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

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/quickStats/quick_stats_main?xTopic=Specialized%20Care&pageNumber=5&resultCount=10&filterTypeBy=undefined&filterTopicBy=13&autorefresh=1

* An inventory was not conducted in 2008

11/19/2012
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.

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

Referring Physician Office

Assess patient need for MRI/CT

Access online OE tool to receive feedback and place order

DI-APP intervention focus

Hospital Site

Receive auto-faxed requisition

Schedule patient

Scan patient

Decreased booking turn around time

Decreased wait time
## Participating Communities

<table>
<thead>
<tr>
<th>Community</th>
<th>Toronto</th>
<th>Hamilton</th>
<th>London</th>
<th>Thunder Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Type</td>
<td>Academic Centre</td>
<td>Academic Centre</td>
<td>Academic Centre</td>
<td>Academic Centre</td>
</tr>
<tr>
<td>Est. Annual MRI/CT Volume (patients)</td>
<td>72,000</td>
<td>26,500</td>
<td>18,000</td>
<td>22,500</td>
</tr>
</tbody>
</table>
| 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
Timelines

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

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

**Monitoring**
- Data collection
- Change management in clinics
- Performance measurement

**Evaluation**
- Data analysis
- Final report and recommendations
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
**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

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

*Orders were potentially inappropriate

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

- Improvement
- Quality
- Patient Centered

- Evidence-based
- Appropriate care
- Efficient ordering workflow
- Booking
- Scan
- Referral
- Safety
- Decreased wait time

The Joint Department of MEDICAL IMAGING
## Performance Measures

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

<table>
<thead>
<tr>
<th>Metric</th>
<th>Intent</th>
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<tbody>
<tr>
<td>Knowledge of Guidelines</td>
<td>...proportion of orders that initially match guideline recommendations</td>
</tr>
<tr>
<td>Compliance</td>
<td>...proportion of initial orders that are changed to follow guidelines</td>
</tr>
<tr>
<td>Requisition Completeness</td>
<td>...proportion of orders received through the OE tool that are complete</td>
</tr>
<tr>
<td>Booking Turnaround Time</td>
<td>...average time taken to book an order received through the OE tool</td>
</tr>
<tr>
<td>Unmatched Requests</td>
<td>...proportion of all requests that do not match the guideline terminology</td>
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</table>

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<thead>
<tr>
<th>Metric</th>
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</tr>
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<tr>
<td>Physician Drop-Off</td>
<td>...alert when a physician has not placed an order through the OE tool for a month</td>
</tr>
<tr>
<td>Referral Behaviour</td>
<td>...assess physicians’ use of the OE tool compared to standard ordering practice</td>
</tr>
<tr>
<td>Pilot Volumes</td>
<td>...track incoming volumes from OE tool</td>
</tr>
<tr>
<td>Requisition Receipt</td>
<td>...monitor any failures in the faxing system between the OE tool and hospital</td>
</tr>
<tr>
<td>Escalation Volume</td>
<td>...track frequency and type of issues participants experience</td>
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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:

**Expected Outcomes**

1. **Decrease wait times to access MRI/CT services**
2. **Increase awareness of evidence-based MRI/CT ordering guidelines**
3. **Decrease inappropriate imaging exams for patients**
4. **Provide direction for future provincial initiatives**
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.