The Joint Department of
MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Ontario's Diagnostic Imaging
Appropriateness Pilot Project

Rising Demand for MRI/CT Exams

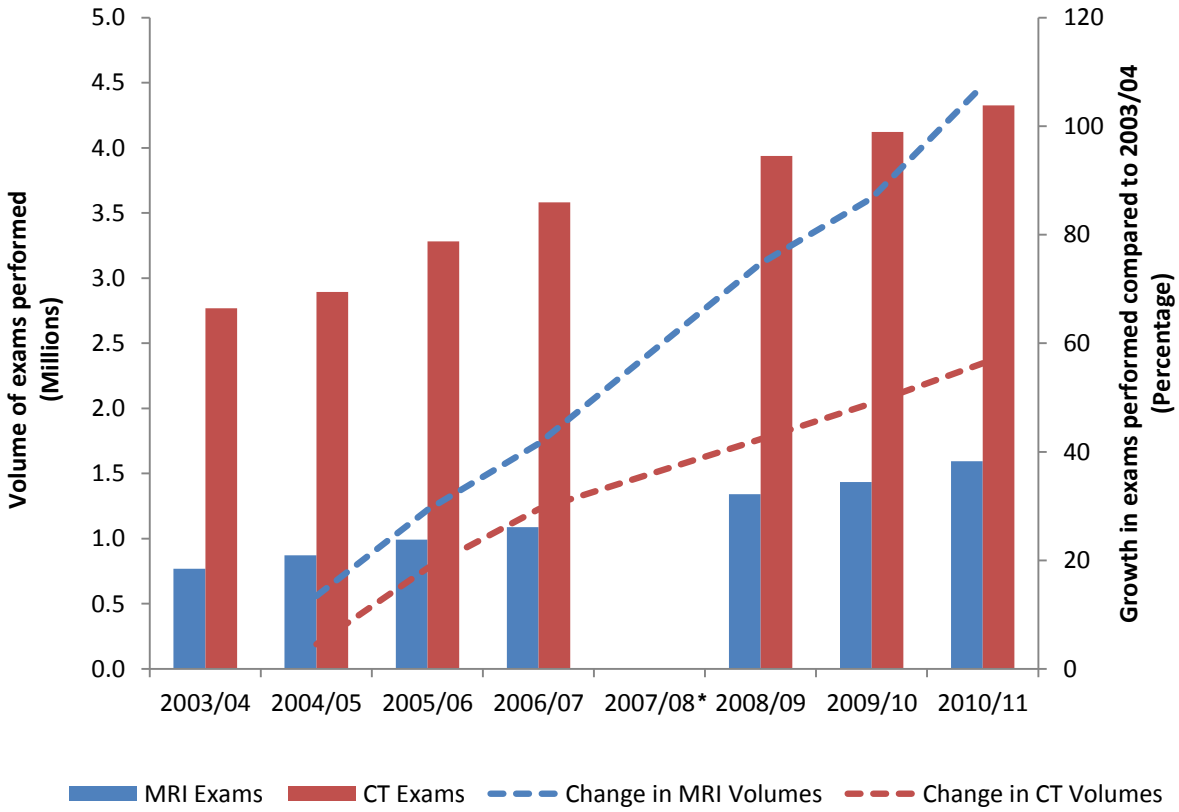
Growth:

- In Canada volumes of MRI and CT exams performed are increasing annually by 11% and 5%, respectively.[1]

Appropriateness:

- According to the Health Council of Canada approximately 30% of MRI and CT requests are inappropriate.[2]

Growth in volumes of MRI and CT exams performed in Canada between 2003-2011[3]



1. Canadian Institute for Health Information, "Medical Imaging in Canada: 2011", http://www.cihi.ca/CIHI-ext-portal/pdf/internet/MIT_SUMMARY_2011_en

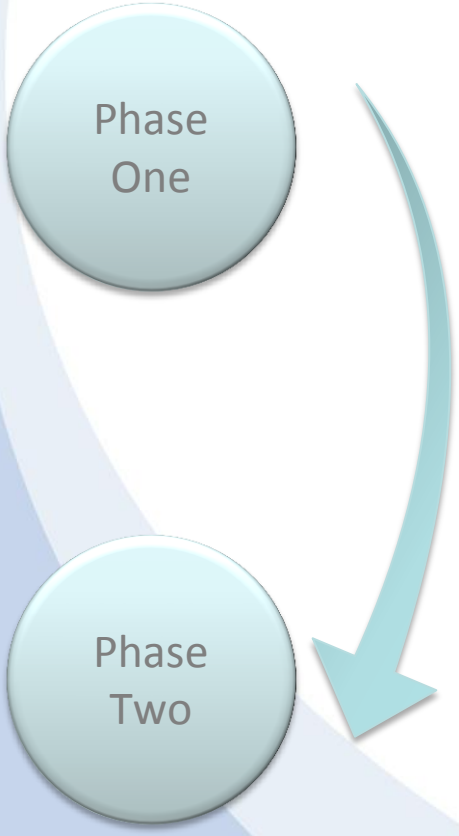
2. Health Council of Canada, "Decisions, Decisions: Family Doctors as Gatekeepers to Prescription Drugs and Diagnostic Imaging", September 2010

3. Canadian Institute for Health Information, "MIT 2011 Data Release: Static Figures and Tables", http://www.cihi.ca/CIHI-ext-portal/internet/EN/Quick_Stats/quick+stats/quick_stats_main?xTopic=Specialized%20Care&pageNumber=5&resultCount=10&filterTypeBy=undefined&filterTopicBy=13&autorefresh=1

** An inventory was not conducted in 2008*

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Ontario's Appropriateness Initiatives



2004 The Ministry of Health and Long-Term Care established the MRI & CT Expert Panel to create a plan for improving Ontarians' access to MRI/CT services.

2006 The Panel recommended integrating an electronic order entry (OE) tool with decision-support into physicians' ordering workflow.

2009 The *Provincial MRI/CT Referral Guidelines* were published online, with over 800 indications.*

Present The Diagnostic Imaging Appropriateness Pilot Project is acting on the Panel's recommendation.

**The Provincial MRI/CT Referral Guidelines can be located at: https://www.mrictdecisionsupporttool.ca/OEBI/IndicationSearch/Help_Introduction*

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Pilot Description

The Diagnostic Imaging Appropriateness Pilot Project (DI-APP) implements **an electronic order entry tool** with evidence-based **decision support** for MRI/CT in community physicians' offices across Ontario.

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Participant Workflow

Patient Visit	Order Entry	Booking	Scheduling	Exam
				
Referring Physician Office		Hospital Site		
Assess patient need for MRI/CT	**Access online OE tool to receive feedback and place order**	Receive auto-faxed requisition	Schedule patient	Scan patient

DI-APP intervention focus

Decreased booking turn around time

Decreased wait time

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Participating Communities

Community	Toronto	Hamilton	London	Thunder Bay
Hospital Type	Academic Centre	Academic Centre	Academic Centre	Academic Centre
Est. Annual MRI/CT Volume (patients)	72,000	26,500	18,000	22,500
Referring Physicians Population	• Non-hospital affiliated clinic • Non-hospital affiliated solo practice	• Non-hospital affiliated solo practice	• Hospital embedded clinics	• Non-hospital affiliated clinics

Total Participants: 12 clinics with 45+ referring physicians

Goals and Objectives

Goals

1. Achieve **quality care** through evidence-based practice, patient-centred care and continuous quality improvement.

2. Understand the key barriers, facilitators and lessons learned to **inform provincial roll-out**.

Objectives

A. Facilitate improvements in physician **knowledge of evidence-based guidelines**

B. **Reduce inappropriate referral rates** and associated costs

C. **Reduce wait times** for MRI/CT

D. Contribute to the **evolution of evidence-based practice** for MRI/CT ordering

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Timelines

Planning

Aug. 2011 – Feb. 2012

- Plan pilot structure and evaluation
- Participant engagement
- OE tool customization

Setup

Feb. 2012 – Jul. 2012

- Privacy and security assessment
- IT system build
- Physician training

Monitoring

Aug. 2012 – Nov. 2012

- Data collection
- Change management in clinics
- Performance measurement

Evaluation

Oct. 2012 – Dec. 2012

- Data analysis
- Final report and recommendations

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Key Success Factors

Successful physician engagement driven by….

- Clinician's desire to improve patient care
- Motivation to contribute to system change
- Use of a value-added ordering process
- Support from clinical champions

Successful system deployment driven by…

- Strong vendor relationship
- Utilization of pilot-wide IT expertise
- Flexible system design
- Supportive system host

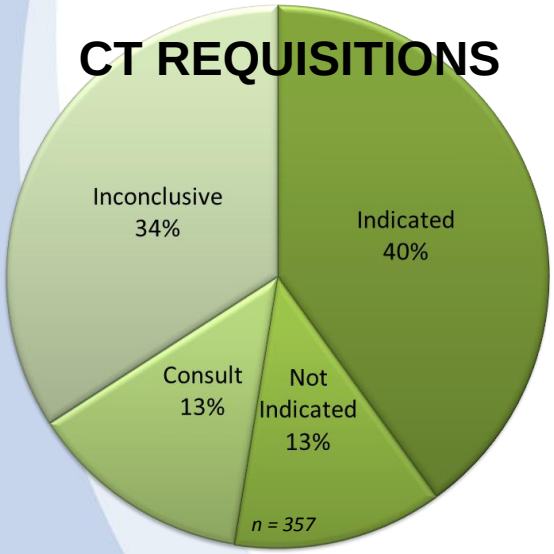
Successful privacy and security implementation driven by…

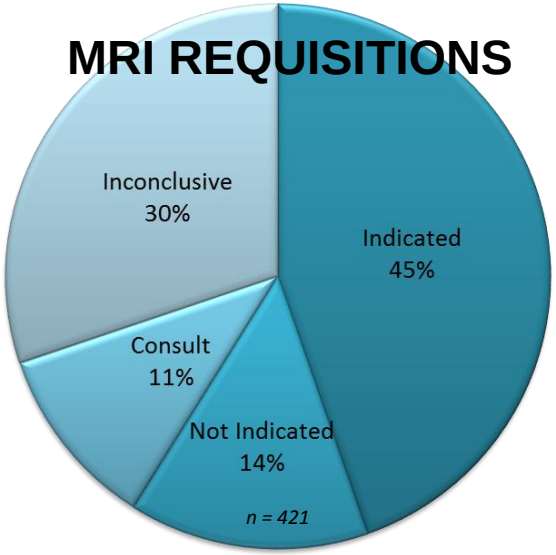
- Leveraging expert advice
- Executing robust participation agreements
- Strong hospital commitment
- Transparency

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Baseline Results

Methodology: Clinical indications for approx. 800 paper requisitions were documented and put through the OE tool. The evidence-based feedback was then documented. All the hospital sites displayed similar trends.





Highlights:

- Baseline results for MRI and CT requisitions were very similar
- High proportion of "Inconclusive" results suggests the original requisitions reviewed were incomplete and/or that gaps exist in the *Provincial MRI/CT Referral Guidelines*

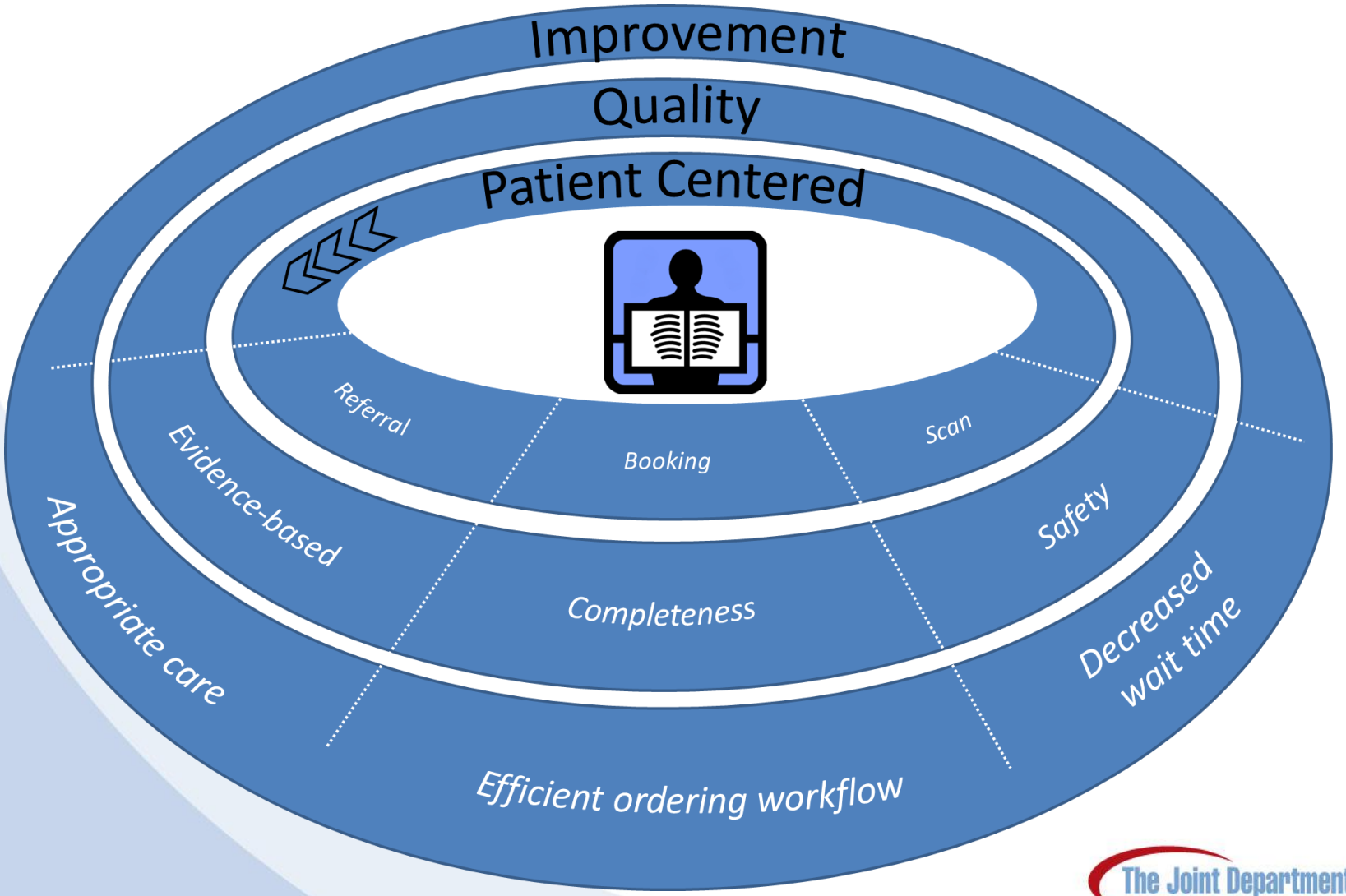
Study Comparison	Inappropriate	Inconclusive**
DI-APP	**13%**	**32%**
Health Council of Canada	30%	n/a
Manitoba Demonstration Project in Physician Demand-Side Control for Diagnostic Imaging	11%*	80%
Appropriateness of Lumbar Spine MRI in the Toronto Central LHIN	3% (ACR) 3% (Feasby)	64% (ACR) 81% (Feasby)

*Orders were potentially inappropriate

** Inconclusive results occur when the original requisitions reviewed were incomplete and/or there was no corresponding match in the guidelines

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Improving the Patient Journey



The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Performance Measures

DI-APP will use outcome and process metrics to gauge impact and success

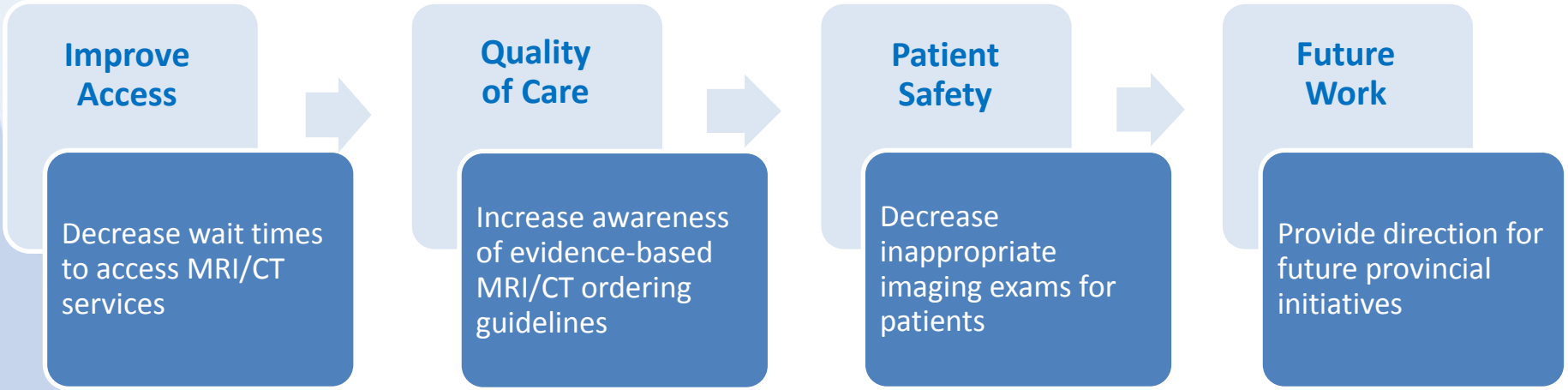
Outcome Metrics	
Metric	**Intent** To measure the…
Knowledge of Guidelines	…proportion of orders that initially match guideline recommendations
Compliance	…proportion of initial orders that are changed to follow guidelines
Requisition Completeness	…proportion of orders received through the OE tool that are complete
Booking Turnaround Time	…average time taken to book an order received through the OE tool
Unmatched Requests	…proportion of all requests that do not match the guideline terminology

Process Metrics	
Metric	**Intent** To…
Physician Drop-Off	…alert when a physician has not placed an order through the OE tool for a month
Referral Behaviour	…assess physicians' use of the OE tool compared to standard ordering practice
Pilot Volumes	…track incoming volumes from OE tool
Requisition Receipt	…monitor any failures in the faxing system between the OE tool and hospital
Escalation Volume	…track frequency and type of issues participants experience

The Joint Department of MEDICAL IMAGING
Mount Sinai Hospital • University Health Network • Women's College Hospital

Expected Outcomes

The data collection period began on September 12, 2012 and results will be compiled and made available in December 2012. The following are expected outcomes for DI-APP:



Contact Information

- For more information please contact Lester Ly, Project Manager for the Joint Department of Medical Imaging at lester.ly@uhn.ca
- Thank you for your interest in Ontario's Diagnostic Imaging Appropriateness Pilot Project.