Editorial

The National Osteoporosis Guideline Group’s new guidelines: what is new?

Introduction

The importance of osteoporosis (OP) to the health economy is widely documented [1]: with costs of fractures alone of £1.73 billion, the ageing population also will lead to a doubling of this estimated cost. Recent advances in the literature regarding the diagnoses and management of OP have occurred. Although there have been Royal College of Physicians (RCP) guidelines published in 1999, 2000 and 2002 [2–4] and National Institute for Healthcare and Clinical Excellence (NICE) guidelines and the new final appraisal determination document from NICE [5–7], they have not been updated with recent advances including the newly developed World Health Organization FRAX™ data (www.shef.ac.uk/frax), which give a 10-yr fracture risk assessment and explains how it fits in the treatment paradigm. Additionally, newer treatments including zoledronate are not included. Other groups not included in current guidance are men or women receiving glucocorticoid therapy, men with osteoporosis or post-menopausal women at high risk of fracture but with a T-score above −2.5.

A consensus group called the National Osteoporosis Guideline groups (NOGG) was therefore developed including representation from the Bone Research Society, British Geriatrics Society, British Orthopaedic Association, British Society of Rheumatology, National Osteoporosis Society, Osteoporosis 2000, Osteoporosis Dorset, Primary Care Rheumatology Society and Society for Endocrinology. They published the guidelines, which were launched on 6 October. It is not intended as a working document but as a framework from which local protocols could be developed. This is quite refreshing in view of the perceived ‘one size fits all’ culture that has emerged from NICE guidance and target culture from Whitehall. The guideline covers men as well as women and deals with prevention as well as treatment strategies and is a holistic document for use by clinicians, managers and patients alike.

New issues discussed in the guidance

How to define and assess OP

It is known that the risk of fracture increases 2-fold for every s.d. decrease in BMD. Although OP is diagnosed as the traditional T-score of <-2.5 in either the femoral neck or the hip, it was recommended that it be measured only at the femoral head, and as some units define OP either in the spine and femur, this might lead to some units, including the authors’ own, to consider this in reporting OP. The rationale for this is complex and includes the fact that the prediction of fracture is not improved by the use of multiple sites [8]. A caveat was that if it was impossible to measure BMD at the hip or in younger post-menopausal women and men in whom the spine is differentially affected, then other sites could be used.

Other techniques for measuring BMD were not recommended and include quantitative CT and peripheral scanners, although it does recommend their use for risk assessments, the implication for the wider community being unclear. It might therefore be a means for pre-screening in areas where access to BMD of the hip is rationed.

Measuring BMD at the spine was recommended as assessing response to treatment, while hip BMD could be used as a case-finding strategy. This could cause confusion as reporting on one or the other might increase the amount of time needed for reporting scans.

Assessment of fracture risk

This was felt to be the function of BMD at the hip, especially in elderly people. Using BMD alone to determine fracture risk was felt to be not ideal, as it has a low sensitivity and means that most OP fractures will occur in patients with T-scores <-2.5.

Other risk factors that were identified as important and predict fracture risk independent of age and BMD are listed below. They were recommended to be included in any case-finding exercise. Their independence of BMD at predicting fractures is shown in Table 1.

The group acknowledges that there are other risk factors, either acting by reducing BMD or not responding to treatments that are not mentioned.

The group also recommended the use of 10-yr fracture risk assessment using the recently developed FRAX™ tool (www.shef.ac.uk/frax), developed by the WHO collaborating centre for metabolic bone diseases at Sheffield, which has been well validated. One of the limitations of this tool is that the cumulative severity of each risk factor is not taken into account; hence highest ethanol intake and moderate ethanol intake would count the same, and steroid dose and several fractures would count as one risk factor only.

The FRAX™ should be calculated using the algorithms freely available on the website (www.shef.ac.uk/frax) and treatment should be instigated if the patients are above the upper threshold for treatment and BMD should be calculated if they are between the upper and lower threshold of risk. Simplified tables with risk stratified are reproduced in the guidelines and are reminiscent of the Framingham tables for cardiovascular risk. The thresholds for treatment are shown in the Table 2.

Strategies for OP prevention and treatment

Prevention and treatment. The only interventions that have a good evidence for the prevention of OP are exercise and calcium and vitamin D supplementation, which augment BMD. Other strategies, which would be natural to endorse, have weaker evidence for their efficacy. They include smoking cessation and increasing dietary calcium. Expert evidence only existed for reducing ethanol consumption and fall prevention programmes. The group therefore made no recommendation for any of the population-based strategies as their efficacy and evidence base has not been rigorously assessed. The only recommendation was that case-finding should be encouraged.

Calcium and vitamin D supplementation in the elderly living in residential care, housebound and in nursing homes was evaluated and recommended by the guidelines group. Increasing protein intake and correcting poor oral protein intake has been shown to be beneficial, especially after an osteoporotic fracture and were recommended.

In patients at high risk, no distinction was made between prevention and treatment and the drugs were divided into those that prevented vertebral, non-vertebral and hip fractures; the only drugs that had good evidence for all three were alendronate,
risedronate, zoledronate and HRT. Other drugs showing good
evidence for vertebral and nonvertebral fractures were strontium
ranelate, teriparatide and possibly ibandronate.

The differences between bisphosphonate treatments were high-
lighted in a review and bisphosphonates differed by renal
impairment threshold and amount of water needed to swallow
each tablet (Table 3).

In women, other treatments including etidronate, calcitonin,
calcitriol and HRT were thought not to be recommended first line
either due to insufficient evidence of their use (etidronate,
calcitonin, calcitriol), or a bad risk–benefit ratio (HRT).
But it was recommended that patients who are intolerant of
bisphosphonates could be prescribed strontium or raloxifene.
Teriparatide was felt to be better left for the more severe
patients.

In men, the only drugs approved for use were alendronate,
risedronate and teriparatide.

**Case finding.** There were no concrete recommendations on case
finding, but it was suggested that further research be done. Case
finding by fragility fracture and risk factors was suggested as a
suitable means of proceeding. This was restricted to men and
women over the age of 50 yrs. Additional risk factors were also
listed as per the list below.

Clinical risk factors used for the assessment of fracture
probability:

- Age
- Sex
- Low BMI (≤ 19 kg/m2)
- Previous fragility fracture, particularly of the hip, wrist and
  spine
- Vertebral fracture
- Parental history of hip fracture
- Current glucocorticoid treatment (any dose, by mouth for ≥ 3
  months)
- Current smoking
- Alcohol intake of ≥ 3 U/day
- Secondary causes of osteoporosis including:
  - Rheumatoid arthritis
  - Untreated hypogonadism in men and women
  - Prolonged immobility
  - Organ transplantation
  - Type I diabetes
  - Hyperthyroidism
  - Gastrointestinal disease
  - Chronic liver disease
  - Chronic obstructive pulmonary disease

**Recommendations**

The guidelines made recommendations to several bodies:

(i) Audit of local and RCP guidelines should be included as part
of quality assurance.

(ii) Training in the management of OP be included in the
curricula of several of the medical colleges.

(iii) Health authorities and commissioners for care should
recognize OP and fractures as a significant health issue.

(iv) Health authorities and commissioners should also see to it
that local healthcare programmes address the avoidable risk
factors for OP, fractures, falls and poor bone health.

(v) Importantly, they also recommended that the osteoporotic
fracture prevention should be included in the quality outcomes
framework.

(vi) It was also felt that a clinical lead might be an appropriate
person to be appointed.

**Conclusion**

This holistic document pulls together disparate guidelines for the
management of OP and updates them, making them more relevant
to the health care consumer. It is hoped that all NHS workers
notice of them and of osteoporosis. Perhaps inclusion in
the quality outcomes framework will make OP more prominent
amongst health professionals and the public.

**Disclosure statement:** M.B. has received honoraria for speaking
from Elsevier, Sanofi-Aventis, Merck, Roche, Wyeth and Abbott.
He has also attended meetings sponsored by Elsevier, Eli Lilly,
Roche, Abott and Wyeth. The author’s department has received
monies for software development from Roche.

M. BUKHARI

1University Hospitals of Morecambe Bay, NHS Trust, Royal
Lancaster Infirmary, Lancaster and Clinical Sciences, University of
Liverpool, Liverpool, UK

Accepted 17 November 2008

Correspondence to: M. Bukhari, Department of
Rheumatology, Royal Lancaster Infirmary, Ashton road,
Lancaster LA1 4RP, UK. E-mail: marwan.bukhari@mbht.nhs.uk

**References**

1 Kanis JA, Brazier JE, Stevenson M, Calvert NW, Lloyd Jones M. Treatment
of established osteoporosis: a systematic review and cost-utility analysis. Health

2 Royal College of Physicians. Osteoporosis: clinical guidelines for the prevention and

---

**TABLE 1. Risk factors and their inter-dependency on BMD estimation**

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Independence from BMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low BMI</td>
<td>Low</td>
</tr>
<tr>
<td>History of previous fragility fractures</td>
<td>Partially independent</td>
</tr>
<tr>
<td>Parental history</td>
<td>Largely independent</td>
</tr>
<tr>
<td>Glucocorticoids</td>
<td>Mostly independent</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Dose dependent*</td>
</tr>
<tr>
<td>RA</td>
<td>Independent of BMD and glucocorticoids</td>
</tr>
<tr>
<td>Smoking</td>
<td>Partly dependent</td>
</tr>
</tbody>
</table>

---

**TABLE 2. Showing how to interpret risk using FRAX™ reproduced from the NOGG guidance**

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Lower assessment threshold</th>
<th>Upper assessment threshold</th>
<th>Intervention threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>6</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>55</td>
<td>7</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>8.2</td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td>65</td>
<td>9.5</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>70</td>
<td>11</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>75</td>
<td>14</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>80</td>
<td>18</td>
<td>36</td>
<td>30</td>
</tr>
</tbody>
</table>

---

**TABLE 3. Difference between bisphosphonates**

<table>
<thead>
<tr>
<th>Bisphosphonate</th>
<th>Formulation</th>
<th>Creatinine clearance threshold (ml/min)</th>
<th>Amount of water (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alendronate</td>
<td>p.o. weekly</td>
<td>35</td>
<td>&gt;200</td>
</tr>
<tr>
<td>Risedronate</td>
<td>p.o. weekly</td>
<td>30</td>
<td>≤120</td>
</tr>
<tr>
<td>Ibandronate</td>
<td>p.o. monthly</td>
<td>30</td>
<td>180–240</td>
</tr>
<tr>
<td>Ibandronate</td>
<td>i.v.</td>
<td>30</td>
<td>NA</td>
</tr>
<tr>
<td>Zoledronate</td>
<td>i.v.</td>
<td>40</td>
<td>NA</td>
</tr>
</tbody>
</table>


