

Interprofessional Resource Team planning



Photo caption: Stock photo of a smiling female clinician using a stethoscope to listen to a little girl's heartbeat.

An interprofessional resource team (IRT) is a team of nurses and other health disciplines staff (such as social workers, physiotherapists, occupational therapists, dietitians and more) hired by a hospital to fill in for absences and leaves. This solution looks at historical data to predict the frequency of leaves and absences and helps leaders at St. Joseph's and St. Michael's create IRTs with the right size and mixture of skills.

- IRTs can help the hospital to avoid using agency staff (i.e. nurses and health disciplines staff who work for private staffing agencies), while still ensuring teams are resourced to provide excellent care.
- Since implementing this solution, we have seen **approximately \$1 million in savings** each year by reducing the use of agency staff and overtime hours, according to internal analysis.



Multiple Sclerosis Reporting and Analytics Tool



Photo caption: (From left to right) Chloe Pou-Prom, data scientist; Ashley Jones, project manager; Dr. James Marriott, neurologist; Dr. Jiwon Oh, clinical director for the BARLO MS Centre (Photo credit: Eduardo Lima)

The Multiple Sclerosis Reporting and Analytics Tool – also known as MuScRAT – integrates tens of thousands of patient notes from Canada's largest Multiple Sclerosis (MS) clinic into individualized patient histories, saving countless administrative hours for staff and doctors so they can focus on patient care.

"MS is a disease that lasts decades. Often when a clinician is seeing someone for the first time, they have ten or more years of medical notes to go through," says Dr. Jiwon Oh, clinical director of the BARLO MS Centre at St. Michael's Hospital. "The goal of MuScRAT is to – in a quick snapshot – summarize a person's relevant clinical history in MS."

Learn more about MuScRAT.



Emergency Department Nurse Assignment tool



Photo caption: Clinical staff in the St. Michael's Emergency Department (Photo credit: Eduardo Lima)

There are many different roles that a nurse can perform in a busy Emergency Department (ED): triage, acute care, ambulatory care, trauma response – just to name a few. This tool helps nursing team leaders and administrative staff assign nurses to their role for each shift in the ED.

- Creating nursing assignments for each shift previously took two to four hours daily. With this AI tool, it takes **15 minutes or less** so team leaders and administrative staff have more time to provide care and support other needs in the ED.
- It also reduced the 'repeat rate' the number of times a nurse is assigned to the same role in back-to-back shifts from 20+ per cent to 5 per cent. This helps to ensure nurses work in a variety of roles, creating more learning opportunities and job satisfaction.



CHARTWatch patient monitoring



Photo caption: Swanee Tobin, clinical leader manager, Ruth Mega, charge nurse, and Dr. Reza Gholami, physician, use CHARTWatch on their unit. (Photo credit: Eduardo Lima)

CHARTWatch uses patient data from the hospital's existing electronic patient record – such as laboratory test results, patient vitals and patient demographics – to predict the level of support a patient will need.

Learn more about ChartWatch.

- CHARTWatch is part of Unity Health's collaboration with **Signal 1**, a Canadian health AI startup.
- CHARTWatch is saving lives. **20+ per cent fewer patients are dying** on units that use CHARTWatch.



Emergency Department Wait Time Dashboard

Expected Wait Times		
Most patients will see a doctor within:	How many patients are in the ED?	
2 hours 19 minutes	58 patients total	
for patients arriving at 11:30 AM	6 patients in critical condition	
We see the most urgent patients first.		Current Time
We take the time that each patient needs for their care.		11:33 AM

Photo caption: A screen capture of the wait time dashboard at St. Michael's Emergency Department.

Waiting for care in the Emergency Department (ED) can be a highly stressful experience. To give patients and their families a better idea of how long they will wait to see a doctor, we created a dashboard that shares expected wait times on screens in the St. Michael's ED waiting areas.

- The wait time is a prediction for the length of time within which 90 per cent of patients will see a doctor after being triaged, based on historical data and current conditions.
- What patients are saying: "Having the wait times displayed is a great addition. I know that staff are quite busy, so having this information provided without having to constantly get up and ask is great."

Note: This dashboard is not posted externally. This is to ensure community members do not prioritize other nearby EDs that are experiencing similar or higher patient volumes but do not have an estimated wait time available.



Emergency Department Volume Forecasting



Photo caption: A busy hallway in the St. Michael's Emergency Department (Photo credit: Eduardo Lima)

Using historical and current data on Emergency Department (ED) volumes, weather and holidays, this tool predicts how many patients will arrive to the St. Joseph's and St. Michael's EDs days and weeks in advance. Anticipating the number of ED patients helps to ensure there are enough staff to prevent long wait times and provide the best care possible.

- The tool not only predicts the number of patients that will arrive to the ED, it also predicts how many of the arrivals will be high-intensity patients (heart attacks, trauma cases, etc.), mental health patients and patients with lower or more moderate care needs.
- The predictions from the tool boast an accuracy rate of 80 to 95 per cent.



Risk of Unintentional Severe Hypoglycemia in Hospital predictor



Photo caption: Stock photo of a female clinician wearing personal protective equipment and speaking to a man who is lying in a hospital bed.

The Risk of Unintentional Severe Hypoglycemia in Hospital (RUSHH) tool identifies the inpatients who are most likely to develop hypoglycemia – low blood sugar – so their care team can intervene and prevent it.

Low blood sugar can prolong hospitalization and can even cause seizures or a coma in severe cases.

• Since launching the tool in October 2020 on cardiovascular and vascular inpatient units at St. Michael's Hospital, there has been a **30+ per cent reduction in rates of low blood sugar.**



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Brain Bleed Detection tool



Photo caption: A head CT scan

This AI solution looks at the CT scans for St. Michael's Emergency Department patients who come in with a head injury and predicts whether the patient has an intracranial hemorrhage – also known as a brain bleed. The predictions are flagged to care providers so they can assess and give faster diagnoses and treatment.

- Brain bleeds can cause permanent brain damage and even death. Fast diagnosis and treatment is critical.
- The model correctly identifies 85+ per cent of cases where the patient has a brain bleed.



Hemodialysis Hospital Admission solution



Photo caption: Stock photo of a woman lying in a hospital bed receiving dialysis.

This tool alerts clinical leads on St. Michael's outpatient dialysis unit of the patients who are most likely to experience a health decline and hospitalization so they can prevent it.

- Hospitalization rates among dialysis patients are higher than the general population and it's often difficult for clinicians to identify which patients are most at risk.
- Since launching in late 2023, we have seen a **~20 per cent reduction in hospital admissions** in the 30 days after patients have a dialysis appointment.



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REWARD AI risk predictor



Photo caption: A woman in a hospital bed with two female clinical staff members checking her vitals.

This solution, which stands for Recognizing Warnings in Adults at Risk of a life-threatening Diagnosis using AI, identifies patients on the general internal medicine units at St. Michael's who are at risk of internal bleeding so their care team can prevent it.

- Untreated internal bleeding can cause organ failure, shock and potentially death. Even if quickly treated, internal bleeding can significantly increase a patient's length of hospitalization.
- REWARD AI was launched in September 2023. In early feedback, physicians are finding the tool convenient, easy to use and helpful to the care they provide.