConnect by health service providers as it is funded by eHealth Ontario, through the cSWO Program.

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## Future Development

The ClinicalConnect team is working to expand the functionality and features of the portal to include eNotifications, eReferrals and eConsults, making it a true 'one-stop shop' for electronic health records.\* Discussions are also under way detailing integrations with eHealth Ontario's ONE® ID Identity and Access Management Service, a set of systems and processes that enables healthcare providers to access secure ehealth services, as well as the provincial diagnostic imaging (DI) common service, which will enable the sharing and viewing of patients' diagnostic images and reports from across Ontario to hospital and community-based healthcare providers anytime, anywhere. ClinicalConnect has become a fundamental tool in bridging the gap between disparate information systems spanning a wide geographical area and multiple regional healthcare facilities.

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## Privacy and Security

From a privacy and security perspective, ClinicalConnect utilises a combination of industry standards for authentication, authorisation and auditing to safeguard data. ClinicalConnect data is encrypted with the appropriate security controls in place to safeguard the privacy of patient information according to the Province of Ontario's Personal Health Information Protection Act, 2004 (PHIPA). PHIPA establishes the legal privacy roles and responsibilities for each organisation participating in the use of systems like ClinicalConnect. Each participating organisation signs a Data Sharing Agreement, and must meet PHIPA requirements by having the requisite privacy and security policies, procedures, training programmes, privacy officers and controls in place that serve to protect patient information accessed via ClinicalConnect.

## User Feedback

Reaction from ClinicalConnect users is very positive:

**Dr. Rob Lloyd**, a Paediatric Intensivist at HHS, is an early adopter and a firm believer in ClinicalConnect. He says, "ClinicalConnect is a godsend. In the past we had essentially no access to patient info from other hospitals so it often took many days after admission to get a complete picture of the patient's past history. This often resulted in repeat tests, miscommunication, and delayed care. Now, with the click of a mouse I can instantly be looking at consult notes, discharge summaries, radiology reports and lab data from previous hospital visits across all four South West Ontario LHINs – geographically that's remarkable as South West Ontario is a vast area – more than 35,000 square kilometres." **Sandy Moss**, a Registered Nurse at Niagara Health System, says "ClinicalConnect speaks for the patient when they cannot speak for themselves."

## Patient View

How is ClinicalConnect from the patient's perspective? Chaplain Erna Hibbs and her husband, Don, can attest to the benefits of Don's care team using the portal to provide him with better, more efficient care given they have his necessary medical history at their fingertips. Don is a patient from Simcoe, Ontario, but has been a patient at multiple healthcare facilities in the region, including the Juravinski Hospital, about an hour's drive from where Don lives, and he has been seen and treated by a variety of providers. We all know it can be frustrating to repeat your story to those providing your care, but as Chaplain Hibbs explains, ClinicalConnect helps with that. "We no longer have to pull out his letter from his mother, as he says, that lists his medications and treatments. We don't have to do that anymore – it's in ClinicalConnect". Not only does accessing ClinicalConnect save time and reduce stress for the patient, but it also means the provider doesn't have to rely as much on their patients' recall, nor do they have to ask the patient to provide information about treatment and medications from other facilities again and again; that's better for everyone. The Hibbs also explain they take comfort in the fact that Don's healthcare information is available in the secure portal to the various providers – with ClinicalConnect, providers know the full story, with real-time information, anytime, anywhere.

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## Patient Portal

At this point, health information in ClinicalConnect is accessed by physicians and clinicians within a patient's circle of care. But a version of the portal designed for patients' use may not be far behind. We know that the patient experience no longer begins at the front door of the hospital. When patients interact with hospitals or healthcare organisations, they expect the same kind of 'electronic experience' that they enjoy in other industries like banking, travel and retail.

Consider the level of personalisation available in those industries – online book stores recommend books based on your previous purchases and personal preferences, your bank reminds you to pay recurring bills (or even does it for you), online travel services know you prefer an aisle seat, but yet when you visit the hospital or physician, you often have to fill out your information on a clipboard each time and, even more often, you have to recount your previous medical history. In addition to how other industries use technology to provide their customers with greater convenience and efficiency, in the healthcare sector specifically, there has been a proliferation of new products and technologies that foster healthcare consumerism, including telemedicine, clinical decision support, electronic health records and health intelligence (Cohen et al. 2010). Research shows that 73 per cent of consumers would use a tool to help them pay their medical bills, communicate with doctors, make appointments and obtain lab results online (Intuit 2011).

## Benefits for Patients

There is undoubtedly a movement afoot to move away from paper-based health records – be it for greater efficiency, appropriate and effective sharing of relevant patient care information across the continuum, and for enhanced privacy and security reasons – all benefiting patients and providers alike. A survey in the U.S. found that people pay more attention and become more engaged in their health and medical care when they have easy access to their health information online – and that is especially true for those with lower incomes (Udem 2010).

Expanding ClinicalConnect as a patient portal could assist healthcare providers to better understand the patient's view relative to health management, healthy living goals, compliance, outcomes and overall patient satisfaction. Other benefits to patients include improved access to healthcare providers themselves and relevant healthcare resources, easier access to their own health records, and the ability to get test results to the patients faster, because they are integrated into ClinicalConnect in real time from the source systems.

From a provider perspective, using a future version of ClinicalConnect that is patient-facing could increase efficiencies in the form of shorter time and effort needed to gather information and disseminate it to patients, which in turn reduces the wait times for patients and anxiety associated with waiting for test results; reduce administrative costs through increased automation; and reduce and possibly eliminate the need for duplicate medical tests. Moving to a more electronic-based system could result in greater time efficiencies for both the provider and patient with less travel time for appointments that in some cases could be carried out electronically or by phone.

Discussions around ClinicalConnect evolving to a patient portal have included the possible integration of evidence-based information sources that would provide patients with clinically relevant information about their condition – information from cases similar to theirs in terms of age and gender, amongst other characteristics. Furthermore, leveraging existing software that regularly 'pushes' relevant information directly to patients by email or text message to treat their specific conditions would be an added benefit and help keep managing conditions top of mind for patients.

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Finally, the option exists to integrate the patient version of the portal with existing software that is being used to develop Personal Health Records, whereby patients can input their own health information and eventually tie that to the information being contributed by healthcare facilities, creating the all encompassing patient portal.

Although adapting ClinicalConnect to have a patient-facing component is not yet under way, the provider platform is already significantly deployed in the region and could be leveraged for patient use. Work continues to expand the depth and breadth of data that is available to physicians and clinicians to better serve the approximately 3.6 million patients residing in South West Ontario, as well as continuously leveraging other trusted online resources to make ClinicalConnect the key regional access point for patients' electronic health information.

## Further Information

To learn more about ClinicalConnect, please visit [info.clinicalconnect.ca](http://info.clinicalconnect.ca) or email [info@clinicalconnect.ca](mailto:info@clinicalconnect.ca) Our website features a variety of video and written testimonials about the benefits of ClinicalConnect and how this established eHealth solution is improving patient care and safety across a vast geographic region.

### \* Erratum:

This sentence was amended to remove the start of the sentence: "In addition to the upcoming hospital integrations", on 11 January 2016.

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