

Diagnostic Imaging Decision Support Embedded in Electronic Referral Forms



Implementing evidence-informed decision support at the point of the referral on the eReferral forms reduces the unnecessary ordering of MRI scans and has the potential to eliminate unnecessary health expenditure

100% of MRI scans ordered for low back pain (LBP) were clinically appropriate and aligned with the best-practice guidelines

99.1% of MRI scans ordered for headache were clinically appropriate and aligned with the best-practice guidelines



Potential cost savings
due to MRI decision
support in eReferral forms

Benefits / Key Info

- **366** MRI referrals were processed through the eReferral solution using forms with embedded decision support guidelines (122 for headache and 244 for LBP)
- **60%** of patients were females between 19 and 92 years old
- The MRI referrals were sent by 115 clinicians
- **94%** of referring providers found the guidelines to be useful or very useful
- **All** referrals for LBP and headache, except for one, were aligned with the clinically indicated recommendations
- Using eReferral with implemented MRI guidelines at the point of referrals **has the potential to save up to \$128,051 of unnecessary health expenditure** (projection of cost savings based on an average cost of \$1,131 per MRI scan and 30% of unnecessary orders as indicated by evidence).¹

"The guidelines for doing MRI for headache and low back pain are very useful. They have helped me in my discussions with patients who are wanting MRIs for indications where it is not likely to be helpful especially for chronic mechanical low back pain or chronic migraines. I have shown some patients the referral form as we complete it together and it facilitates a discussion on the need for imaging at all."

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The Eastern Ontario MRI Central Intake Program (triaging requests for Cornwall Community Hospital, CHEO, Hôpital Montfort, The Ottawa Hospital, Pembroke Regional Hospital, Queensway Carleton Hospital, and the University of Ottawa Heart Institute) has integrated a unique design of MRI for headache and low back pain (LBP) decision support guidelines within the eReferral forms that requires providers to select a clinically validated indication before submitting their diagnostic imaging (DI) referral request.

MRI referrals sent electronically in Champlain between December 2019 and October 2020 were assessed for alignment with the distinctive MRI guideline recommendations on the eReferral form.

Background

The use of Magnetic Resonance Imaging (MRI) in Canada is on the rise.¹ Ontario alone has experienced a 17% increase in MRI scans over the past five years.²

With this rise in the use of MRI, there is more than a two-fold increase in the cost of MRI scans.³ However, evidence shows that about 30% of the ordered MRI scans are unwarranted.^{1,4} The majority of unnecessary MRIs in Canada (80%) are for lumbar spine, head and extremities complaints.⁵ Many international diagnostic imaging (DI) guidelines do not recommend MRI scans in these cases.⁶

There is visible fluctuation in the use of evidence-based practice guidelines when ordering DI among primary care practitioners.^{1,6} Evidence supports the importance of having clear guidelines available at the point of ordering to reduce unwarranted ordering of diagnostic scans.^{7,8}

The Joint Department of Medical Imaging at the University Hospital Network (UHN) in Toronto, Ontario, has developed clinically validated best-practice guidelines for the appropriate ordering of many DI scans.⁹

To promote best practices and support clinicians in their decision making at the point of care, the Ontario eServices Program has integrated these guidelines into the electronic referral forms (eforms) used by Ocean users to refer patients for DI. These eForms, with embedded DI evidence-based clinical guidelines, promote clinical decision making for only ordering DI scans that are necessary for patients.

Acknowledgements

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