TITLE: Imaging in Patients with Low Back Pain: Clinical Effectiveness and Guidelines

DATE: 10 March 2015

RESEARCH QUESTIONS

1. What are the clinical benefits and harms of imaging for low back pain (LBP) in patients with no other risks?

2. What are the evidence-based guidelines for imaging for LBP in patients with no other risks?

KEY FINDINGS

Three systematic reviews and three evidence-based guidelines were identified regarding the clinical effectiveness of imaging in patients with LBP.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2015, Issue 2), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold; HTAIS), Canadian and major international health technology agencies, as well as a focused Internet search. Filters were applied to limit the retrieval to systematic reviews, health technology assessments and meta analyses, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and February 17, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
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<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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| **Intervention** | X-rays  
CT scans  
MRI  
PET or SPECT  
Bone scans and bone density scans excluded |
| **Comparator** | Any comparator  
No comparator |
| **Outcomes** | Clinical benefits and harms  
Guidelines |
| **Study Designs** | Systematic reviews, health technology assessments and meta analyses, and evidence-based guidelines |

CT = computed tomography; MRI = magnetic resonance imaging; PET = positron emission tomography; SPECT = single-photon emission computed tomography

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by evidence-based guidelines.

Three systematic reviews and three evidence-based guidelines were identified regarding the clinical effectiveness of imaging in patients with low back pain. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Three systematic reviews\(^1\)\(^-\)\(^3\) and three evidence-based guidelines\(^4\)\(^-\)\(^6\) were identified regarding the clinical effectiveness of imaging in patients with low back pain.

Two systematic reviews\(^1\)\(^,\)\(^2\) of magnetic resonance imaging (MRI) in low back pain found the diagnostic accuracy of MRI for spinal pathology to be inconclusive due to a high degree of heterogeneity across studies. A systematic review with meta-analysis\(^3\) that examined the association between low back pain and abnormalities on MRI found that several abnormalities (i.e., disc protrusion, nerve root displacement or compression, disc degeneration, high intensity zone) were all associated with LBP. However, the authors concluded that any individual abnormality was not likely to be entirely responsible for the LBP.

Three evidence-based guidelines\(^4\)\(^-\)\(^6\) were identified regarding the use of diagnostic imaging in LBP. Detailed recommendations are provided in Table 2.
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Guidance</th>
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<td>WLDI (2013)⁴</td>
<td><strong>&quot;Without Radiculopathy (90% of cases)</strong>*&lt;br&gt;Third visit (day 10 to 17 - about 1 week after second visit)&lt;br&gt;While not indicated in the absence of red flags, if still disabled, then consider imaging study (anterior-posterior [AP]/lateral 2-view x-ray of lumbar) [Benchmark cost: $150] to rule out tumor, fracture, osteoporosis, myelopathy.” Major Recommendations, Without Radiculopathy</td>
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<td>AMA/TOP (2011)⁵</td>
<td>**&quot;For acute low back pain (no red flags), diagnostic imaging tests, including X-ray, computed tomography (CT), and magnetic resonance imaging (MRI) are not indicated. In the absence of red flags, routine use of X-rays is not justified due to the risk of high doses of radiation and lack of specificity.” Diagnostic Imaging, page 12</td>
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<td>ACOEM (2011)⁶</td>
<td><strong>&quot;Routine x-ray for acute, non-specific LBP – Not Recommended</strong>*&lt;br&gt;MRI is recommended for patients with subacute or chronic radicular pain syndromes lasting at least 4 to 6 weeks in whom the symptoms are not trending towards improvement if both the patient and surgeon are considering prompt surgical treatment, assuming the MRI confirms ongoing nerve root compression. In cases where an epidural glucocorticosteroid injection is being considered for temporary relief of acute or subacute radiculopathy, MRI at 3 to 4 weeks (before the epidural steroid injection) may be reasonable. – Moderately Recommended&lt;br&gt;Standing or weight-bearing MRI for any back or radicular pain syndrome or condition – Not Recommended&lt;br&gt;<strong>Routine CT for acute, subacute, or chronic non-specific LBP, or for radicular pain syndromes – Not Recommended</strong>*&lt;br&gt;CT for patients with acute or subacute radicular pain syndrome that has failed to improve within 4 to 6 weeks and there is consideration for an epidural glucocorticoid injection or surgical discectomy – Recommended&lt;br&gt;SPECT for the evaluation of patients with low back pain and related disorders – Not Recommended&lt;br&gt;<strong>Diagnostic ultrasound for diagnosing LBP – Not Recommended</strong>*</td>
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ACOEM = American College of Occupational and Environmental Medicine; AMA = Alberta Medical Association; CT = computed tomography; LBP = low back pain; MRI = magnetic resonance imaging; SPECT = single-photon emission computed tomography; TOP = Toward Optimized Practice; WLDI = Work Loss Data Institute.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Guidelines and Recommendations

See: Major Recommendations, Without Radiculopathy

See: Diagnostic Imaging, page 12

See: Table 1: Summary of Recommendations for Diagnostic and Other Testing for Low Back Disorders

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APPENDIX – FURTHER INFORMATION:

Guidelines and Recommendations

Outside Date Range


See: 1.1 Assessment and Imaging

Methodology Unclear


Review Articles
