

Authors

- Project team
 - Lilly Whitham, Senior Project Manager, Office of Strategy Management, JDMI
 - Jisla Mathews, Senior Business Analyst, Office of Strategy Management, JDMI
 - Karen Weiser, Business Analyst, Office of Strategy Management, JDMI
 - Dr. Ravi Menezes, Epidemiologist, JDMI Research
 - Dr. Amy Lin, Neuroradiology Fellow, UHN

- Project Sponsors
 - Dr. Larry White, Radiologist-in-Chief, JDMI
 - Catherine Wang, Executive Director, JDMI
 - Dr. Jeff Bloom, Family Physician-in-Chief, UHN
 - Dr. Raj Rampersaud, Spine Surgeon, UHN and Clinical Champion, ISAEC Pilot
 - Lee Fairclough, VP Quality Improvement, Health Quality Ontario



Declaration of Conflict of Interest

- The University Health Network has received financial support from the Ontario Ministry of Health and Long-Term Care in the form of one-time funding to complete this project
- Physician sponsors received an honorarium from the University Health Network to provide expertise and direction as a Project Sponsor
- No other relationships with commercial interests exist

Presentation Outline

- Why build appropriateness tools/pathways for imaging?
 - Reason for action
 - Approach
 - Partnerships
- How did we create the pathways?
 - Governance
 - Methodology
- The imaging pathways
 - Headache pathway
 - Low back pain pathway
 - TIA/stroke pathway
 - Knee pain pathway
- Evaluation results
- What's next
 - Key implementation recommendations

WHY BUILD APPROPRIATENESS TOOLS FOR IMAGING?



Reasons for Action

- Known issues with **variability in what images are ordered** for common clinical scenarios^{1,2} (e.g. *right modality, MRI, x-ray, U/S CT and when*)
- Rapid advances in imaging can create **uncertainty** around what imaging is needed and when
- **Feedback from primary care providers** that robust, Ontario-specific, guidelines, framed in the primary care lens would be valuable³
- Opportunity to ease pressure on imaging departments by avoiding duplicate and unnecessary procedures
- Opportunity to **improve patient experiences** by avoiding unnecessary waits and testing

1. In 2011 approximately 800 MRI/CT requisitions were collected across UHN, St. Joseph's Healthcare Hamilton, Thunder Bay Regional Health Sciences Centre, St. Joseph's Health Care London and the clinical indications were cross-referenced with the Ontario MRI/CT Referral Guidelines to assess variability with guidelines.
2. You, J. J., Purdy, I., Rothwell, D. M., Prybylski, R., Fang, J., & Laupacis, A. (2008). Indications for and results of outpatient computed tomography and magnetic resonance imaging in Ontario. *Canadian Association of Radiologists journal- Journal l'Association canadienne des radiologistes*, 59(3), 135-143.
3. Diagnostic Imaging Appropriateness Pilot Project Phase 2 implemented an order entry tool with guideline-based decision support in 60 primary care physicians' clinics around Ontario. Physicians provided strong feedback that guidelines were not applicable to their practice because they were not sufficiently robust and were written in radiology-centric language.

Goals and Deliverables

Project Goals

1. Align clinically relevant, evidence-based diagnostic imaging guidelines focusing on selected clinical scenarios that commonly present to primary care and where there is variability in referral practices.
2. Conduct a feasibility analysis on the methods for dissemination, education and adoption of the guidelines into clinical workflow.

Deliverables

1. Align evidence-based diagnostic imaging guidelines into imaging pathways, that:
 - Reflect the realities of the healthcare system in Ontario
 - Address common clinical scenarios within the central nervous system, head and neck, the musculoskeletal system and the spine
 - Include all imaging modalities
 - Are developed in partnership with primary care, radiologists, specialist physicians
2. Conduct a feasibility analysis to understand barriers to adoption and make recommendations to facilitate integration into clinical workflow
3. Disseminate the pathways to primary care, radiologists and specialist physicians
4. Develop a sustainability plan to continuously review and update the imaging pathways to ensure they act as a reliable resource

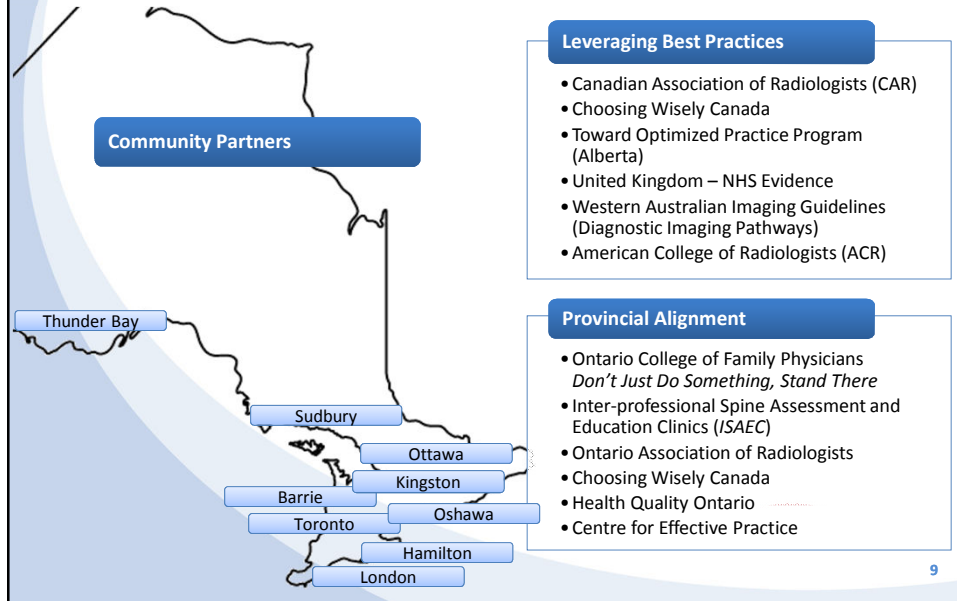
7

Our Approach

- **Building imaging pathways** to outline **if, when and what imaging** is needed for common primary care presentations of:
 - Headache
 - Low back pain
 - Knee pain
 - Stroke/TIA
- Ensure pathways are user friendly and applicable to the primary care providers
- **Pathways will capture:**
 - Common presentations in primary care
 - Realities of clinical experience in Ontario
 - Ontario patient population, healthcare system and resource availability
 - Preferred primary care terminology
 - Best evidence
- Pathways will not include emergency/acute trauma presentations

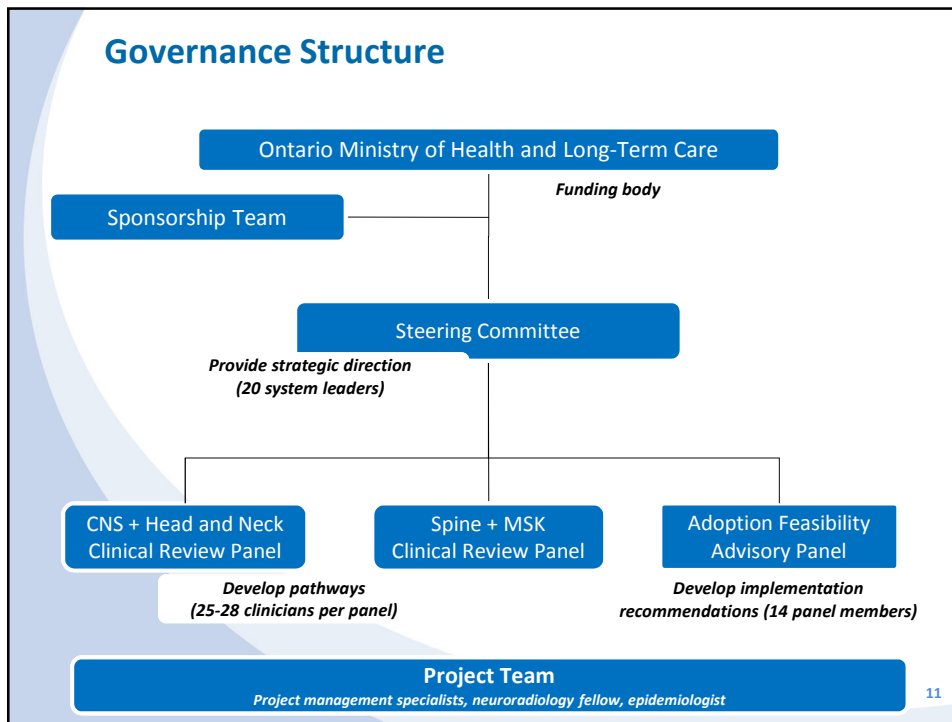
8

Critical Partnerships



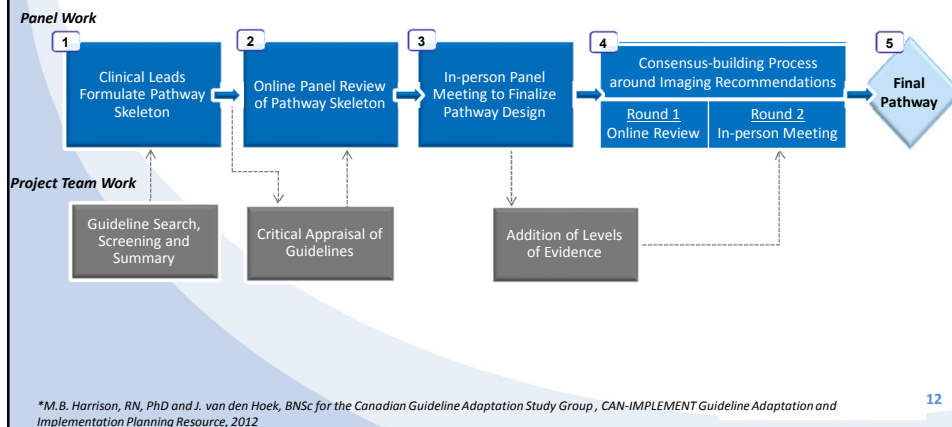
HOW DID WE CREATE THE PATHWAYS?

Governance Structure



Methodology

Approach: Support the pathways with current evidence by leveraging elements of the CAN-IMPLEMENT* framework, a streamlined version of the ADAPTE guideline adaptation methodology

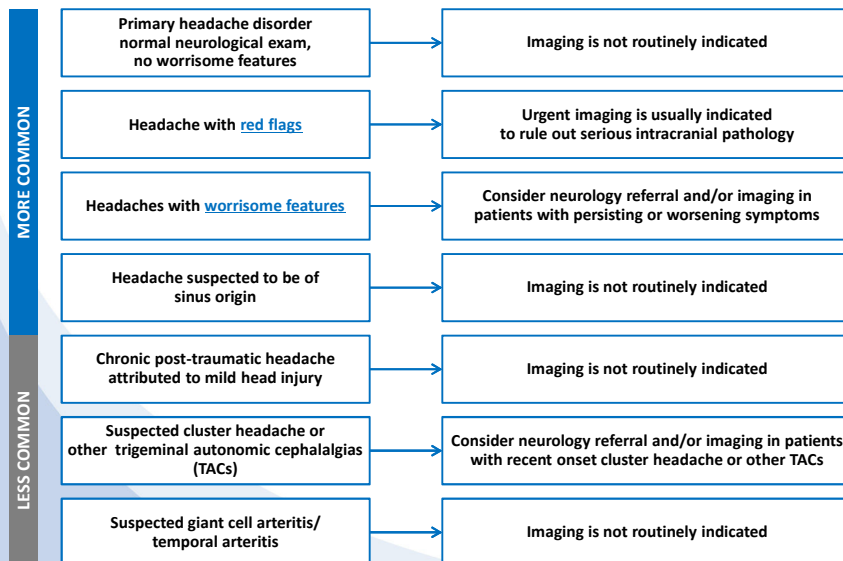


*M.B. Harrison, RN, PhD and J. van den Hoek, BNSc for the Canadian Guideline Adaptation Study Group, CAN-IMPLEMENT Guideline Adaptation and Implementation Planning Resource, 2012

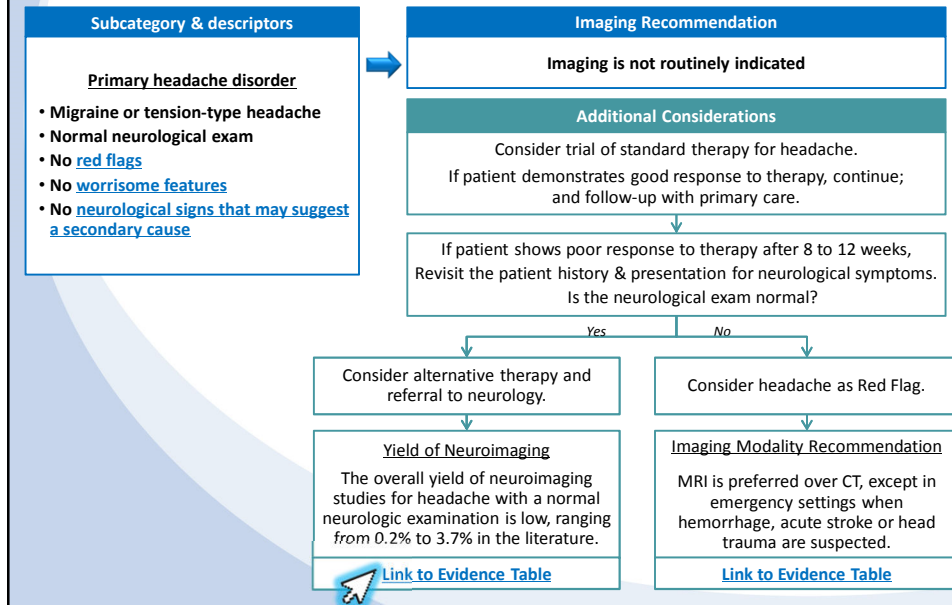
THE IMAGING PATHWAYS

- Headache Pathway
- Low Back Pain Pathway
- TIA/Stroke Pathway
- Knee Pain Pathway

Headache Imaging Pathway Summary



Subcategory #1: Primary Headache Disorder



Evidence Table: Yield of Neuroimaging

Subcategory: Primary Headache Disorder

#	Study/ Guideline	Study Population	Yield Ratio	Link To Full Text
1	You et al 2011, Canada	623 patients receiving CT for headache, normal exam	2.1%	PDF
2	Clarke et al 2010, UK	530 patients receiving MRI/CT for headache, normal exam	Migraine: 1.2% Tension: 0.9%	PDF
3	Sempere et al 2004, Spain	1876 patients receiving MRI/CT for headache, normal exam	0.9% [CI 0.5-1.4]	PDF
4	Tsushima et al 2005, Japan	306 patients with normal exam chronic/ recurrent headache were examined with MRI	0.7%	PDF
5	Wang et al 2001, US	402 adult patients with chronic headache, received MRI, normal exam	3.7%	PDF
6	Jordan et al 2000, US	328 headache patients referred for MRI, normal exam	1.5%	PDF

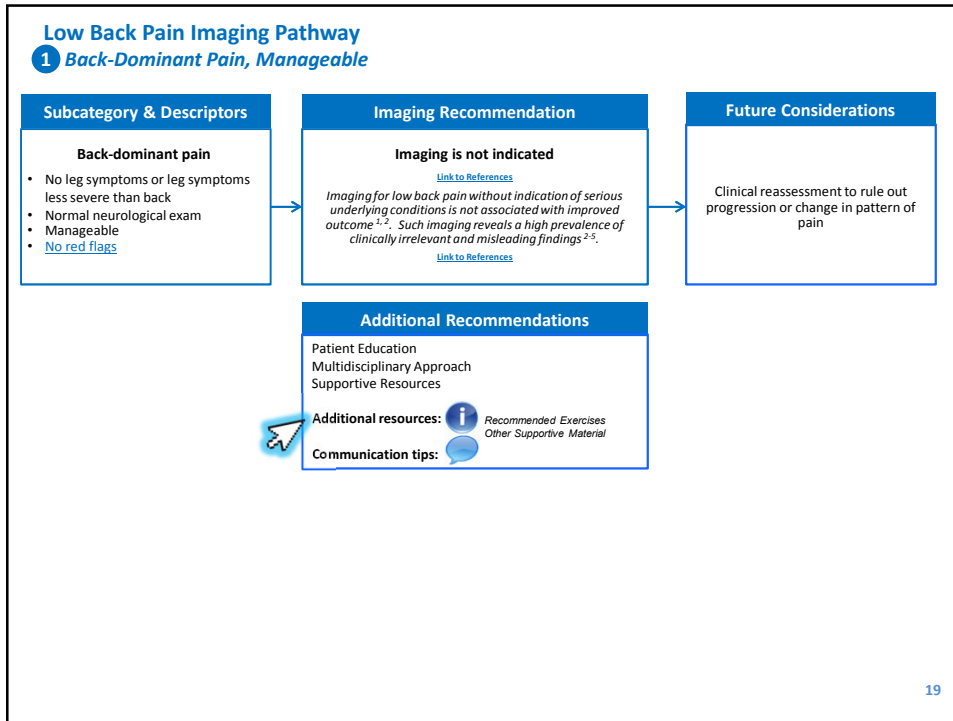
16

THE IMAGING PATHWAYS

- Headache Pathway
- **Low Back Pain Pathway**
- TIA/Stroke Pathway
- Knee Pain Pathway

Low Back Pain Imaging Pathway: Summary

Subcategory & Descriptors	Imaging Recommendation	Rationale
1 Back-dominant pain <ul style="list-style-type: none"> • No leg symptoms • Normal neurological exam • Manageable 	Imaging is not indicated* Link to References	<p><i>*Imaging for low back pain without indication of serious underlying conditions is not associated with improved outcome¹. ² Such imaging reveals a high prevalence of clinically irrelevant and misleading findings^{2,5}.</i></p> <p>Link to References</p>
2 Back-dominant pain <ul style="list-style-type: none"> • Unmanageable; recurrent; progressive • Chronic (≥3 months) • Normal neurological exam 	Imaging is not indicated* Link to References	
3 Back-dominant pain with yellow flags <ul style="list-style-type: none"> • Yellow flags are psychosocial barriers that may hinder recovery in a patient with low back pain 	Imaging is not indicated* Link to References <i>Imaging can detect abnormalities that are not clinically relevant, promoting negative back behaviour and hindering recovery⁶</i> Link to References	
4 Leg-dominant pain <ul style="list-style-type: none"> • Intermittent or constant • Manageable 	Imaging is not indicated* Link to References	
5 Leg-dominant pain <ul style="list-style-type: none"> • Unmanageable due to severity or duration • Functionally significant neurologic deficit • Failure to resolve (6-12 weeks) 	Imaging is indicated and Referral for surgical consultation MRI preferred; if contraindicated or not available, then CT Link to References	
Back Pain with Red Flags		
Suspected cancer → X-ray & MRI**	**x-ray alone is not indicated as a diagnostic tool due to high negative rate	
Suspected spinal infection → X-ray & MRI**		
Suspected fracture → Fragility → X-ray High-Energy → X-ray & CT		
Suspected inflammatory disease → Rheumatology consultation		
Severe/progressive neurologic deficit → Emergent management: MRI & consultation to surgery or immediate referral to ED		
Cauda equina syndrome → Emergent management: MRI & consultation to surgery or immediate referral to ED		



Low Back Pain Imaging Pathway

Additional Resources

Recommended Exercises	Source	Links
ISAEC Illustrated Exercises for Patients	Inter-professional Spine Assessment and Education Clinics (ISAEC) (2015)	
ISAEC Positions of Relief, Stretches and Exercises: VIDEOS	Inter-professional Spine Assessment and Education Clinics (ISAEC) (2015)	
Spine Assessment and Treatment: Back Exercises	Saskatchewan Spine Pathway (2010)	

Supportive Resources for Physicians	Source	Links
Three-Minute Primary Care Low Back Examination Video	Institute for Work & Health (IWH) & University of Toronto, Division of Rheumatology	

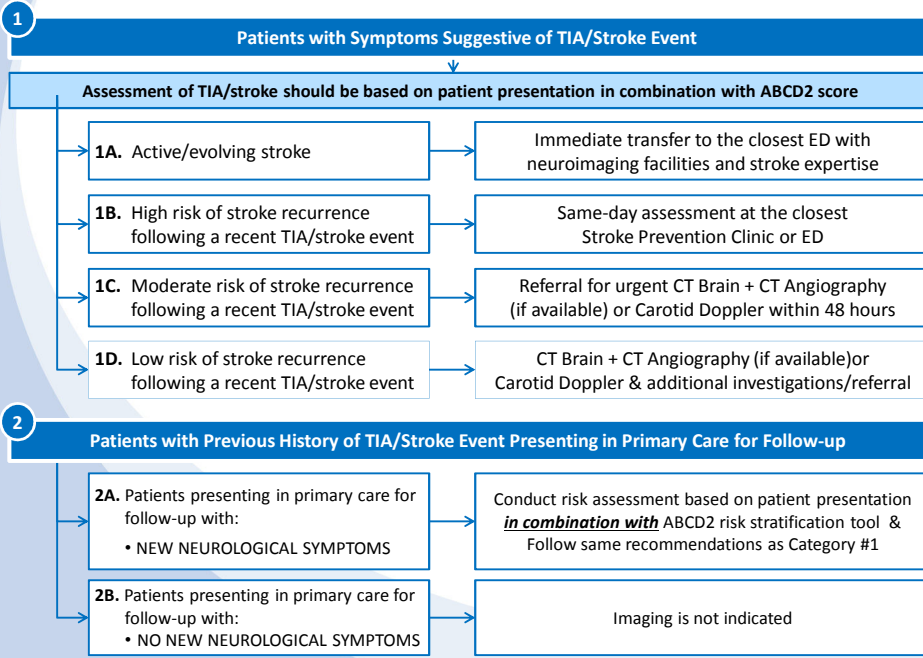
Other Supportive Material	Source	Links
Imaging tests for lower back pain: When you need them—and when you don't.	Choosing Wisely Canada (2014)	
Primary Care Focus on Low Back Pain Primary Care Toolkit	Low Back Pain Strategy Centre for Effective Practice (2013)	

20

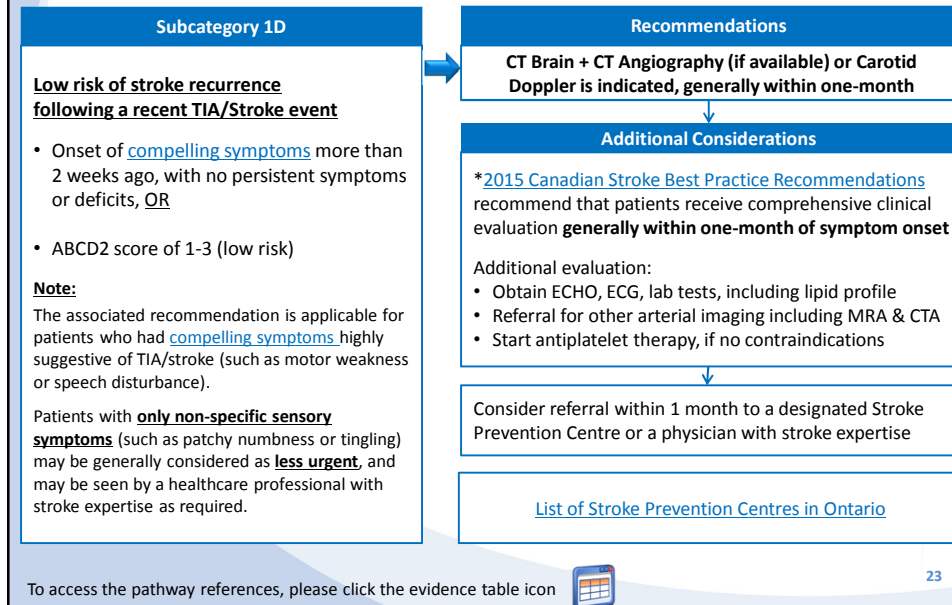
THE IMAGING PATHWAYS

- Headache Pathway
- Low Back Pain Pathway
- **TIA/Stroke Pathway**
- Knee Pain Pathway

TIA/Stroke Imaging Pathway: Summary

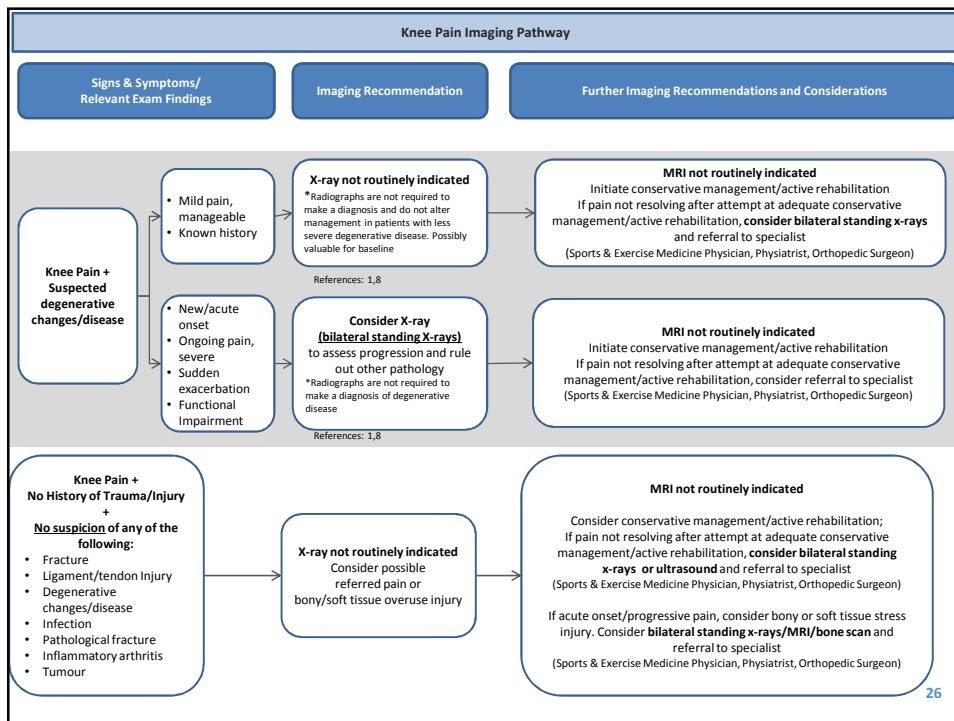
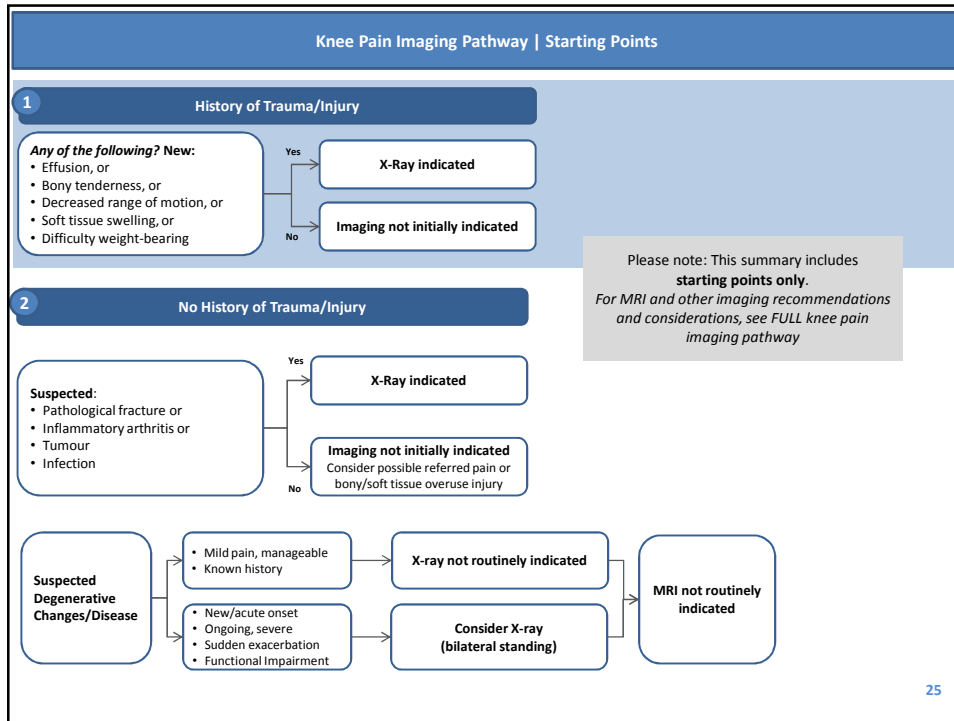


Subcategory 1D: Low Risk of Stroke Recurrence Following a Recent TIA/Stroke Event



THE IMAGING PATHWAYS

- Headache Pathway
- Low Back Pain Pathway
- TIA/Stroke Pathway
- Knee Pain Pathway



PROJECT EVALUATION SURVEY RESULTS

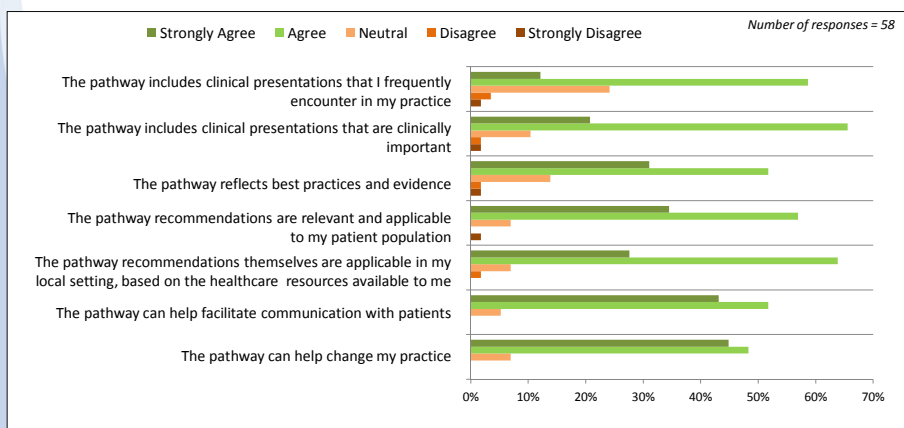
PRIMARY CARE PROVIDER ASSESSMENT OF IMAGING PATHWAYS



Primary Care Provider Assessment of Imaging Pathways *Survey audience: Primary care providers not involved in the project*

Review of the Low Back Pain Imaging Pathway

Question: Based on your review of the low back pain pathway, please rate your agreement with the following statements:

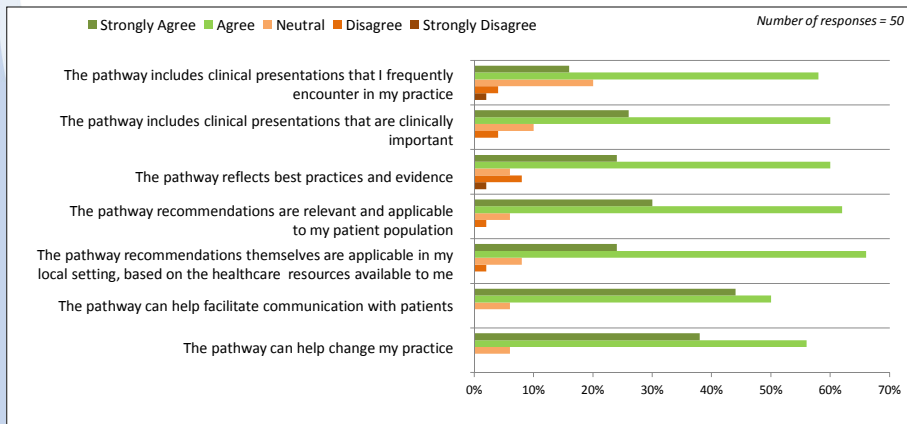


Primary Care Provider Assessment of Imaging Pathways

Survey audience: Primary care providers not involved in the project

Review of the Headache Imaging Pathway

Question: Based on your review of the headache pathway, please rate your agreement with the following statements:



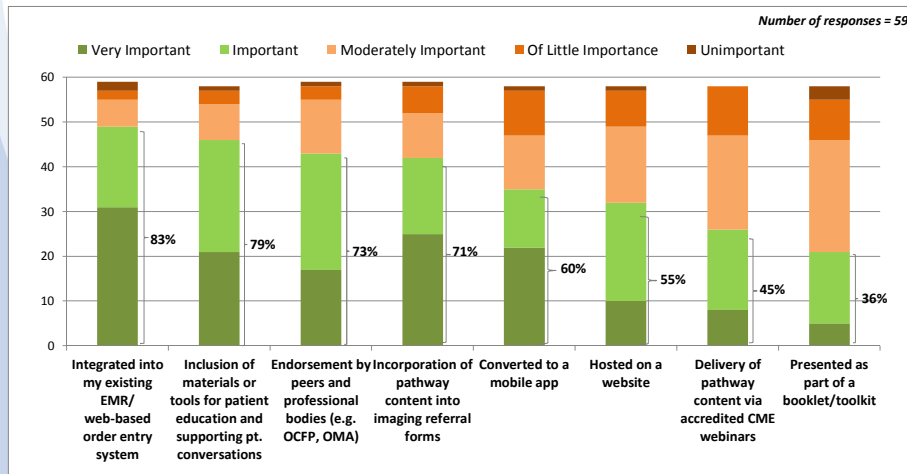
29

Primary Care Provider Assessment of Imaging Pathways

Survey audience: Primary care providers not involved in the project

Factors influencing adoption

Question: What factors would help you and your primary care colleagues use these pathways? Please rate the importance of the following options:



WHAT'S NEXT

Key Implementation Recommendations

IT Integration

- Pursue integration of pathways with Ontario's major EMRs to support primary care providers' workflow.

Integrated Implementation

- Investigate alignment of pathways with existing primary care best practice implementations: HQO Communities of Practice, Choosing Wisely Canada recommendations, Quality-Based Procedures, etc.

Data to Support Practice Change

- Create imaging indicators to give clinicians insight into their imaging referral patterns relative to peer groups. Leverage existing tools like the HQO Primary Care Practice Reports.

Tools for Patient Conversations

- Develop tools to support the imaging-decision conversations between primary care providers and their patients.

Communication and Dissemination

- Pursue incorporation of pathways into OCFP courses and distribution via Chiefs of family medicine, radiology and the other specialties at academic hospitals.

Contact Information

Lilly Whitham, MSc, PMP
Senior Project Manager, JDMI, UHN
Email: lilly.whitham@uhn.ca

Karen Weiser, MBA
Business Analyst, JDMI, UHN
Email: karen.weiser@uhn.ca

