



Hospital Command Centre

Advancing how care is delivered at the Humber River Hospital

Humber's Quality Command Centre Helps Deliver Better, Faster, and Safer Patient Care: Year One in Review

After an unwitnessed collapse at home, Mr. X¹ who lives with multiple complex medical conditions arrived in the Humber River Hospital (Humber) Emergency Department with his family. Mr. X was quickly assessed in the ED, admitted to hospital and transferred up to the cardiac monitoring ward within 6 hours of admission. Despite remaining stable, Mr. X and his family wished for answers, reassurance and a safe discharge plan to get him home as quickly as possible. His care team immediately went to work and was able to confirm there was nothing prevalent causing Mr. X's loss of consciousness. Within 48 hours of arriving in the ED, he was discharged safely with homecare to the comfort of his home, with his family, and with peace of mind.

Since Humber opened the doors to its analytics-powered Quality Command Centre one year ago, patients like Mr. X who require in-depth work ups no longer get caught up in unnecessarily long patient stays. How does the Command Centre help make this happen?

Breakthrough Intelligence

It is artificial and human intelligence coming together 24 hours a day, seven days a week, detecting risk, coordinating complex care activity and backstopping care teams in real-time. In Mr. X's case, upon his arrival at Humber's ED, the Clinical Expediter, Bed Allocator and Imaging Expediter teamed up in the Command Centre and leveraged real-time insights on the Wall of Analytics™ to identify and prioritize a telemetry bed given his special need for close monitoring and arrange a CT head exam in the ED for Mr. X within 2 hours of his arrival there. They also partnered with Mr. X's care team throughout his stay on the inpatient unit to expedite his diagnostic bloodwork, ensure multiple imaging exams would be completed in one trip to radiology, arrange for an echocardiogram and CT angiogram to be done within 24 hours of his admission and ensure on time rapid assessments by physiotherapy and occupational therapy to confirm Mr. X was mobilizing safely. The result – a more comfortable and more satisfied patient and family, less stressed caregivers and best use of stretched hospital resources.

At the heart of Humber's 4,500 square foot Command Centre is the 22 screen GE Healthcare Partners (GEHC) Wall of Analytics™ which detects in real-time patient-specific care delays and bottlenecks, where pressure exists now or is mounting in the next 48 hours, where care delivery activities are outstanding, and where risk is building. In the background, 16 AI-powered analytics purpose-built by GEHC for Humber continuously monitor Humber activities at the patient level, ingesting data that reside in 12 information



systems and modules from various vendors. Fourteen command centre staff, repurposed from throughout the hospital, monitor the “Tiles” which display insights from the analytics in easy-to-read format, and intervene to alleviate pressure on the system as well as stress on hospital staff.

Partnering for Success

As an early implementer of smart hospital solutions, Humber continued leading healthcare innovation in Canada with the opening of its Quality Command Centre in November 2017, a first of its kind in a Canadian hospital and second in the world at the time. “After seeing the Dell Computer command centre ten years ago, we thought that’s what we ought to do with patient care,” says Barb Collins, President & CEO of Humber River Hospital. “Not long after that, we started talking with GE Healthcare Partners about creating such a system in the new hospital we were planning.”




The depth and experience of GEHC’s Command Centre team provided Humber speed for implementation, expertise that ranged widely from workflow mapping to engineering, physical layout, activation support and change management, focus amid other strategic initiatives and a proven structured approach that was a vital to the success of GEHC’s first enterprise-wide Command Centre program at the Johns Hopkins Hospital in Baltimore.

Fast forward to today where Humber is an active member of GEHC’s Command Centre Ecosystem that comprises ten command centre programs across the US, Canada and UK, the purpose of which is to exchange ideas about new tiles, roles and interventions and guide one another with respect to implementation and lessons learned.

Mission Accomplished

At the outset, Humber committed to a 2.5 year return on its investment, as directed by the Board of Directors. With an aging workforce, serving a rapidly growing community that exceeds 800,000 residents, and with ED visit volumes routinely topping 400 in a day, it was determined Humber would face a capacity shortfall of 40-50 medicine beds by the year 2020. A do-nothing scenario was not an option.

Working with GEHC, a multi-generational plan was developed with Generation 1 solving for patient flow and throughput challenges, Generation 2 leveraging clinical patient data to make a step level change towards high reliability care and Generation 3 focusing on reducing acute care utilization, extending Humber’s care delivery beyond the walls of the hospital and driving virtual care.

High Reliability	GEN 1	 Patient Flow & Patient Care Logistics bed base allocation, bed assignment, room cleaning, critical care capacity management, discharge planning, surgical scheduling and throughput, elevated risk of harm due to logistics intensity, etc.
	GEN 2	 Clinical Pathway & Reduce Never Events delays in care, early warning algorithms, QBP monitoring, etc.
Care Transformation	GEN 3	 Community Reach & Reduced Acute Utilization support health and wellness, virtual visits, home monitoring, communication and collaboration


The difference the Command Centre has made this past year is resounding with caregivers who no longer must depend on daily heroics to deliver their best care in Humber’s high occupancy environment. Whether providing insight to load balance caregiver capacity across units or prompting action when an inpatient unit is under pressure, the tiles are monitored and acted upon when required by Command Centre staff who ensure care activities happen on time, when they are needed the most and in moments that matter.



The Humber Command Centre supports care teams throughout the hospital by spotting when inpatient units are under pressure based on what patient level activities have taken place in the prior 90 minutes and by intervening to relieve that pressure.

Hospital administrators are also realizing the benefit from its investment in the Command Centre. In the last year, Humber has managed to care for an 8% increase in the average number of daily Emergency Department (ED) visits and an increase in the number of patients admitted equivalent to 23 beds worth of capacity without having to invest in additional infrastructure and resources.

Most importantly, the Command Centre, which works behind the scenes to help make every inpatient’s experience at Humber better, faster and safer, has eliminated the need for “hallway medicine.” It has supported hospital outcomes that include a 52% reduction in acute conservable medicine bed days, a 23% reduction in the average time a patient admitted in the ED waits to reach an inpatient bed, a 45% reduction in inpatient bed clean wait times and a 38% reduction in the average time inpatients wait for certain diagnostic exams.² With these outcomes, and anticipated continued growth in demand for services, Humber anticipates a 2-year return on its investment in the Command Centre.

DISCHARGE		
PATIENT	LOCATION	TASK NEEDED
H765423991	7E33	NONE 
H092678918	7E46	NONE 
H122876543	7E56	
H247689191	9W25	 
H654312785	12E41	  

The Humber Command Centre helps reduce bed and wait time pressure by removing barriers to discharge. The result: best performer for ED wait times in Ontario.³

“Humber’s achievements demonstrate the efficacy of Command Centres in orchestrating care delivery across the organization, bringing consistency to processes, prioritizing actions, eliminating waste, de-risking care and predicting tomorrow’s pressure points,” says Jeff Terry, CEO of Command Centres for GE Healthcare Partners. “Humber River Hospital is so advanced in many ways. We’re honored for them to be one of the first to join our command centre community.”

Process Improvement...in Real-time

For decades, healthcare providers have worked at addressing ongoing efficiency, quality and safety challenges in their organizations. Yet despite investments in Lean, Six Sigma and PDCA having become ubiquitous in healthcare, there are few reported instances of enterprise-wide impact, results are seldom sustained, and projects are repeated time and again.

Recognizing that hospitals are a complex system of interdependent programs and services, care delivery intrinsically is highly variable, and situations change dynamically from one-minute to the next, Humber views its Command Centre as the means to adapt and “improve processes” in real-time, rather than once every few months or every few years when measures of performance retrospectively surface a problem.

In addition to shining a light where action is needed right away or in the next 24-48 hours to eliminate a delay or a risk, the Command Centre also uncovers for the hospital’s transformation team opportunities for process improvement, workflow change or capacity redesign when patterns of alerts are spotted. Furthermore, GEHC’s problem-back approach used during analytic design and implementation uncovered instances at Humber where workflow and processes were either unknowingly inconsistent or not aligned with hospital objectives (e.g. use of Expected Discharge Date) and prompted improvements to be made to them going forward.

Achieving Buy-in

Early in the year before the Command Centre opened, staff across the hospital shared concerns about the Command Centre approach that included “big brother” watching them, losing the ability to make decisions, having decisions be second-guessed, disruption of workflow, additional documentation and so on. Today, strong engagement has replaced these concerns, as evidenced by requests to move other roles into the Command Centre, the generation of 350 ideas for additional tiles, spontaneous team visits to the Command Centre and the request and subsequent fulfilment to establish a high value situational awareness and alerting Tile for display on each inpatient unit.



“This isn’t about telling doctors how to be doctors, but rather it’s about helping and supporting them in doing their work, removing roadblocks and barriers,” says Dr. Susan Tory, the Command Centre’s Medical Director. Clinical, Staffing, Imaging, Support Services, ED, Procedural, Home & Community Care and other expeditors in the Humber Command Centre backstop physicians and other caregivers on the front lines in many ways. Alerted by analytics that spot real-time or emerging risks, these Expeditors have the wherewithal to investigate the situation, consult with co-located Command Centre colleagues and take action that might include sending a nurse to an inpatient floor that is inundated with discharges, admissions and patient codes or flagging to the Resource Nurse on an inpatient unit that a patient’s catheter removal is overdue. Previously this action might have required the caregiver to engage with multiple information systems, mouse clicks and phone calls or it might never have been pursued. Whereas research has shown two-thirds of reported medical errors identify ineffective communication as a root cause, Humber has faced this challenge head on with its Command Centre.

Generation 2: High-reliability Healthcare

The development of Humber's second-generation Tiles is underway and expanding the focus of the Command Centre to eliminate never events and ensure patients stay on evidence-based pathways. A first-of-its-kind Perinatal Tile, for instance, will detect obstetrical and neonatal risks of harm, helping to ensure time-sensitive activities are happening on time, and alert to early signs of clinical deterioration. Although accessible through Humber workstations across the hospital, the Clinical Tiles do not replace the work of Humber care teams, who will continue to serve patients as risks emerge. Rather, Command Centre staff will act as a second line of defense, prompted by Clinical Tile alerts that appear on the Wall of Analytics™ and which may be set at higher thresholds than those that display outside the Command Centre.

"We need to get hospitals to a point where they don't make errors," says Peter Bak, Chief Information Officer. "The Command Centre allows us to identify the drivers that often lead to errors and alleviate those situations to reduce the potential for mistakes."

Here to Stay

The Command Centre approach disrupted Humber's traditional model of care delivery in which programs and services across the hospital functioned without an understanding of how decisions for one patient might affect the progress or status of all patients in the hospital. The Command Centre enables real-time enterprise-wide situational awareness for the first time, which in turn has brought forward a new culture of transparency, data-driven decision-making, team work, accountability and execution.

"Creating a Command Centre is not just another digital healthcare initiative," explains Collins. "It's creating an entirely new system for the hospital; it requires new thinking and it's the type of thinking that's here to stay. This is a solution that works, and for the first time in 40 years, we have a tangible way to sustain change."

¹ Patient's name has been changed to protect privacy

² Humber Performance Scorecard (Jan 2018 v. Jan-Jun 2017)

³ Humber ranked 1st in the Ontario ED Pay for Results Program for 2018/19 funding

About Humber River Hospital

Humber River Hospital (HRH) is North America's first digital hospital and the first hospital to implement a Command Centre to manage hospital systems, services and workflows. As one of Canada's largest acute care hospitals, HRH also operates one of the country's busiest emergency departments. Committed to compassionate, professional, respectful care, the hospital serves a vibrant and culturally diverse community of more than 850,000 residents in the northwest Greater Toronto Area. The 1.8 million square foot facility's design reflects lean, green and digital design principles. HRH operates 688 acute inpatient beds with 3,400 staff, approximately 700 physicians, and over 1000 volunteers. The hospital has formal affiliations with medical schools at Queen's University and University of Toronto.

To learn more about Humber River Hospital visit www.hrh.ca.

About GE Healthcare Partners

As the global management consulting arm for GE Healthcare, the GE Healthcare Partners team is dedicated to becoming the leading provider of outcomes-based solutions in healthcare via Performance Partnerships, Command Centre Partnerships, and Consulting Solutions--three areas primed to drive transformational change in healthcare organizations.

GE Healthcare Partners creates value for clients by leveraging the power of GE Healthcare to solve the most challenging problems in healthcare through the delivery of client problem-back solutions, long-term strategic partnerships, and advanced analytic capabilities. By connecting with clients to define and prioritize their critical challenges, the Partners team designs the best strategies and activates impactful solutions to create sustainable outcomes to enable them to transform and succeed.

For more information contact Matthew Smith at 312-982-5513 or visit www.gehealthcarepartners.com.

