Non-Invasive Imaging Modalities for the Diagnosis and Monitoring of Liver Fibrosis: Diagnostic Accuracy, Clinical Effectiveness/Utility, Cost-Effectiveness, and Guidelines
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Acknowledgments:

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the diagnostic accuracy of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease?

2. What is the clinical effectiveness and clinical utility of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease?

3. What is the cost-effectiveness of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease?

4. What are the evidence-based guidelines associated with the use of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease?

Key Findings

Four health technology assessments, 30 systematic reviews (21 with meta-analyses), and four economic evaluations were identified regarding the use of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease. Additionally, ten evidence-based guidelines were identified.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, economic studies, and guidelines. The search was also limited to English language documents published between January 1, 2012 and July 31, 2017. Internet links were provided, where available.

Selection Criteria

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

<table>
<thead>
<tr>
<th>Population</th>
<th>Adult and pediatric patients with liver disease or suspected of having liver disease with accompanying liver fibrosis (e.g., but not limited to, chronic viral hepatitis, non-alcoholic fatty liver disease, alcoholic liver disease, liver malignancies, etc.)</th>
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<tr>
<td>Intervention</td>
<td>Imaging modalities (e.g., but not limited to, transient elastography [Fibroscan], magnetic resonance imaging [MRI], computed tomography [CT], etc.)</td>
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| Comparator  | Q1-3: Liver biopsy;  
Sham;  
No treatment  
Q4: No comparator |
| Outcomes    | Q1: Diagnostic accuracy (in diagnosing/detecting fibrosis or staging/grading disease/fibrosis severity, validity, reliability, sensitivity, specificity)  
Q2: Clinical effectiveness and utility (e.g., monitoring of liver disease/fibrosis once treatment is initiated, use to make treatment decisions);  
Safety (e.g., false positives/false negatives, harms to the patient)  
Q3: Cost-effectiveness (e.g., incremental cost per QALY or health benefit gained)  
Q4: Guidelines (for both diagnosis and monitoring) |
| Study Designs | Health technology assessment, systematic reviews, meta-analyses, randomized controlled trials, economic evaluations, evidence-based guidelines |

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 randomized controlled trials, economic evaluations, and evidence-based guidelines.

Four health technology assessments, 30 systematic reviews (21 with meta-analyses), and four economic evaluations were identified regarding the use of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease. No randomized-controlled trials were identified. Additionally, ten evidence-based guidelines were identified associated with the use of non-invasive imaging modalities to detect liver fibrosis in patients with or suspected of having liver disease.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

PubMed: PM27601240


Systematic Reviews and Meta-analyses

Adult Populations


Overview of Reviews


Systematic Review of Economic Evaluations


Pediatric Populations


Randomized Controlled Trials

No literature identified.
Economic Evaluations


Guidelines and Recommendations


See: Recommendation 10, page 5 PubMed: PM25585348


See: Recommendation 9 and 10, page 920
Appendix — Further Information

Previous CADTH Reports


Non-Randomized Studies – Not Formally Searched


Economic Evaluations – Alternative Comparator


Clinical Practice Guidelines – Uncertain Methodology

