Decreasing MRI Wait Times Using LEAN Methodology

Our Experience at Humber River Regional Hospital

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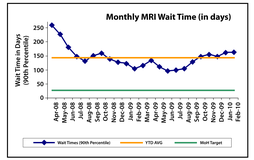
Humber River Regional Hospital

Purpose

Humber River Regional Hospital is a regional acute care hospital with 550 beds across three sites, situated in the Greater Toronto Area servicing a population of approximately 850,000. There is currently one 1.5Tesla scanner situated at the Finch Site campus. Wait times for a routine non-priority MRI studies, pre-project averaged 163 days, with a maximum of 260 days.

In 2008 the Ontario Ministry of Health and Long Term Care, (MoHLTC) embarked on a Provincial MRI Process Improvement Project (MRI PIP). The main goal of the project was to optimize capacity, thereby reducing wait times with existing MRI scanners and positively impacting patient flow by improving efficiency and throughput. A secondary goal of the project was to create a commitment to continuous improvement. The process looked at five key metrics during the project. These were a decrease in wait times, increase in efficiency and an increase in capacity. Optional additional metrics included variable costs and staff satisfaction.



Method

In the fall of 2008 Humber River Regional Hospital (HRRH) was approached by the MoHLTC to be the pilot hospital for this project. The Process Improvement Project used LEAN methodology and began by reviewing our current practices. Areas were targeted where processes had been put into place to deal with "what if's". These areas included the time between requisition received and MRI booked; utilization of the available funded hours of operation; the number of scans that were started on time; the length of time that the patient was in the department; and report turnaround time.

Although this project only targeted the MRI department, the 1.5 day introduction to LEAN methodology was presented to selected delegates from every area in the Imaging Department. This opened the door to future LEAN projects within the Imaging Department. The staff that were selected to attend this event were reassured that the goal of the Process Improvement Project was not to reduce jobs, but to look for opportunities to eliminate or reduce waste within the current workflow thereby making them more efficient. Following the Introduction to LEAN, the selected MRI team, which included MRI Radiologists, Management, MRI and other department Technologists, Imaging RN's, Booking Clerks, and Registration Clerks met for a three day Value Stream Mapping Event (VSM). The VSM mapped out the current state and the proposed future state.

Step 1

CURRENT STATE MAP

Step 1 *(Cont'd)*

CURRENT MRI PROCESS

Requisition received → Report mailed

Measurement	Current State
Flow Time	178 days
Touch Time	79 minutes
% Yield	12.5%
Hand-offs	38
Value Added %	0.02%
Patient Moves	7

Step 2

IDENTIFY THE VALUE STREAM

- Tag each step as Value or Non-Value Added
- Business Value-Added are non-Value Added patient processes but mandatory for regulatory purposes. (documentation, charting etc.)

Step 3

GAP ANALYSIS

Main Opportunities Include:

- Standardize: schedule; process to release IP slot; process to replace last minute cancellations
- Improve patient flow on day of exam

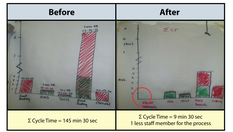
Two Rapid Improvement Events (RIE) were planned based on the outcome of the VSM.

RIE #1 SCHEDULING TEMPLATE AND BOOKING PROCESS

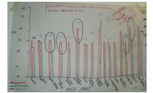
The first RIE looked at HRRH's booking process and the scheduling template. Booking turnaround times for requisition received to appointment given had been identified as an issue prior to the MoHLTC announcement of the PIP. As well, the scheduling template had already started to be addressed, and the PIP helped to further identify other opportunities.

CURRENT STATE MAP - BOOKING PROCESS

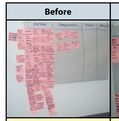
Requisition received → Appointment Booked (Notification sent)

Before	After
	
2 Cycle Time = 145 min 30 sec	2 Cycle Time = 9 min 30 sec 1 less staff member for the process

SCHEDULING TEMPLATE - PLANNED vs ACTUAL PROCEDURE TIMES



- Room booking times changed to mirror actual scan times

Before	After
	
56 Wastes	10 Wastes

Outcome RIE #1

- Combined non OHIP/compassion
- 20 minute booking slots to allow greater capacity
- Additional 20 minute slot at end of day
- Includes scheduled breaks
- Reduction of Booking turnaround time from 1 month to less than 2 days

Capacity:

- Increased by 3 patients per weekday
- 1 patient per weekend day

RIE #2 PATIENT FLOW ON DAY OF EXAMINATION

The second RIE focused on Patient Flow on the Day of the Exam, to increase on-time scan performance; thereby decreasing patient's stay in MRI and allowing for increased capacity.

Patient Flow Process Map – Patient Arrives → Patient leaves MRI

	Current	Target	Day 1	Final	% Change
Stay in MRI	79 min	63 min	75 min	57 min	24%
% on-time scan starts	32.5%	39.6%			
Manual cycle time			30.8 min	17.7 min	42%
Patient moves			9	9	0%
Patient steps			137	137	0%
Staff steps			475	117	75%
Hand-offs			29	20	31%
Wastes			57	27	53%

Results

- A decrease in routine wait times from an average of **163** days in October 2008 to a low of **103** days in February 2009. A Wait Time increase in March 2009 was the result of decreased Provincial MRI funded hours.
- An increase in approximately 600 patients scanned per year.
- Booking turnaround times have decreased from approximately 35 days to a current time of 1.87 days.
- An average decrease in the length of time in MRI of 30 minutes per patient.
- On-time scan performance was the same as pre PIP, however the data includes late and early scan starts.

January 2009

Key Indicators	2/1/2009	Target	Baseline (Apr '08-Nov '08)	08-09 YTD Avg
EFFICIENCY (%)	95.41	**105.19**	97.05	105.08
CAPACITY (Exams)	150.00	**172.00**	156.00	163.50

May 2010

Key Indicators	5/2/2010	Target	Baseline (Apr '08-Nov '08)	08-09 YTD Avg
EFFICIENCY (%)	108.29	**105.19**	97.05	105.08
CAPACITY (Exams)	175.00	**172.00**	156.00	163.50

LESSONS LEARNED AT HUMBER RIVER REGIONAL HOSPITAL

- Ensure all departments that may be required for a successful project are aware of the rapid improvement events.
- Transparency with the rest of the imaging department (especially with the RIE).
- Set reachable targets; know what the team is looking for.
- Know that the targets can be changed.
- Listen to the small voices.

Humber River Regional Hospital