Tackling flow to improve access to MRI

Standardized process improvement practices integrated with a robust change management process can help to improve wait times and enhance the patient experience.
THE MRI ACCESS CHALLENGE

Access to MRI has been identified as a considerable challenge in Canada over the past few years and often results in a substantial wait list problem for healthcare organizations and their patients. As access to imaging services can impact the time to diagnosis as well as the ability to monitor disease progression across a broad range of clinical conditions, addressing this challenge has become a priority for many healthcare providers across the country.

Recognizing the need to tackle this challenge, the 2003 First Ministers’ Accord on Health Care Renewal created a $1.5 billion Diagnostic/Medical Equipment Fund to support an increase in access to publicly funded diagnostic services. Close to a decade after this national investment, the Organization for Economic Development and Cooperation (OECD) reports that, in Canada, the number of MRI units had increased to reach 8 per million population in 2009 though it continued to lag behind OECD’s average of 12 MRI units per million population. Furthermore, in its 2011 Health Care Renewal Progress Report, the Health Council of Canada states that Canadian investment in imaging equipment has increased the number of scanners available and scans being performed, but have not necessarily led to shorter wait times for patients.

In light of these findings, increasing the number of scanners has not provided the complete solution to improving access and reducing wait times.

IMPROVING FLOW TO INCREASE CAPACITY

Today, many MRI service providers are looking beyond the “more is better” philosophy to increase capacity within their existing resource base. Access to care is a complex issue on both the supply and the demand side of the care continuum; however, addressing patient flow is one of the most direct means through which providers can locally influence, control, and improve access to MRI.

Our GE Healthcare experience working with various healthcare providers across the country has demonstrated that improving flow through the application of performance improvement initiatives may increase capacity though it requires a fundamental shift in how we do things. To facilitate this fundamental shift and help tackle these improvement initiatives, various stakeholders across the country have identified best practices and approaches specific to increasing flow and access to imaging services. For example, the Province of Ontario has published MRI specific performance improvement best practices centered on improving booking, scheduling and throughput (Figure 1). Another example is Dr. Richard Steyn who identified five (5) core practices to improve access which are centered on Lean and Six Sigma principles (Figure 2). Though various approaches have been proposed, all require fundamental change in practices. GEHC has found that standardized process improvement practices integrated with a robust change management process are essential to initiating, driving and sustaining these new practices for increased capacity.

GE HEALTHCARE’S APPROACH TO PROCESS IMPROVEMENT

The GE Healthcare’s Performance Solutions’ team has leveraged these best practices using a holistic approach to increase MRI capacity through improving processes, reducing practice variation and coaching delivery teams through their transitions using our Change Acceleration Process (CAP). Our approach includes three (3) main building blocks:

- Current state assessment and validation;
- Future state definition and solution design/deployment; and
- Change management to support cultural transformation.

Current State Assessment and Validation

Our approach first starts with a “current state assessment” focused on diagnosing MRI workflow and patient flow challenges that may impact quality, safety and access. Front-line observations are conducted to identify non-value added activities that take away valuable healthcare providers from delivering patient care. A variety of tools are used (such as circles of work, spaghetti maps, time value analysis, process maps and scenario analysis) to conduct root cause analyses that drive at the sources of workflow and patient flow challenges.

Engaging stakeholders early on in any process improvement initiative is critical in order to generate buy-in when implementing change. Broad stakeholder consultations (i.e. internal and external “customers” of MRI services, such as referring clinicians, patients, MRI staff, and radiologists) are conducted to gather input and understand the perspectives of all stakeholder groups. “The voice of the customer” guides process improvement from the “people” side, ensuring that alignment, acceptance and accountability are gained and in turn accelerate the initiative.
Value Stream Mapping is often used as a tool to directly engage front-line staff in the identification of workflow and patient flow improvement opportunities. A Value Stream Mapping exercise brings together representatives from all the processes involved in the delivery of MRI services (i.e. booking and registration clerks, technologists, nurses, radiologists, patients) to map the flow of all current activities required to deliver the service. Throughout the mapping activity participants identify barriers to smooth flow and opportunities for improving the flow and increasing overall efficiency. Moreover, because the “process owners” (i.e. front-line staff) are actively engaged in identifying barriers and opportunities, a sense of ownership is promoted.

**Future state definition and solution design/deployment**

Once the “current state” has been validated and opportunities prioritized, our team works with healthcare organizations to design and implement solutions that embed standard practices to promote sustainable improvement. Targeted Rapid Improvement Events (Kaizens) or Work-Out™ are used to facilitate solution design and implementation. These events typically consist of three (3) steps:

1. **Planning**: Framing the current state and opportunity in measurable terms. Having metrics for current performance is critical to monitor the impact and success of solution implementation and ensure sustainability.
2. **Conducting the Session**: Facilitating the generation of solutions, the planning of the implementation and the “trystorming” exercises.
3. **Facilitating project execution**: solution realization and sustainability planning.

In the quest to shift how MRI services are delivered and managed, the importance of culture and human behaviour cannot be over-emphasized.

**Change management to support cultural transformation**

Some organizations have learned the hard way that just because they have valid statistics supporting the need for change does not mean everyone will immediately embrace the proposed solution. Healthcare systems are complex environments to transform, due to seemingly different stakeholder priorities often fostered by entrenched practices aligned with deep domain expertise (silos of practice) as opposed to delivery of care aligned along the patients’ journey. This is especially true of those environments where multi-disciplinary teams interact and multiple handoffs take place. Frequently, deep-rooted cultures grounded in historical practices and behaviours may further complicate these dynamics and present their own challenges. In addition, change must happen without disrupting patient care (Figure 3).

GE Healthcare’s approach to MRI process improvement focuses heavily on stakeholder engagement and ownership to help facilitate buy-in and mitigate these cultural and change management challenges. This is accomplished through the use of GE’s “Formula for Success”, a framework based on the application of both “quality” elements and “people” elements, to drive effective outcomes. Additionally, Lean Six Sigma methodologies combined with GE’s Change Acceleration Process (CAP) and Work-Out™ provide a robust and proven approach to process improvement through stakeholder engagement.

**TOOLS FOR PROCESS IMPROVEMENT**

Lean is an improvement methodology focused on creating value for the patient and eliminating waste through detailed analysis of workflow in relation to time.

Six Sigma is an improvement methodology driven by statistical analysis of data to identify causes of unwanted variation and defects for large complex problems.

CAP (Change Acceleration Process) is GE’s framework and robust set of tools that help proactive planning for change acceptance and successful implementation of change.

Work-Out™ is GE’s process for rapid problem solving via staff empowerment and use of cross-functional teams to resolve typically small issues and improve processes.
GE HEALTHCARE'S EXPERIENCE WITH MRI PROCESS IMPROVEMENT

In the past decade, GE Healthcare has engaged with a variety of hospitals to streamline and improve access to imaging services (and specifically to MRI services) (Figure 4). Our experience has demonstrated that initiatives that target capacity, quality, safety and efficiency across booking, scheduling, and patient throughput are key drivers in improving access and decreasing wait times for MRI services. Our team has worked across a variety of facilities and has achieved measurable outcomes as highlighted in the examples set out in the table above.

As use of MRI continues to expand both for diagnostic and research purposes, demand pressures will continue to be a challenge for care providers across the country. Using a standard approach to flow management and applying proven performance improvement tools and change methodologies has become “best practice” to address capacity challenges – and often yields surprising results. As one healthcare leader commented, “Coming into this project, I was hoping that one outcome would be evidence that we need additional technologists to increase throughput and reduce wait times for MRI exams. I was truly amazed when the project produced approximately 20 percent increase in throughput with the same number of technologists and MRI systems.” This is only one of the numerous examples that further demonstrate that standardized process improvement practices integrated with change management tools can support a healthcare environment focused on cost containment, improved access, high quality and sustainability.

References
4. GE Healthcare Case Study: (2006) MRI Productivity Performance Improvement

FIGURE 4

<table>
<thead>
<tr>
<th>FACILITY TYPE</th>
<th>ENGAGEMENT</th>
<th>OUTCOMES ACHIEVED</th>
<th>BEST PRACTICES IMPLEMENTED</th>
<th>TOOLS</th>
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| Tertiary      | Streamline and simplify MRI workflow for optimal utilization of resources | • ~10% increase in exam schedule availability  
ON-going referring physician collaboration  
Reduce delays ~10% per scanner | • New booking model  
Standardized scan protocols  
Physician engagement  
Enter inpatient staff on exam/ordering requirements | • Value Stream Mapping  
Six Sigma  
CAP |
| Regional      | Streamline and simplify MRI workflow for optimal utilization of resources | • ~20% increase in exam scheduling with same staffing  
Align with regions continuous learning and improvement strategy | • Staff and physicians engaged in change management processes | • Value Stream Mapping  
Six Sigma  
CAP |
| Teaching      | Expanding capacity and patient throughput | • Schedule changes increased patient throughput by ~2 exams per day  
Decrease in exam duration for some procedures | • Adjust schedule to fit ‘actual’ scan time  
Ensure patient arrival on time | • Value Stream Mapping  
Six Sigma  
CAP |
| Community     | MRI Start UpBariatric | • Successful service start up achieving the utilization target within the first year of operation | Standardized:  
MRI Training  
MRI Requisitions  
MRI Protocols  
Booking templates  
Safety training | • Process Mapping  
Six Sigma  
CAP |
| Community     | MRI Business Case Development | • Client received funding from ministry for Bariatric MRI | Standard approach to quantify “need” | • Process Mapping  
Six Sigma |

Note: Examples of outcomes achieved with a range of clients over the course of the GEHC project.