TITLE: Bone Mineral Density Testing Post-Fracture: Cost-Effectiveness and Guidelines

DATE: 20 May 2015

RESEARCH QUESTIONS

1. What is the cost-effectiveness of bone mineral density (BMD) testing in individuals 50 years and older at risk of osteoporosis due to fracture?

2. What are the evidence based guidelines regarding bone mineral density (BMD) testing for individuals 50 years and older at risk of osteoporosis due to fracture?

KEY FINDINGS

One economic evaluation was identified regarding the cost-effectiveness of bone mineral density testing in individuals 50 years and older at risk of osteoporosis due to fracture. In addition, seven evidence-based guidelines were identified regarding bone mineral density testing for individuals 50 years and older at risk of osteoporosis due to fracture.

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, economic studies, 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 May 7, 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>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
</tr>
</tbody>
</table>
| **Intervention** | Q1: Dual energy x-ray absorptiometry  
Q2: Any bone mineral density test (e.g., dual energy x-ray absorptiometry, quantitative computed tomography, radiographic absorptiometry, quantitative ultrasound etc.) |
| **Comparator** | Q1: Any alternate bone mineral density test;  
No testing  
Q2: No comparator |
| **Outcomes** | Q1: Cost-effectiveness  
Q2: Guidelines and recommendations regarding:  
Who should be tested;  
Which test/technology to use;  
Frequency of testing |
| **Study Designs** | Health technology assessments, systematic reviews, meta-analyses, 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 economic evaluations and evidence-based guidelines.

One economic evaluation was identified regarding the cost-effectiveness of bone mineral density testing in individuals 50 years and older at risk of osteoporosis due to fracture. In addition, seven evidence-based guidelines were identified regarding bone mineral density testing for individuals 50 years and older at risk of osteoporosis due to fracture. No relevant health technology assessments, systematic reviews, or meta-analyses were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One economic evaluation sought the most cost-effective method to identify rural women aged 60 to 64 years who would be eligible for osteoporosis treatment. The number of peripheral forearm densitometry (pDXA) examinations needed, and the cost of screening, was reduced when women with a prior fracture or clinical risk factors greater or equal to 20% were treated without confirmation by pDXA. This was followed by pDXA confirmation in women with clinical risk factors between 9.3% and 20%. 1

Seven evidence-based guidelines were identified regarding bone mineral density testing for individuals 50 years and older at risk of osteoporosis due to fracture. Four guidelines recommend that dual x-ray absorptiometry (DXA) be offered to individuals over the age of 50 years with a history of prior fragility fracture. DXA testing is also recommended by one guideline regarding men over the age of 50 years who had a prior fracture. One guideline recommends...
that DXA be offered if the fragility fracture occurred after the age of 40 years. Another guideline\(^4\) recommends that bone density testing be offered for women younger than 65 years, and men younger than 70 years, if they had a prior fracture. The guideline by the National Institute for Health and Clinical Excellence\(^5\) recommends fracture assessment for women aged 51 to 64 years, and men aged 51 to 74 years, who had a prior fracture, and that DXA not be offered routinely without prior fracture assessment.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Economic Evaluations


Guidelines and Recommendations

   See: 2 Key recommendations, page 4
   3.2.4 Previous Fracture, page 8

   See: Table 1: When to Order a BMD test (DXA), page 7

   See: Major Recommendations

   See: Algorithm, page 14


   See: Indications for DXA Scan and Recommendations for Follow-up, fifth bullet
See: Table 5. Screening & Management Based on Risk for Osteoporotic Fractures, page 3
Diagnostic Testing, pages 8 to 9

PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca
APPENDIX – FURTHER INFORMATION:

Economic Evaluations

**Age of Patients Not Specified**


**Cost of Dual Energy X-ray Absorptiometry not Specified, DEXA as Part of Larger Intervention**


Evidence-Based Guidelines – Age of Patient not Specified

See: Algorithm, page 1
   2. Patient with a Low-Impact (Fragility) Fracture, pages 9-10

Clinical Practice Guidelines – Uncertain Methodology

See: Table 2. Risk factors for osteoporosis: indications for measuring BMD, page S4

See: Who Should be Assessed for Osteoporosis? page 1