

Evaluating benefits is an important component of the connecting South West Ontario (cSWO) Program that helps to support and demonstrate the realization of health system benefits through the adoption of electronic health records (EHRs). By pursuing the measurement of organizational value (improvements in the efficiency of care delivery such as time-savings and redirected resources) and clinical value (patients undergo fewer unnecessary tests, patients have improved access to care), patients ultimately benefit from higher quality, better informed clinical decision-making.

The cSWO Analysis and Research program uses a research-based approach to identify areas of clinical best practice that are affected by the use of EHRs, and works collaboratively with clinicians to understand the value of EHRs. This formative evaluation process informs change management and adoption, and enables clinicians to use EHRs more effectively. This research does not include the use of any personal health information.

This document is one in a series of case studies which describe the clinical value of EHRs in different clinical settings and contexts, particularly with respect to clinical best practices. The work of the cSWO Analysis and Research program is ongoing; depending on the circumstance, these cases occasionally raise questions for further investigation, and clinicians are invited to participate in analysis and research to continue to develop these answers.

Value statement

Access to the cSWO Regional Clinical Viewer, ClinicalConnect™, has improved patient experience, increased patient safety, and contributed to reducing wait times for the diagnostic imaging (DI) departments at several hospitals within the Hamilton Niagara Haldimand Brant (HNHB) Local Health Integration Network (LHIN), including Brant Community Healthcare System (BCHS), Hamilton General Hospital (HGH), and McMaster University Medical Centre (MUMC).

The importance of timely diagnostic imaging

DI refers to the use of different imaging modalities to produce images from inside the human body in order to accurately diagnose and treat certain medical conditions. DI is minimally or non-invasive and encompasses a variety of procedures including computed tomography (CT) scans, x-rays, magnetic resonance imaging (MRI), fluoroscopy, ultrasound, and interventional radiology (IR). Delays in booking a diagnostic procedure can prompt several consequences¹:

- Jeopardized well-being
- Advanced disease resulting in the inability to treat
- Increased stress
- Lost productivity at work
- Strained relationships
- Increased risk of adverse events

As a result of the risks associated with delaying a DI test, Ontario established target DI wait times in 2012 in order to ensure individuals receive timely care. As of May 2017, the quarterly wait time to receive an MRI for non-urgent patients was 79 days at BCHS, 60 days at HGH, and 72 days at MUMC², all lower than Ontario's average wait time of 99 days³, yet longer than Ontario's target wait time of 28 days.⁴ These numbers indicate an opportunity for the HNHB LHIN hospitals to continue to improve their DI wait times in order to minimize the consequences associated with delaying a diagnostic procedure booking. Rising wait times are correlated with an increase in patient volume, as a result of the aging population, increasing rates of obesity and chronic illness, advances in CT/MRI guided intervention, and patient demand for CT or MRI scans.⁵

Patients receiving a DI procedure that administers intravascular iodinated contrast media, and who exhibit certain risk factors including, but not limited to, being over 60 and having a history of kidney disease, diabetes, or hypertension⁶ must first have Estimated Glomerular Filtration Rate (eGFR) or serum creatinine tests conducted. Prior to conducting a DI procedure for one of these patients, it is important that the radiologist has access to the test results to determine how well the patient's kidneys are functioning. Poor kidney function can cause a change in the agent chemical's composition, creating a risk of developing Nephrogenic Systemic Fibrosis (NSF), a disease of the skin and internal organs.⁷

ClinicalConnect usage in diagnostic imaging departments

The DI departments at BCHS, HGH, and MUMC have all recognized benefits associated with using ClinicalConnect, particularly in the area of patient booking. Before patients can be scheduled for their DI procedure, any required blood tests, such as eGFR to ensure good kidney function, must be done. Without access to ClinicalConnect, booking clerks at several of the hospitals would include a four week window in order to ensure the patient has adequate time to have blood work performed, and for the results to be faxed to the DI facility. Other organizations required the patient to come in to that facility for their lab work.

With ClinicalConnect, the booking clerk is now able to verify that the patient has had the necessary lab work, and can book the patient in for a test or procedure much sooner, streamlining the booking process. The benefits associated with accessing ClinicalConnect indicated by staff from the above organizations can be categorized into improved patient experience, increased patient safety, and decreased wait times as follows:

| Improved Patient Experience | Increased Patient Safety | Decreased Wait Times |
|--|---|---|
| <ul style="list-style-type: none"> • Patients are able to choose where to have bloodwork taken because results can be found in the lab module of ClinicalConnect regardless of where the test was performed • Patients undergo fewer duplicate tests as a result of the accessibility of patients' previous health history • Appointments no longer have to be rescheduled due to missing lab results | <ul style="list-style-type: none"> • When necessary, kidney function tests can be accessed through the lab module before booking to ensure proper DI procedure • Patient travel time can be decreased as a result of the patient being able to get bloodwork closer to home | <ul style="list-style-type: none"> • Booking turnaround time is faster as a result of having immediate access to patient lab results • Eligible patients can now be scheduled into cancelled time slots more easily |

An additional benefit described by the IR department is the ability to look at past DI reports and images to develop a more comprehensive understanding of their patients' history, resulting in improved clinical decision making. This access also enables patient bookings to be prioritized based on the severity of the patient's condition. Furthermore, there is an increased ability to determine the resources needed for a procedure, and the estimated procedure time, ultimately improving the scheduling of the DI procedure. The MRI staff are also able to use ClinicalConnect to screen their patients by accessing operative reports and consult notes to ensure that any implants or joint replacements are compatible for their MRI scan. This reduces the amount of time that would be needed to confirm this information and greatly reduces the booking turnaround time.

Testimonials

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| <p>Lianne Broughton, senior diagnostic imaging technologist, DI, HGH</p> | <p>"Patients attending for CT scans are sent for bloodwork prior to their appointments with us, usually by their family doctor and often at community labs. Obtaining these results used to mean hours of waiting, phone calls and faxes for the booking team, and long waits for the patient, while we ensured that everything was in place for the procedures, but with ClinicalConnect, all they need to do is look in the labs module and they have the information instantly – it's completely changing the way that they work."</p> |
| <p>Melissa Heather, patient registration, DI, BCHS</p> | <p>"A lot of our patients come from out of town, and in the past if a test was required, we requested that it be completed onsite so that we could ensure that we receive the results in a timely manner. Now that we have access to all of the results on ClinicalConnect, we tell them to go to a location closer to home. This saves the patient and their caregiver time, and reduces the stress of having to travel to the hospital for a single simple test."</p> |
| <p>Amanda Koksanowic, booking clerk, DI, HGH</p> | <p>"The ability to view operative reports via ClinicalConnect not only saves me time but also ensures patient safety and prevents rebooking a patient to a later date due to lack of implant information."</p> |

Questions

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Sources

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