key points

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In the past the management of osteoporosis centred on the use of diagnostic thresholds based on bone mineral density (BMD) measured at the spine or hip by dual x-ray absorptiometry (DXA). Previous guidance was based on an opportunistic case-finding strategy whereby the presence of clinical risk factors would prompt clinicians to measure BMD. Those patients with a BMD value that fell within the range of osteoporosis were considered for treatment.

More recently it has been found that the presence of several of these risk factors is associated with a fracture risk greater than can be accounted for by BMD alone. Assessment of fracture risk therefore needs to take into account specific risk factors that contribute to fracture risk as well as BMD.

NICE recommends that assessment of fracture risk should be considered in all women $\geq$ 65 and all men $\geq$ 75 years, and women < 65 and men <75 years if they have risk factors. When assessing an individual's risk of fracture, absolute risk should be estimated. Either FRAX (without a BMD value if a DXA scan has not been undertaken before) or QFracture should be used, within their allowed age ranges, to estimate 10-year predicted absolute fracture risk. BMD should not be routinely measured to assess fracture risk without prior assessment using FRAX (without a BMD value) or QFracture.

FRAX and QFracture do not give the same estimates of absolute risk. The reasons lie in the different calibrations used in the two models. In the UK model of FRAX, as in all the other models of FRAX, the risk algorithm is superimposed on, or calibrated to, the epidemiology of fracture (and mortality) incidence in the UK. The QFracture output reflects the incidence of fracture contained within the primary care database used to derive the tool.

NICE states in the guideline that the measurement of BMD by DXA should be considered in people whose fracture risk is in the region of an intervention threshold following risk assessment with FRAX (without a BMD value) or QFracture. It is clear that given the differences in outputs from the two tools that separate thresholds will be needed for FRAX and QFracture.

The measurement of BMD contributes an additional, independent risk factor for better characterisation of fracture risk in the individual patient and there is a need to be able to integrate the BMD result with the other risk factors. As BMD is not an entry variable for QFracture, NICE recommends the recalculation of absolute risk using FRAX once the BMD value is known.