

European guidance for the diagnosis and management of osteoporosis in postmenopausal women – what is the current message for clinical practice?

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Ten years ago the European Foundation for Osteoporosis and Bone Disease (subsequently the International Osteoporosis Foundation) published guidelines for the diagnosis and management of osteoporosis.¹ Since then, significant advances in the field of osteoporosis include the development of many new techniques for measuring bone mineral, improved methods of assessing fracture risk and new treatments that have been shown to significantly reduce the risk of fractures at vulnerable sites. Against this background, the European Society for Clinical and Economic Evaluation of Osteoporosis and Osteoarthritis (ESCEO), in collaboration with the International Osteoporosis Foundation, revised the original guidelines,² the practical implications of which are summarised below.

Diagnosis of osteoporosis The guidance adopt the recommendations of the IOF and World Health Organization for the diagnosis of osteoporosis. This relies on the quantitative assessment of bone mineral density (BMD), usually by central dual energy X-ray absorptiometry (DXA). BMD at the femoral neck provides the reference site. It is defined as a value for BMD 2.5 SD or more below the young female adult mean (T-score less than or equal to -2.5 SD). Severe osteoporosis (established osteoporosis) describes osteoporosis in the presence of 1 or more fragility fractures.³

Diagnostic thresholds differ from intervention thresholds for several reasons. Firstly, the fracture risk varies markedly in different countries and at different ages, even with the same T-score. Other factors that determine intervention thresholds include the presence of clinical risk factors,

high indices of bone turnover and the cost and benefits of treatment.

The guidance also updates the investigation of patients with osteoporosis, but the use of clinical risk factors for fracture has the greatest potential impact on the management of osteoporosis.

Clinical risk factors At present there is no universally accepted policy for population screening in Europe to identify patients with osteoporosis or those at high risk of fracture. Patients are identified opportunistically using a case-finding strategy on the finding of a previous fragility fracture or the presence of significant risk factors. The risk factors that are recommended for clinical assessment are summarised in **TABLE 1**.

Algorithms that integrate the weight of clinical risk factors for fracture risk with or without information on BMD have been developed – FRAX™. The FRAX™ tool (www.shef.ac.uk/FRAX) computes the 10-year probability of hip fracture or a major osteoporotic fracture (clinical spine, hip, forearm and humerus fracture).^{3,4} Probabilities can be computed for several European countries, categorized for different levels of risk. At present FRAX models are not available for Poland. The available evidence suggests that Poland is a medium risk country (e.g. Spain). The fracture risks in the UK are used in the ESCEO guidance where the fracture risks are somewhat higher.

Case finding The ESCEO guidance recommend that fracture risk should be assessed in postmenopausal women with the risk factors outlined in **TABLE 1** where assessment would influence management.

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Received: April 23, 2008.

Accepted: August 1, 2008.

Conflict of interest: none declared.

Pol Arch Med Wewn. 2008;

118 (10): 538-540

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TABLE 1 Clinical risk factors used for the assessment of fracture probability

Age
Sex
Low body mass index
Previous fragility fracture, particularly of the hip, wrist and spine including morphometric vertebral fracture
Parental history of hip fracture
Glucocorticoid treatment (by mouth for 3 months or more)
Current smoking
Alcohol intake of 3 or more units daily
Secondary causes of osteoporosis include:
Rheumatoid arthritis
Untreated hypogonadism in men and women
Inflammatory bowel disease
Prolonged immobility
Organ transplantation
Type I diabetes
Thyroid disorders
Chronic obstructive pulmonary disease

Women with a prior fragility fracture should be considered for treatment. In the presence of other CRFs, the ten year probability of a major osteoporotic fracture (clinical spine, hip, forearm or humerus) should be determined using FRAX™ (www.shef.ac.uk/FRAX). Women with probabilities below the assessment threshold shown in **FIGURE** can be reassured. Women with probabilities above the assessment threshold can be considered for testing with BMD and their fracture probability reassessed. Thereafter, women with probabilities above the intervention threshold should be considered for treatment.

The intervention threshold at each age is set at a risk equivalent to that associated with a prior fracture and, therefore rises with age. But the proportion of women in the UK potentially eligible for treatment rises from 20 to 40% with age. It is important to note that the setting of intervention thresholds depends not only on fracture

risk, but also on many local socio-economic factors, the availability of DXA and local practices. Thus the guidance of ESCEO should be regarded as one example how local intervention thresholds might be developed in Poland.

Without on line computer access, charts can be downloaded from the FRAX™ web site that give fracture probabilities according to age, sex, the number of CRFs and the T-score for femoral neck BMD. In the absence of BMD, similar charts use body mass index in place of BMD.

Treatment of osteoporosis General management includes the maintenance of mobility, avoidance of falls and correction of nutritional deficiencies, particularly of calcium, vitamin D and protein. Intakes of at least 1000 mg/day of calcium, 800 IU of vitamin D and of 1 g/kg body weight of protein can be recommended.

Major pharmacological interventions in Europe are raloxifene, the bisphosphonates, agents derived from parathyroid hormone and strontium ranelate. Until recently hormone replacement treatment was also widely used. All these interventions have been shown to reduce the risk of vertebral fracture when given with calcium and vitamin D supplements. Some have been shown to also reduce the risk of non-vertebral fractures, in some cases specifically at the hip (**TABLE 2**).

Other pharmacological interventions include calcitonin, hormone replacement treatment, clodronate, etidronate and derivatives of vitamin D.

Monitoring of treatment commonly uses repeated estimations of BMD and markers of bone formation and (or) bone resorption.

CONCLUSIONS The objectives of the ESCEO guidance are not to prescribe medical practice in any specific country. This depends so much on local factors. Rather they should provide a working document that can be used by national agencies to adapt to the particular needs of each country. The present guidance are timely in this respect with the recent availability of FRAX™, and health care professionals will need to become familiar with its use.

FIGURE Assessment threshold for BMD testing (left) and treatment threshold (right)

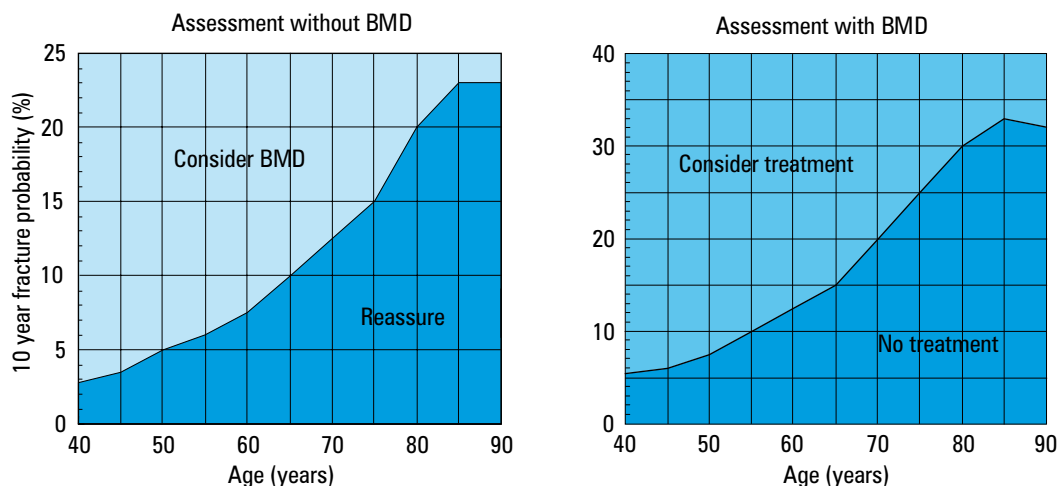


TABLE 2 Effect of major pharmacological interventions on fracture risk

	Vertebral fracture	Non-vertebral fractures
Alendronate	+	+ (including hip)
Risedronate	+	+ (including hip)
Ibandronate	+	+ ^a
Zoledronic acid	+	+ (including hip)
HRT	+	+
Raloxifene	+	NA
Teriparatide and PTH	+	+
Strontium ranelate	+	+(including hip)

+ – effective drug

^a in subsets of patients only (post-hoc analysis)

Abbreviations: HRT – hormone replacement therapy, NA – no evidence available, PTH – parathyroid hormone

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