TITLE:  Bisphosphonate Use in Patients with Osteopenia and Low Risk of Fractures: Clinical Effectiveness and Guidelines

DATE:  17 April 2015

RESEARCH QUESTIONS

1. What is the clinical effectiveness of bisphosphonates in patients with osteopenia at low risk of fracture?

2. What are the evidence based guidelines associated with the use of bisphosphonates in patients with osteopenia at low risk of fracture?

KEY FINDINGS

Seven systematic reviews and one evidence-based guideline were identified regarding the use of bisphosphonates in patients with osteopenia at low risk of fracture.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2015, Issue 3), 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, 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 April 2, 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>
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<tbody>
<tr>
<td><strong>Population</strong></td>
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<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td><strong>Comparator</strong></td>
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<td><strong>Outcomes</strong></td>
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<td><strong>Study Designs</strong></td>
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</table>

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.

Seven systematic reviews and one evidence-based guideline were identified regarding the use of bisphosphonates in patients with osteopenia at low risk of fracture. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Seven systematic reviews and one evidence-based guideline were identified regarding the use of bisphosphonates in patients with osteopenia at low risk of fracture.

A summary of the findings from the seven systematic reviews is provided in Table 2.

The Institute for Clinical Systems Improvement guideline for the diagnosis and treatment of osteoporosis recommends that bisphosphonates, particularly zoledronic acid, should be considered for bone loss prevention in men without osteoporosis who are undergoing androgen deprivation therapy for prostate cancer.

<table>
<thead>
<tr>
<th>Table 2: Systematic Reviews and Meta-analyses</th>
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<tbody>
<tr>
<td><strong>Author (Year)</strong></td>
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| Anagha et al. (2014)
<p>| Zoledronic acid | Postmenopausal women with early breast cancer taking AIs | “Third generation bisphosphonates have an effect on BMD of patients who are on treatment of AIs in breast cancer.” |
| Su et al. (2014) | Bisphosphonates | Postmenopausal women with early breast cancer taking AIs | “(Bisphosphonates) may protect against bone loss in postmenopausal women with (early breast cancer) receiving adjuvant (aromatase inhibitor) treatment.” |
| Ding et al. (2013) | Bisphosphonates | Men with non-metastatic prostate | “There was generally more improvement in bone mineral density” |</p>
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Intervention</th>
<th>Patient group</th>
<th>Results/Conclusions</th>
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<tbody>
<tr>
<td>Guo et al. (2013)^4</td>
<td>Bisphosphonates</td>
<td>Crohn’s disease</td>
<td>“There was no evidence to support the use of bisphosphonates for osteoporosis or osteopenia in Crohn’s disease.”</td>
</tr>
<tr>
<td>Crandall et al. (2012)^5</td>
<td>Various treatments including bisphosphonates</td>
<td>Osteoporosis and osteopenia</td>
<td>“The level of evidence is low to moderate for fracture risk reduction in postmenopausal women with osteopenia and without prevalent fractures.”</td>
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<tr>
<td>Zhang et al. (2012)^6</td>
<td>Zoledronic acid</td>
<td>Osteoporosis prevention</td>
<td>“This present study shows that zoledronic acid could be effective approach in the prevention of osteoporosis, and could increase the bone mineral density and reduce the risk of fracture.”</td>
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<td>Valachis et al. (2010)^7</td>
<td>Bisphosphonates</td>
<td>Breast cancer</td>
<td>“Our meta-analysis provides substantial evidence that bisphosphonates in the adjuvant setting among women with breast cancer do not decrease the number of fractures compared with placebo or no treatment.”</td>
</tr>
</tbody>
</table>

AI = aromatase inhibitors; BMD = bone mineral density.

^a Verbatim conclusions.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

   PubMed: PM24795759

   PubMed: PM25450582

   PubMed: PM23803126

   PubMed: PM23179146


   PubMed: PM22805729

   PubMed: PM20061004
Guidelines and Recommendations

See: Recommendations, page 6

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APPENDIX – FURTHER INFORMATION:

Guidelines and Recommendations – Methods Unclear

   See: Risk stratification, page 3

   See: Recommendations, Bone health, page 3

Review Articles


   Abstract not available.