IN PURSUIT OF EXCELLENCE: OPTIMIZATION PROCESS AT CANADA'S NEW BRUNSWICK HEART CENTRE

Case Study: New Brunswick Heart Centre
Saint John, NB
EXECUTIVE SUMMARY
In May 2016, Horizon Health Network, in keeping with its vision of “Exceptional Care, Every Person, Every Day,” entered into a five-year partnership with Medtronic Integrated Health Solutions (IHS) to improve access to a variety of key services offered by the New Brunswick Heart Centre (NBHC), the single provider of adult tertiary cardiac care for New Brunswick and Prince Edward Island. Of the five NBHC clinical services that are the subject of this partnership, cardiovascular surgery (CVS) wait times represented the most pressing need. That is the focus of this document.

The plan was to apply a Lean Six Sigma methodology to enhance operations and demonstrate return on investment (ROI). A Kaizen application for healthcare setting was delivered collaboratively by subject matter experts from both Medtronic IHS and Horizon’s Performance Excellence team, with outstanding support from the dedicated staff and physicians at NBHC and the Saint John Regional Hospital (SJRH). Other stakeholders included the New Brunswick Department of Health.

The results of the initial phase of the project have exceeded expectations and this trend is expected to continue improving over time. Not only has NBHC vastly increased its capacity and efficiency in handling patients, it has also gained insight into controlling costs in the future while increasing the quality of care and further promoting a culture of continuous improvement within NBHC.

Effective engagement with the project team contributed greatly to the project’s success and ensured a sustainable process. NBHC was able to improve internal processes, thus providing the capacity to be more productive on an ongoing basis. The project has demonstrated that partnerships between industry and health care professionals can lead to optimized service for patients and increased ROI, while improving efficiencies and ensuring the sustainability of health care services.

BACKGROUND
Heart problems are one of the leading health issues for people living in New Brunswick and elsewhere in the world. Sadly, the number of people with heart problems is increasing each year, creating greater challenges for the health care system. As a provincial centre of excellence, NBHC has a responsibility to address the growing needs of its communities and transform its operations so it can serve more people and offer better care within its existing budget. The goal of the partnership with Medtronic IHS is to improve patient access, which aligns with NBHC’s mission to continuously improve the delivery of patient care and patient education.

The rapidly changing global health care system requires innovative approaches to address rising costs and increasingly complex disease states. In keeping with Horizon’s strategic direction to support provincial tertiary programs, such as cardiac care offered at NBHC, the partnership with Medtronic IHS demonstrates national leadership in moving towards value-based health care.

COMPELLING RESULTS:
14% INCREASE IN OR CAPACITY
44% REDUCTION IN MEDIAN RMWT, FROM 118 DAYS TO 66 DAYS
31% REDUCTION IN 90TH PERCENTILE RMWT, FROM 283 DAYS TO 195 DAYS
7.1% REDUCTION OF POST-OP ALOS LEADING TO INCREASED BED UTILIZATION ON NURSING UNIT
**APPROACH**

Identify solutions aimed at reducing or eliminating non-value-added clinical activities and administrative redundancies.

**Assessment Plan to evaluate value streams:**
Two Kaizen teams were formed to evaluate the highest priority value streams in the overall process:

• The CVS-OR team, which focused on process optimization from “decision to operate” to “complete surgery”.

• The inpatient average length of stay (ALOS) team, which focused on all activities related to patient flow pre- and post-procedure.

**THE TEAM**

The project steering committee included the project sponsor from Horizon’s executive team, NBHC senior administrative and medical leadership, Horizon’s performance excellence team, and the Medtronic IHS team. A core team with representation from Horizon’s Performance Excellence Program, NBHC and SJRH administration, medical leadership and Medtronic IHS provided oversight to the project teams, which consisted of more than 50 subject matter experts who were directly involved in the design and execution of the various initiatives.

**METHODOLOGY**

Medtronic program optimization methodology, which is based on Lean Six Sigma continuous improvement principles, began with a baseline review of NBHC programs and operations to highlight areas of focus. This was followed by one-on-one interviews with key stakeholders, data analysis and an ROI workshop. ROI methodology, a universally accepted approach developed by the ROI Institute, includes a review of five levels of organizational needs using a V-model to measure both intangible and tangible results.

**OUTPUTS**

• Project Charter
• Problem Statement
• High Level Process Map (block diagram)
• Value Stream Mapping
• Root Cause Analysis
• Waste Analysis
• Pros and Cons Analysis

**CASE STUDY NBHC**

"WE’VE HAD OUR FIRST SET OF RESULTS ON RETURN ON INVESTMENT FOR THE FIRST PHASE OF OUR PROJECT, AND THE RESULTS HAVE BEEN VERY POSITIVE."

GERI GELDART, V- P OF CLINICAL, HORIZON HEALTH NETWORK

"WHAT IS DIFFERENT WITH THE IHS PROJECT IS WE ARE DOING A WHOLE PROGRAM REVIEW. IT ALLOWS US TO CHANGE OUR CULTURE AT HORIZON TO BE CONTINUOUSLY IMPROVING THE WAY WE CARE FOR PATIENTS."

-MELISSA STARK, LEAN SIX SIGMA BLACK BELT PROCESS IMPROVEMENT FACILITATOR HORIZON HEALTH NETWORK
**ACTION PLAN**
The group identified challenges meeting the Canadian Cardiovascular Society’s guidelines for recommended maximum wait time (RMWT) for cardiovascular surgery. These challenges had been reviewed multiple times in the past but additional resources had not permanently solved the problem. The number of patients waiting continued to increase, affecting their quality of life and increasing their risk of suffering adverse events while waiting for surgery. During the interviews, struggles with intensive care unit (ICU) capacity became very apparent, leading to a high number of OR cancellations (1.4 per week on average).

As the project unfolded, the project leads and core team held weekly performance huddles to review status and discuss any bottlenecks in the action plan. The core team reviewed status and potential risks on a bi-weekly basis, and the steering committee met quarterly to ensure full alignment and address key issues.

**FOCUS AREAS**
- Increase OR capacity through wait list management, OR slate scheduling, enhancements to the transcatheter aortic valve implantation (TAVI) program and 90th percentile patient review.
- Reduce OR cancellations through OR slate scheduling and cancellation standard work.
- Reduce ALOS in the ICU through reducing unnecessary bed days for all ICU patients and fast tracking eligible CVS patients to the nursing unit.
- Reduce ALOS on the step down unit (SDU) through the discharge promotion board (see Figure 5), day of surgery admissions (DOSA) and repatriation to the home hospital or referring site.

**RESULTS**
A weekly dashboard reported the project’s KPIs, providing visibility and timely feedback on the effectiveness of the overall process. Each KPI was assigned to an owner who was held accountable to report progress on a weekly and monthly basis.

As a result of the team efforts, in the first six months after the Kaizen, the NBHC was able to achieve remarkable overall results:
- OR capacity increased by 14%.
- Median RMWT reduced by 44% from 118 days to 66 days.
- 90th percentile RMWT reduced by 31% from 283 days to 195 days.
- Increased bed utilization on 5BN through reduction of Post-Op ALOS by 7.1%.
- ROI has exceeded expectations and is expected to continue improving over time.
ABOUT THE PARTNERS

New Brunswick Heart Centre (NBHC) is located within the Saint John Regional Hospital, the largest community hospital in New Brunswick. It offers a range of cardiac care services, including cardiac surgery, general cardiology, interventional cardiology and electrophysiology. Many specialized support services and clinics are also in place.

Medtronic Integrated Health Solutions (IHS) partners with healthcare providers to reduce variation — delivering a better patient and provider experience with increased efficiency and improved financial performance. Leveraging the global knowledge and expertise of Medtronic, IHS helps Canadian health systems optimize their care settings and develop their service lines with customized solutions that address their unique operational and clinical challenges.

Learn more about how Medtronic and its partners are helping drive more value into healthcare systems at www.medtronic.ca/IHS.