

Risk assessment of fragility fracture:

NICE guideline

INTRODUCTION

Fragility fractures result from mechanical forces that would not ordinarily result in fracture. The World Health Organization (WHO) has quantified this as forces equivalent to a fall from a standing height or less. Reduced bone density is a major risk factor for fragility fractures. The prevalence of osteoporosis increases markedly with age, from 2% at 50 years to more than 25% at 80 years. There are a number of pharmacological treatments available for the primary or secondary prevention of fragility fractures. These primarily target bone loss and assessment for treatment has largely been based on the measurement of bone mineral density (BMD). However, the majority of fragility fractures occur in people who do not have osteoporosis. Factors, including lifestyle factors such as smoking and high alcohol intake, the use of oral or systemic glucocorticoids, sex, previous fractures, and disorders such as rheumatoid arthritis all increase the risk of fragility fracture.

This new guideline from NICE assesses the value of risk prediction tools, with and without BMD, for prediction of fracture risk.¹

THE GUIDELINE

The guideline recommends the use of absolute risk of fragility fracture and recommends use of one of two tools: FRAX^{®2} or QFracture^{®3}. Both of these tools provide estimation of absolute fracture risk over a 10-year period. They have slightly different age ranges: the current age ranges are FRAX 40–90 years and QFracture 30–84 years.

Fracture risk is closely correlated with age and the guideline recommends an age-related approach to assessment.

Assessment is suggested for all females over 65 years and all males over 75 years. Above the age limit of the tools, people should be considered to be at high risk. Although the available tools do include

people over the age of 80 years, the guideline advises healthcare practitioners to be cautious about 10-year risk in older people as this may underestimate an individual's short-term risk.

Females between 50 and 65 years and males between 50 and 75 years should be assessed if they have additional risk factors: previous fragility fracture, current or frequent recent use of oral or systemic glucocorticoids, a known secondary cause of osteoporosis, a history of falls, a family history of hip fracture, low body mass index, smoking or weekly alcohol intake greater than 14 units for females and 21 units for males.

Routine assessment of risk is not recommended for people under 50 years unless they have major risk factors, as they are unlikely to be at high risk of fragility fracture. The suggested high risk groups are current or recent use of oral or systemic glucocorticoids, untreated premature menopause, or previous fragility fracture.

Following assessment with FRAX or QFracture, BMD measurement is recommended only for people whose fracture risk is in the region of the threshold for an intervention. The absolute fracture risk should then be recalculated using FRAX. The evidence reviewed for the guideline indicated that BMD could result in reclassification of risk, but this occurred mainly around intervention thresholds.

Repeat assessment of fracture risk should not take place for at least 2 years and only then if the original result was near the threshold. Recalculation should be considered if there is a change in risk factors.

Although FRAX or QFracture may include a risk factor in the tool, healthcare professionals should be aware that the risk may be an underestimate depending on how the tool treats the risk factor. The guideline suggests that risk tools are likely to provide an underestimate of

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risk when a previous fracture has been a vertebral fracture, the alcohol intake is very high, the person has secondary causes of osteoporosis, or is receiving high-dose oral or high-dose systemic glucocorticoid (more than 7.5 mg prednisolone or equivalent per day for 3 months or longer).

Fracture risk may also be affected by factors that may not be included in the risk tool, for example living in a care home, or taking drugs that may impair bone metabolism such as anticonvulsants, selective serotonin reuptake inhibitors, thiazolidinediones, proton pump inhibitors, and antiretroviral drugs.

Fracture risk in people less than 40 years should be assessed using BMD. Assessment should only be done in those with major risk factors such as history of multiple fragility fractures, major osteoporotic fracture, or current/recent use of high-dose oral or high-dose systemic glucocorticoid. This is >7.5 mg prednisolone or equivalent per day for 3 months or longer. The measurement of BMD may also be appropriate in individuals who are about to start treatments that may rapidly reduce bone density such as hormone deprivation treatment for prostate or breast cancer.

COMMENT

The guideline changes the basis for assessment of fracture risk to the use of absolute risk rather than relative risk and recommends more targeted use of BMD. The risk tools also highlight modifiable risks such as smoking and alcohol intake. One potential challenge to implementing the guideline is that no recommendations are currently available about what to

do with the risk score once calculated. Current technology appraisals from NICE use age, previous fracture, and BMD result when making recommendations about pharmacological interventions. These technology appraisals are expected to be updated in light of this guideline.

Provenance

Freely submitted; externally peer reviewed.

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