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Healthcare

Transformation Services

Tufts
Medical
Center

An end-to-end approach to optimizing MR workflow

Philips Healthcare Transformation Services and Tufts Medical Center
collaborate to enable performance improvement

Who/where

MR Services at Tufts Medical Center, Boston, MA.

Challenge

Increase patient throughput and system utilization and enhance patient satisfaction through streamlined workflow processes.

Solution

Philips Healthcare Transformation Services led a consulting engagement which included in-depth data collection and analysis, onsite observations and staff interviews, followed by root cause analysis, return on investment calculations, and prioritized change recommendations.

Results

The consulting team provided an objective evaluation and detailed assessment of the MR workflow, identified several data-based performance improvement opportunities, and provided new technology cost-benefit analysis. Tufts MC has begun to implement the project recommendations and expect to increase MR system utilization, room capacity, patient throughput, and enhance staff and patient satisfaction.

Tufts Medical Center (Tufts MC) is an internationally-respected academic medical center and teaching hospital. It is the principal teaching hospital for Tufts University School of Medicine, conducting groundbreaking medical and health policy research. The MR Services volume had been increasing steadily. They were prepared to support additional growth but were looking to further improve workflow, system utilization, and patient throughput. Tufts MC turned to Philips for clinical and business performance insights and expertise.

The challenge

Tufts MC MR Services includes 3 stationary and 1 mobile MR performing a wide variety of adult and pediatric procedures. Patient volume had been steady with a slight year-on-year increase and market research had indicated continued growth for their patient community. In-house departmental initiatives were underway but additional performance improvements were needed to increase efficiency.

The Tufts MC team was looking to further streamline workflow processes as well as evaluate technology upgrade options in order to reduce examination delays and increase patient throughput, while continuing to support the delivery of exceptional patient care.

A collaborative and data-based approach

The Tufts MC team appreciated the Philips patient-focused, end-to-end, and collaborative approach. Our consultants work closely with our client's clinical, management, and functional support teams to create a collaborative project team.

Each project begins with data collection and a detailed analysis of the available patient and system data. Stakeholder input is gathered from clinicians and staff as well as patients and family when access is granted. The patient journey and clinical workflow is documented from check-in to exam completion.

Project deliverables

A collaborative project team was created including Philips consultants and Tufts MC clinical and management staff. The project team agreed to the deliverables below:

- Analysis of current state operations
- Observations and interviews of key stakeholders
- Identification of possible root causes by process area
- Simulation of current patient flow and process maps
- Data analysis and gap analysis
- Cost-benefit and ROI calculation for technology upgrades
- Prioritized change recommendations
- Outline of key implementation activities with timeline

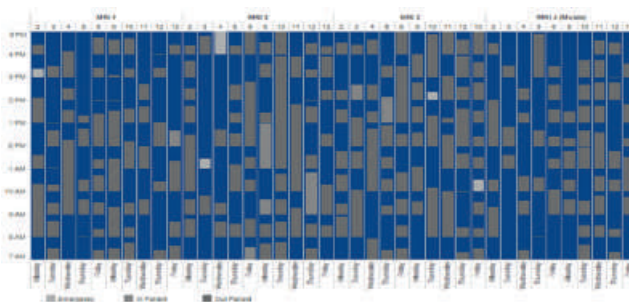
The Philips consultants recommended a phased approach focusing on improving operational workflow, enhancing technology utilization, and understanding the market demographics to increase market share.

Operational workflow

First, patient and system data was collected and analyzed. Data sources included system utilization reports, department floor plans, scheduling protocols and appointment details, process delay information, as well as demographics including patient type, volume, and sources.

The consultants gathered benchmark data and reviewed proposed initiatives which would impact the workflow, technology, clinical staff, and related processes. A schedule gap analysis was used to review the current capacity of the 4 MR units.

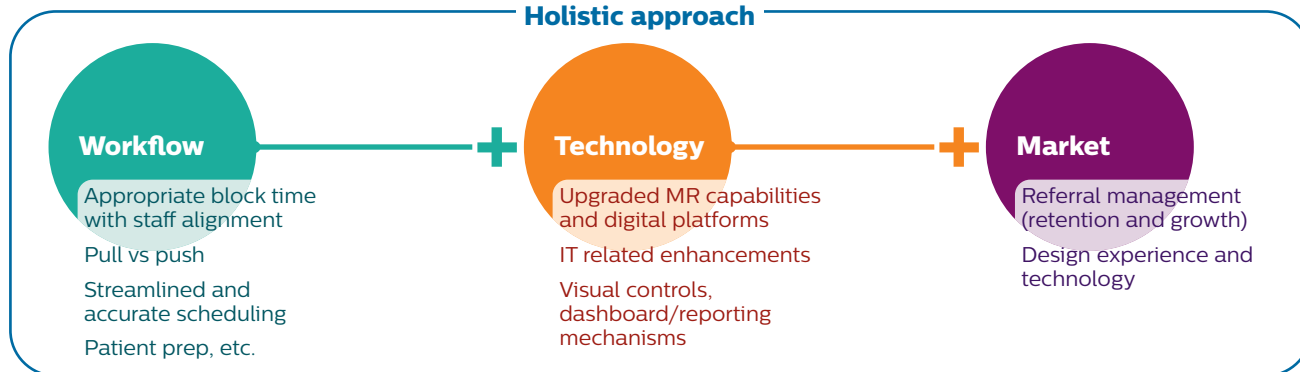
Next, stakeholder input was gathered to obtain insights and perspectives. One-on-one and group interviews included 25+ radiologists, anesthesiologists, nurses, technologists, schedulers, management staff, and others. Tufts MC MR Services had previously implemented leading practices which were also taken into account.



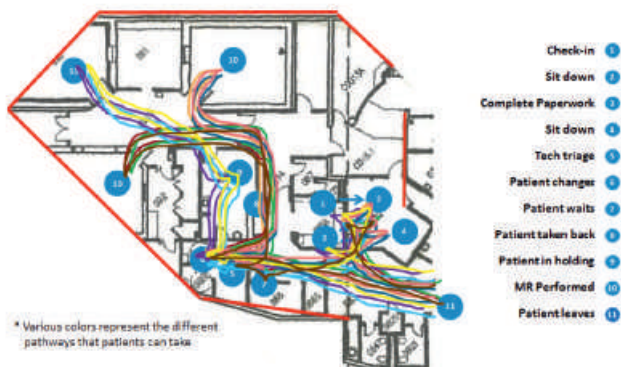
Schedule Gap Analysis

MR Workflow Optimization

Holistic approach



The consultants observed live operations and relevant processes to fully understand the current state, compare processes against best practices, and identify root causes for inefficiencies. The outpatient flow was charted to determine potential time delays.



Patient Flow Diagram

Several improvement opportunities were identified, the project team tested the hypotheses and agreed recommendations based on testing results. These recommendations focused on mitigating delays while improving patient throughput and the overall patient experience - from scheduling, protocol reviews, and transportation, to check-in, triage/prep, and the exam itself including patient prep/screening, scan times, and change-over times.

Change recommendations were prioritized and included:

- Review patient preparation process to reduce incompletes
- Assess scheduling tools, exam protocols, and scheduled time slots
- Implement an integrated 'pull' patient tracking system
- Conduct daily huddles with radiologists, technologists, and receptionists to review schedules and exam details
- Increase signage in transition areas to ease patient journey
- Develop Radiology Information System (RIS) / Hospital Information System (HIS) enhancements and training
- Create operational dashboard to support real-time and periodic sampling of data
- Upgrade the stationary MR technology from analog to digital platform

MR technology enablement

Tufts MC had asked Philips to provide a data-based evaluation of the potential technology enablement options such as upgrading the current analog MR units to a digital platform and/or removing the mobile unit. They were looking to better understand the related workflow impact to these potential changes.

A comprehensive return on investment (ROI) analysis was performed including a ROI analysis for the three stationary MR systems and a detailed list of assumptions and variables. The data from the ROI and a net present value analyses supported the recommendation to upgrade the 3 stationary MR systems to a digital platform.

The Philips dStream digital broadband MR architecture was recommended as it would deliver several advantages over the existing analog MR including improved image quality, reduced exam time thus increased patient throughput, lighter coils, and more without requiring a magnet removal.

Market demographics and referral management

The consultants then considered the market demographics and drivers in relation to the future expected MR services demand. The objective was to reduce market leakage, improve referral management, and capture additional future market share.

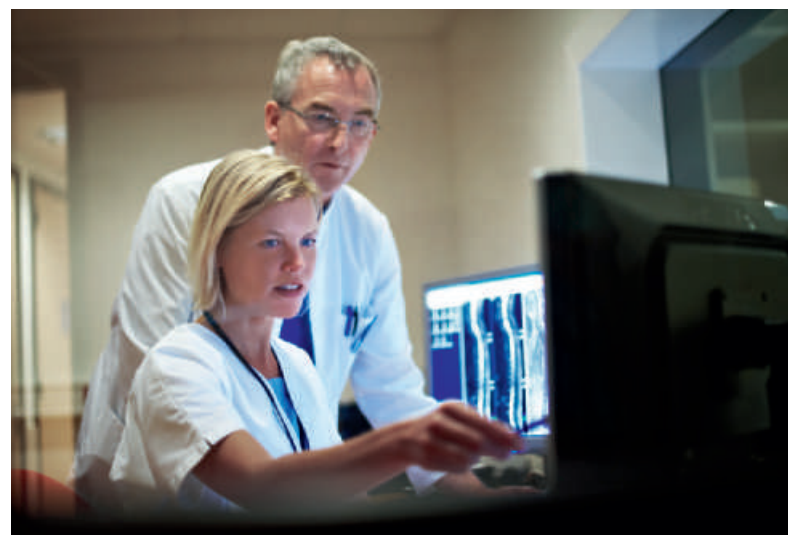
Over 80% of Tufts MC MR Services volume is from outpatient referrals, making it a significant population to understand and focus performance improvement efforts. From the market analysis, it was determined that MR exams within a 10 mile radius of Tufts MC are expected to grow by about 11% over the next 5 years.



10 mile radius of Boston, MA

Our consultants identified the top five MR exams required in the market area which represented about 90% of all MR exams. They also analyzed the services provided on behalf of the top referring physicians to better understand how MR services are delivered to these top referrers.

Although a detailed marketing plan was not part of the engagement, the market assessment provided key insights for customer segmentation and for services positioning. The consultants identified top community and referral needs, recommended changes to reduce referral leakage, and determined potential growth opportunities by identifying and developing differentiated MR services.





Results

The project team evaluated the relative value of the change initiatives along with the effort to implement each, prioritized them into final project recommendations, and developed a high-level implementation plan with timeline. The recommended changes will help Tufts MC create an efficient MR Services workflow as well as enhance the patient, staff, and physician experience.

The Tufts MC team has begun to implement the project change recommendations and have made good progress. The radiology team immediately implemented the 'daily huddle' recommendation and quickly improved their visibility of resolution to scheduling issues. Other Tufts MC departments have also implemented team daily huddles with performance improvement results.

The Tufts MC radiology leadership team was pleased with the project process and results. As other change recommendations are implemented, they will be measured and tracked on an ongoing basis to document progress.

“I liked their approach, looking at our operations from beginning to end. They helped us identify workflow improvements which we will implement.”

E. Kent Yucel, MD
Radiologist-in-Chief
Tufts Medical Center

Learn more

Philips Healthcare Transformation Services provide end-to-end, patient-centric solutions across the care continuum. Our customized consulting and education services are designed to improve clinical care and operational effectiveness while contributing to the financial stability of your enterprise. For more information, please visit www.philips.com/healthcareconsulting.

