TITLE: T-Score as a Measurement to Assess the 10-Year Fracture Risk: A Review of the Clinical Evidence

DATE: 4 August 2011

CONTEXT AND POLICY ISSUES:

Osteoporosis is a common disorder characterized by low bone mass and skeletal fragility that affects up to 16% of Canadian women and 7% of Canadian men over 50 years of age, and caused nine million fractures in 2000 worldwide. Osteoporosis is defined based on the basis of bone mineral density (BMD) assessment. Tools such as T-score and Z-score have been developed to classify BMD in an attempt to assess the risk of fracture in osteoporotic patients, including patients with corticosteroid-induced osteoporosis. The Canadian Association of Radiologists Clinical Practice Guidelines uses T-score and Z-score to report BMD results. A recent Canadian study showed there was an increase in fracture rates from a prior fracture or systemic steroid use. The purpose of this report is to review the evidence on the use of T-score compared with Z-score to assess the 10-year fracture risk in patients under 50 years old who are on steroid therapy.

RESEARCH QUESTIONS:

What is the clinical evidence on the use of T-score compared to Z-score as a measurement to assess the 10-year fracture risk in patients under 50 years old who are on steroid therapy?

KEY MESSAGE:

There is no evidence found on the use of T-score compared to Z-score as a measurement to assess the 10-year fracture risk in patients under 50 years old who are on steroid therapy.

METHODS:

Literature search strategy

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 6), University of York Centre for Reviews and Dissemination (CRD)

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databases, Canadian and abbreviated list of major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between Jan 1, 1995 and Jul 8, 2011.

Selection Criteria and Methods

One reviewer screened the titles and abstracts of the retrieved publications and examined full-text articles for the final article selection, according to the selection criteria outlined in Table 1.

Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Patients under 50 years old who are on steroid therapy</th>
</tr>
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<tbody>
<tr>
<td>Intervention</td>
<td>T-score</td>
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<tr>
<td>Comparator</td>
<td>Z-score</td>
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<tr>
<td>Outcomes</td>
<td>10-year fracture risk</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessment, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies</td>
</tr>
</tbody>
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Exclusion Criteria

Articles were excluded if they did not satisfy the selection criteria in table 1, or if they were published before 1995, or they were duplicate publications of the same study.

SUMMARY OF EVIDENCE:

Quantity of Research Available

Four hundred and seventy seven studies were identified by the literature search, and 17 were identified by the grey literature search. From these, 20 potentially relevant studies were selected for full-text screening, and no clinical trial was selected for inclusion. Appendix 1 describes the PRISMA flowchart of the studies.

Summary of Study Characteristics

Given the lack of evidence on the research topic, a summary of study characteristics is not applicable.

Summary of Critical Appraisal

Given the lack of evidence on the research topic, a critical appraisal of studies is not applicable.

Summary of Findings

There is no evidence on the use of T-score compared to Z-score as a measurement to assess the 10-year fracture risk in patients under 50 years old who are on steroid therapy.
Limitations

The literature search did not find any study that satisfies the inclusion criteria. Studies comparing T-score to Z-score as a measurement to assess the 10-year fracture risk in this group of patients are needed.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING:

The validity of T-scores to assess 10-year hip fractures in patients under 50 years old who are on steroid therapy is not proved at the present time.

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


available from:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2974928/pdf/198_2010_Article_1185.pdf


http://www.osteoporosis.ca/local/files/health_professionals/pdfs/CARI-June05-BMD%20Recomm.pdf

APPENDICES:

APPENDIX 1: Selection of Included Studies

- 477 citations identified from electronic literature search and screened
- 463 citations excluded
- 14 potentially relevant articles retrieved for scrutiny (full text, if available)
- 6 potentially relevant reports retrieved from other sources (grey literature, hand search)
- 20 potentially relevant reports
- 20 reports excluded:
  - irrelevant population and comparator (6)
  - irrelevant outcomes (4)
  - other (review articles, editorials)(10)
- 0 report included in review