

Appendix 5

The FRAX[®] tool has been developed by WHO to evaluate fracture risk of patients. It is based on individual patient models that integrate the risks associated with clinical risk factors as well as bone mineral density (BMD) at the femoral neck.

The FRAX[®] models have been developed from studying population-based cohorts from Europe, North America, Asia and Australia. In their most sophisticated form, the FRAX[®] tool is computer-driven. Several simplified paper versions, based on the number of risk factors are also available, and can be downloaded for use.

The FRAX[®] algorithms give the 10-year probability of fracture. The output is a 10-year probability of hip fracture and the 10-year probability of a major osteoporotic fracture (clinical spine, forearm, hip or shoulder fracture). Following the assessment of fracture risk using FRAX[®] in the absence of BMD, the patient may be classified to be at low, intermediate or high risk.

It must be noted that there are some weaknesses in FRAX which include its failure to estimate risk more accurately than BMD plus age, the underestimate based on fractures number, the bias towards hips, the omission of falls as a risk factor; NOGG is not relevant to those who have had fractures, as it is written for the UK, where the NICE guidelines mandate treatment in all women with fragility fracture over 50 years of age

What is NOGG?

The National Osteoporosis Guideline Group* (NOGG) was established to provide a clinical guideline for the management of men and women at high fracture risk, particularly to address the need to integrate the expression of a patient's fracture risk as a 10-year probability (the output from FRAX[®]) with current clinical management of osteoporosis. This included the need to define thresholds for BMD measurement and treatment.

Aims of the NOGG

Given the development of FRAX[®] algorithms to calculate an individual's 10-year probability of fracture, the Group wished to:

- Provide assessment thresholds for the use of BMD i.e. the fracture probabilities at which a BMD test might or might not be recommended.
- Revise intervention thresholds, based on the existing RCP case-finding strategy, to provide the fracture probability at which intervention is recommended.

Why do we need revised assessment and intervention thresholds?

In the UK, guidance for the identification of patients at high fracture risk has been provided by the Royal College of Physicians (RCP) [RCP 1999, 2000, 2002]. Since the development of the RCP guidelines, it has become apparent that the presence of several of the risk factors used to trigger a bone mineral density (BMD) test is associated with a fracture risk greater than can be accounted for by BMD alone.

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Thus, the assessment of fracture risk should take account of those clinical risk factors (CRFs) that contribute to fracture risk in addition to BMD, since this increases the detection rate of individuals who would fracture.

FRAX[®]

The FRAX[®] tool for the assessment of fracture risk (www.shef.ac.uk/FRAX) integrates clinical risk factors, with or without femoral neck BMD, to calculate the 10-year probability of a major osteoporotic fracture (clinical spine, hip, forearm or proximal humerus) and hip fracture for several countries, including the UK.

Clinical use of FRAX[®] and NOGG Guideline

The guideline is based on an opportunistic case finding strategy in which physicians are alerted to the possibility of osteoporosis and high fracture risk by the presence of clinical risk factors (CRFs) associated with fracture. Briefly the guideline states that:

- Postmenopausal women with a prior fragility fracture should be considered for treatment without the need for further risk assessment, although BMD measurement may sometimes be appropriate, particularly in younger postmenopausal women.
- Assessment by the FRAX tool should be undertaken in:
 - Men aged 50 years or more (with or without fracture) but with a WHO risk factor or a BMI < 19kg/m².
 - All postmenopausal women without fracture but with a WHO risk factor or a BMI < 19kg/m².

Following the assessment of fracture risk using FRAX, the patient may be classified to be at low, intermediate or high risk.

- Low risks - reassure and reassess in 5 years or less depending on the clinical context.
- Intermediate risk - measure BMD and recalculate the fracture risk to determine whether an individual's risk lies above or below the intervention threshold.
- High risk - can be considered for treatment without the need for BMD, although BMD measurement may sometimes be appropriate, particularly in younger postmenopausal women.

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