NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Osteoporosis: risk assessment

Draft for consultation, January 2026

This guideline covers identifying adults who should be assessed for fragility fracture risk, methods of risk assessment, identifying vertebral fractures, treatment criteria and repeat risk assessment (timing and methods) for people not receiving treatment. It aims to provide guidance on the selection and use of risk assessment tools in the care of adults at risk of fragility fractures in all NHS settings. Recommendations on treatment, including treatment monitoring and review, will be published in a second update (see update information for further details).

This guideline will update NICE guideline CG146 (published August 2012).

Who is it for?

- Health and social care practitioners providing NHS-commissioned services
- Commissioners of health and social care services
- Adults at risk of fragility fractures, their families, and carers

What does it include?

- the recommendations
- recommendations for research
- rationale and impact sections that explain why the committee made the 2026 recommendations and how they might affect practice.

Information about how the guideline was developed is on the guideline's webpage. This includes the evidence reviews, the scope, details of the committee and any declarations of interest.

Contents

1 Identifying adults for fragility fracture risk assessment

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

NICE guidance uses gender-inclusive language to describe population groups, where possible. For this guideline, we have reviewed the evidence but have been unable to make specific recommendations for trans and non-binary people because the information available at the time of development for these groups of people was too limited.

Healthcare professionals should use their clinical judgement when implementing sex-specific recommendations, taking into account the individual's circumstances, needs and preferences, and ensuring all people are treated with dignity and respect throughout their care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

Health and social care professionals should follow our general guidelines for people delivering care:

- Patient experience in adult NHS services
- People's experience in adult social care services
- Shared decision making
- Medicines adherence
- Medicines optimisation
- Multimorbidity
- Decision making and mental capacity

1.1 Risk factors for fragility fractures

People aged 50 and over

1.1.1 Assess fragility fracture risk in people aged 50 and over who have any of the following risk factors:

- a previous fragility fracture
- current or frequent use of systemic glucocorticoids (for example, a daily dose of 5 mg or more prednisolone or equivalent for over 3 months, or intermittent use of higher doses).

1.1.2 Consider assessing fragility fracture risk:

- in all women aged 65 and over and all men aged 75 and over
- in women aged 50 to 64 and men aged 50 to 74 if any of the following risk factors are present:
  - history of 2 or more falls in the last year (see also NICE's guideline on falls)
  - history of hip fracture in a first-degree relative (particularly if the family member was aged under 80 at the time of hip fracture)
  - low body mass index (BMI; less than 18.5 kg/m^2)
  - smoking
  - alcohol intake of more than 14 units per week
  - other causes of secondary osteoporosis (see table 1).

Table 1 Other causes of secondary osteoporosis

Type of cause	Examples
Endocrine	• Hypogonadism in either men or women (including untreated early menopause or premature ovarian insufficiency, and treatment with aromatase inhibitors or androgen deprivation therapy) • Hyperthyroidism • Hyperparathyroidism (see also NICE's guideline on primary hyperparathyroidism) • Hyperprolactinaemia • Cushing's disease • Diabetes
Gastrointestinal	• Coeliac disease (see also NICE's guideline on coeliac disease) • Crohn's disease and other inflammatory bowel diseases • Chronic liver disease • Chronic pancreatitis (see also NICE's guideline on pancreatitis) • Other causes of malabsorption
Rheumatological	• Rheumatoid arthritis • Spondyloarthritis (see also NICE's guideline on spondyloarthritis in over 16s) • Other inflammatory arthropathies
Haematological	• Multiple myeloma • Haemoglobinopathies • Systemic mastocytosis
Respiratory	• Cystic fibrosis (see also NICE's guideline on cystic fibrosis) • Chronic obstructive pulmonary disease (COPD; see also NICE's guideline on COPD in over 16s)
Other	• Inherited metabolic diseases known to be associated with osteoporosis such as homocystinuria • Eating disorders related to low BMI such as anorexia (see also the section on low bone mineral density in people with anorexia nervosa in NICE's guideline on eating disorders) • Chronic kidney disease (see also NICE's guideline on chronic kidney disease) • Prolonged immobility • Taking other medicines associated with increased fracture risk (for example anticonvulsants, selective serotonin reuptake

	inhibitors, thiazolidinediones, proton pump inhibitors and antiretroviral medicines)

People aged under 50

1.1.3 Assess fragility fracture risk in people aged under 50 who have had either:

- a previous hip or vertebral fragility fracture or
- 2 or more major osteoporotic fragility fractures.

1.1.4 Consider assessing people aged under 50 who do not meet the criteria in recommendation 1.1.3 only if they have a different major risk factor, such as:

- a previous non-hip, non-vertebral fragility fracture
- current or frequent use of systemic glucocorticoids (for example, a daily dose of 5 mg or more prednisolone or equivalent for over 3 months, or intermittent use of higher doses)
- untreated early menopause or premature ovarian insufficiency.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on risk factors for fragility fracture.

Full details of the evidence and the committee's discussion are in evidence review A: risk factors for fragility fracture.

1.2 Electronic health records

NICE has made a research recommendation on using electronic health records to help identify adults who should have a fragility fracture risk assessment.

For a short explanation of why the committee made this recommendation for research, see the rationale section on electronic health records.

Full details of the evidence and the committee's discussion are in evidence review B: searching and analysis of electronic health records.

1.3 Assessing fragility fracture risk

1.3.1 Offer a dual-energy X-ray absorptiometry (DXA) scan to measure bone mineral density (BMD) when assessing fragility fracture risk (unless not needed for treatment decisions or monitoring) in people aged between 50 and 90 who have had either:

- a previous hip or vertebral fragility fracture or
- 2 or more fragility fractures.

1.3.2 When assessing fragility fracture risk with a risk prediction tool (FRAX or QFracture) determine the 10-year risk of major osteoporotic fracture.

1.3.3 Use either FRAX or QFracture when assessing fragility fracture risk in people aged between:

- 50 and 90 who do not meet the criteria in recommendation 1.3.1
- 40 and 49.

1.3.4 Use QFracture when assessing fragility fracture risk in people aged between 30 and 39.

1.3.5 Complete a full clinical risk assessment alongside the risk prediction tool because FRAX and QFracture do not include all factors associated with an increased risk of fracture (for example, if a person is taking medicines associated with accelerated bone loss such as aromatase inhibitors or androgen deprivation therapy).

1.3.6 Use the same risk prediction tool throughout a person's care because FRAX and QFracture assess risk differently (for example, alcohol intake).

1.3.7 When assessing risk, take into account that fragility fracture risk is decreased while taking hormone replacement therapy (HRT) and this benefit:

- is maintained during treatment but decreases once treatment stops
- may continue for longer in those who take HRT for longer.

(Use the discussion aid on HRT for the incidence of fragility fractures in women in NICE's guideline on menopause.)

1.3.8 Use clinical judgement to decide how to assess fragility fracture risk for people aged over 90.

1.3.9 When assessing fragility fracture risk in people aged under 30:

- seek specialist advice and
- consider measuring BMD with a DXA scan.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on assessing fragility fracture risk.

Full details of the evidence and the committee's discussion are in evidence review C: validity of fragility fracture risk prediction tools and the cost effectiveness section in evidence review E: effectiveness of fracture prediction tools.

1.4 Bone density assessment

Fracture risk threshold for BMD measurement with a DXA scan

1.4.1 Consider BMD measurement with a DXA scan to help guide treatment decisions for people with a 10-year risk of major osteoporotic fracture of 10% or more.

DXA scans before treatment

1.4.2 Ensure a baseline BMD measurement with a DXA scan is done when starting treatment, except if not possible (see recommendation 1.4.4).

1.4.3 If there is likely to be a significant delay in getting a DXA scan, then consider:

- fast-tracking people for a DXA scan if they are likely to need anabolic (bone-forming) treatment because a baseline BMD measurement is needed to determine treatment eligibility or

- starting antiresorptive treatment (these slow the rate of bone breakdown) if the person is unlikely to need anabolic treatment.

If a DXA scan is not possible or not needed

1.4.4 Make a shared decision with the person about whether to treat (see the section on deciding whether treatment is appropriate) without a DXA scan for people:

- who have a 10-year risk of major osteoporotic fracture of 10% or more and for whom a DXA scan is not tolerated or technically feasible, or
- for whom a DXA scan is not needed for treatment decisions or monitoring.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on bone density assessment.

Full details of the evidence and the committee's discussion are in evidence review D: accuracy of bone assessment methods and evidence review E: effectiveness of fragility fracture risk prediction tools.

Identifying vertebral fragility fractures

1.5 DXA-based vertebral fracture assessment (VFA) scan

1.5.1 Consider doing a VFA when doing a DXA scan in people aged 50 and over.

1.5.2 Consider doing a VFA when doing a DXA scan in people aged under 50 who have any of the following:

- a previous major osteoporotic fragility fracture
- signs or symptoms of vertebral fracture, for example:
  - back pain or radiating rib pain

  - change in body shape (for example, physical height loss, or changes suggestive of spinal deformity such as rounded shoulders or exaggerated kyphosis)
  - suspicion of vertebral fracture from the DXA scan
- current or frequent use of systemic glucocorticoids (for example, a daily dose of 5 mg or more prednisolone or equivalent for over 3 months, or intermittent use of higher doses)
- exceptionally low BMD for their age from the DXA scan.

1.5.3 Do not do a VFA when doing a DXA scan if:

- the person has had spinal imaging in the past 3 months and has no symptoms of vertebral fracture or
- scoliosis may affect the interpretation or
- BMI exceeds the threshold for reliable reading as per local guidelines.

1.5.4 Do not routinely do spinal imaging after positive VFA to confirm the fracture.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on identifying vertebral fractures.

Full details of the evidence and the committee's discussion are in evidence review F: diagnostic accuracy of Vfrac and evidence review G: diagnosing vertebral fractures with DXA based VFA.

1.6 Using artificial intelligence to identify vertebral fractures

NICE has published early value assessment guidance on artificial intelligence (AI) technologies to aid opportunistic detection of vertebral fragility fractures that can be used in the NHS, while more evidence is generated.

Deciding whether treatment is appropriate

1.7 Criteria for treatment

1.7.1 Make a shared decision with the person about whether to treat based on:

- 10-year risk of major osteoporotic fragility fracture obtained from FRAX or QFracture (if available)
- BMD score (if available)
- the number and skeletal sites of previous fragility fractures, especially if they have had a hip or vertebral fracture
- time since last fragility fracture
- clinical assessment of risk factors.

1.7.2 Consider pharmacological treatment for men aged 50 and over and women who have experienced menopause, if the criteria for a DXA scan are met (see recommendations 1.3.1 and 1.4.1) and they have any of following:

- a previous hip or vertebral fragility fracture
- BMD T-score of -2.5 or less
- BMD T-score of -1.5 or less and any of the following:
  - any fragility fracture
  - current or frequent use of systemic glucocorticoids (for example, a daily dose of 5 mg or more prednisolone or equivalent for over 3 months, or intermittent use of higher doses)
  - medicines or other factors known to be associated with accelerated bone loss (for example, aromatase inhibitors or androgen deprivation therapy, or having primary hyperparathyroidism not treated with surgery)
- BMD T-score of -1.0 or less and both of the following:
  - aged over 65 and
  - current use of high-dose systemic glucocorticoids (for example, 15 mg or more a day).

1.7.3 Seek advice from a specialist regarding management for men aged between 30 and 50 and women who have not experienced menopause, if the criteria for a DXA scan are met (see recommendation 1.4.1) and they have either:

- a previous major osteoporotic fragility fracture or
- significant decrease in BMD on serial measurements.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on deciding whether treatment is appropriate.

Full details of the evidence and the committee's discussion are in evidence review E: effectiveness of fragility fracture risk prediction tools.

Follow up for people not having treatment

1.8 People who have declined or delayed treatment

1.8.1 Advise people who have declined or delayed treatment:

- when and how to re-access the service and
- to contact their GP if they change their mind or their clinical circumstances change.

1.9 People whose condition did not meet the criteria for treatment

1.9.1 For people with a 10-year risk of major osteoporotic fracture of less than 10%, consider reassessing their risk using the same risk prediction tool used at the baseline assessment:

- when there is any change in their clinical circumstances (for example, a fragility fracture or other new risk factor as listed in the section on risk factors for fragility fractures) or
- at 5 years if there are no changes in clinical circumstances.

1.9.2 For people with a 10-year risk of major osteoporotic fracture of 10% or more, or who had a DXA scan to assess their bone health, but whose condition did not meet the criteria for treatment:

- consider reassessing their BMD with a DXA scan:
  - within 2 to 3 years if their condition was close to meeting the criteria for treatment, especially if they have a significant risk of accelerated bone loss
  - if there is any change in their clinical circumstances (for example, a fragility fracture or other new risk factor as listed in the section on risk factors for fragility fractures) unless this is within 2 years of their most recent DXA scan
  - at 5 years if there are no changes in clinical circumstances.
- consider their need for treatment without reassessing their BMD with a DXA scan if their clinical circumstances change within 2 years of their most recent DXA scan.

1.10 Timing of follow up DXA scans

1.10.1 Do not routinely repeat a DXA scan within 2 years of the person's most recent DXA scan unless there are exceptional circumstances.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on follow up for people not having treatment.

Full details of the evidence and the committee's discussion are in evidence review H: fracture risk monitoring in non-treatment groups.

Terms used in this guideline

This section defines terms that have been used in a particular way for this guideline.

First-degree relative

Parent, child, or sibling.

Fragility fracture

Fractures associated with osteoporosis, typically caused by low impact injuries that would not normally cause a fracture (such as a fall from standing height). Fragility fractures can occur spontaneously, in people with no history of injury. Most vertebral fragility fractures are not caused by falls, instead happening after activities involving lifting, twisting, or bending. Fragility fractures most commonly affect the spine (vertebral column), hip, shoulder (proximal humerus), and wrist (distal forearm). However, fragility fractures can happen in any bone, and some fractures (for example pelvis and rib fractures) are just as strongly associated with reduced bone strength as the most common fragility fractures.

Major osteoporotic fragility fractures

Fragility fractures in the spine, hip, shoulder, and wrist.

Recommendations for research

The guideline committee has made the following recommendations for research.

Key recommendations for research

1 Using electronic health records to help identify adults who should have a fragility fracture risk assessment

What is the clinical and cost effectiveness of searching and analysing electronic health records and social care records (including GP practice lists) to help identify adults who should have a fragility fracture risk assessment?

For a short explanation of why the committee made this recommendation for research, see the rationale section on electronic health records.

Full details of the evidence and the committee's discussion are in evidence review B: searching and analysis of electronic health records.

2 Risk prediction tools

What is the validity of the CFracture risk prediction tool for predicting the risk of fragility fractures in adults, including those who have had a previous fragility fracture?

For a short explanation of why the committee made this recommendation for research, see the rationale and impact section on assessing fragility fracture risk.

Full details of the evidence and the committee's discussion are in evidence review C: validity of fragility fracture risk prediction tools.

3 Bone assessment methods

What is the accuracy of radiofrequency echographic multi spectrometry (REMS) for predicting fragility fractures in adults, including those who have had a previous fragility fracture?

For a short explanation of why the committee made this recommendation for research, see the rationale and impact section on bone density assessment.

Full details of the evidence and the committee's discussion are in evidence review D: accuracy of bone assessment methods.

4 DXA-based VFA scan

What is the diagnostic accuracy of DXA-based VFA scan for identifying vertebral fractures?

For a short explanation of why the committee made this recommendation for research, see the rationale and impact section on identifying vertebral fragility fractures.

Full details of the evidence and the committee's discussion are in evidence review G: diagnosing vertebral fractures with DXA based VFA.

5 Identifying vertebral fractures

What is the clinical and cost effectiveness of Vfrac (vertebral fracture clinical decision tool) to identify people with a vertebral fracture?

For a short explanation of why the committee made this recommendation for research, see the rationale and impact section on assessing fragility fracture risk.

Full details of the evidence and the committee's discussion are in evidence review F: diagnostic accuracy of Vfrac.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Risk factors for fragility fractures

Recommendations 1.1.1 to 1.1.4

Why the committee made the recommendations

The committee agreed the risk factors for fragility fractures included in the 2012 NICE guideline on osteoporosis were still relevant to current practice and agreed to keep these in the recommendations.

People aged 50 and over

The committee agreed that most people at risk of fragility fractures are aged 50 and over. There was also evidence to support doing a risk assessment if they have had a previous fragility fracture or they are currently using, or frequently use, systemic glucocorticoids.

The committee agreed that there is likely to be significantly higher risk of further fragility fracture in people who have previously had one. They also noted fracture liaison services should systematically identify people aged 50 and over who have had a fragility fracture with the aim of reducing further fractures. People will only have been assessed for future fracture risk at the time of the injury if it was diagnosed as a fragility fracture.

Ongoing or high-dosage use of systemic glucocorticoids leads to weaker bones and may cause glucocorticoid-induced osteoporosis. The committee agreed that people who use these are likely to be at significantly higher risk of fragility fracture and therefore should be risk assessed. FRAX assesses risk when glucocorticoids are used for more than 3 months at a dose of prednisolone of 5 mg daily or more (or equivalent) and the committee agreed to use this as a starting point for risk. The risk increases with higher doses. They also noted that the NICE guideline on chronic obstructive pulmonary disease in over 16s recommends monitoring for osteoporosis when using these medicines.

For all other risk factors the committee agreed that there was no evidence to change the 2012 recommendation. Therefore, the committee agreed that risk assessment could not be strongly recommended and should only be considered for these groups. The committee agreed to make some minor changes to recommendation wording to recognise that, for family history as a risk factor, recent evidence suggests the risk is greater if the relative was under the age of 80 at the time of hip fracture. The term 'family history' was also changed to 'first-degree relative' to avoid any misunderstanding about a link with other relatives.

We reviewed the evidence but were unable to make specific recommendations for trans and non-binary people because the information available at the time of development for these groups of people was too limited.

People aged under 50

The committee agreed osteoporosis is uncommon in people aged under 50 and therefore this group should not be routinely assessed. However, as with people aged 50 and over they also agreed that if someone was known to have had a hip or vertebral fragility fracture, or 2 or more major osteoporotic fragility fractures then they should be assessed for the risk of further fracture. These fractures have a significant impact on a person's quality of life and may mean the person is at risk of having another fracture. Similarly, people who currently, or frequently, use systemic glucocorticoids and those with untreated early menopause or premature ovarian insufficiency could be at increased risk of fracture despite being under 50.

How the recommendations might affect practice

The recommendations remain largely unchanged from the 2012 NICE guideline on osteoporosis however risk assessment rates vary, particularly in people who have not had a fragility fracture. These recommendations may raise awareness and increase the number of people coming into the healthcare system. If this is the case there may be increased resource use related to risk assessment, dual-energy X-ray absorptiometry (DXA) scans, and treatment, but savings because of reduced fragility fractures in the longer term.

Return to recommendations

Electronic health records

Why the committee made no recommendations

No evidence was identified for electronic health records so the committee made a recommendation for research on using electronic health records to help identify adults who should have a fragility fracture risk assessment. The committee agreed that electronic health records have the potential to help make it easier to identify people at risk of fragility fracture who may benefit from treatment.

Return to recommendations

Assessing fragility fracture risk

Recommendations 1.3.1 to 1.3.9

Why the committee made the recommendations

People aged between 50 and 90 who have had a previous hip or vertebral fragility fracture or 2 or more fragility fractures are likely to have a risk score above the threshold for a DXA scan. Therefore, the committee agreed that there was no need to recommend using a risk prediction tool and instead bone mineral density (BMD) should be measured with a DXA scan to help guide treatment decisions. Risk may still be calculated with risk prediction tools for some people in this group if it is useful for clinical decision making or communicating risk to the person. There may be some people, particularly older people, where it may be clear their condition needs

treatment and the DXA scan is not needed to decide whether to treat, which treatment to give or for monitoring.

When assessing risk in other people in this age category or in people aged between 30 and 49, the committee agreed that using risk prediction tools first is best because it helps avoid unnecessary DXA scans. The 2012 NICE guideline on osteoporosis recommended the use of either FRAX or QFracture risk prediction tools to assess risk of fracture. Recent evidence has not shown an advantage of using 1 tool over the other, so both continue to be recommended in this update. FRAX only applies to people over the age of 40 therefore the committee recommended using QFracture in people between the ages of 30 and 39.

The committee emphasised the importance of doing a full clinical risk assessment because neither tool includes all factors associated with an increased risk of fracture. FRAX and QFracture also assess risk differently, for example, quantity dependent risk factors may not be treated as continuous variables. Alcohol intake is measured in FRAX as either over or under 3 units per day, whereas in QFracture there are several levels of alcohol intake. FRAX also has fewer criteria than QFracture so is less detailed. QFracture also includes hormone replacement therapy (HRT) use in its assessment. The committee agreed that when doing the risk assessment, it is important to take into account that HRT can reduce the risk of fracture.

Risk prediction tools may not provide an accurate assessment of risk in people over 90 and the benefits of treatment may be outweighed by other factors. Therefore, the committee agreed healthcare professionals would need to use their judgement on how to assess risk for this age group. The committee decided that this should apply over the age of 90 because FRAX and QFracture only estimate the 10-year risk of major osteoporotic fragility fracture or hip fracture up to the age of 90. Although QFracture can provide a risk score for people up to the age of 99 it covers fewer years. For example, it will estimate an 8-year risk score for people aged 92 or a 7-year risk score for people aged 93.

When assessing fragility fractures in people aged under 30 the committee agreed that specialist advice should be sought to consider the impact of potential causes or risk factors on the person’s fracture risk. They agreed it is important to treat the

underlying cause before any osteoporosis treatments are considered. The committee also agreed that a DXA scan should be considered at the same time because it is likely that the specialist would use the results in their review.

A single study was found on the risk prediction tool CFracture (developed in 2023) that uses the same risk factors as QFracture. A recommendation for research to validate the CFracture tool was made because there is limited evidence and the calculator is not currently available. There was 1 study (limited to women aged 65 and over) on the vertebral fracture clinical decision tool (Vfrac) that was developed to identify people with a suspected vertebral fracture. The committee made a recommendation for research on identifying vertebral fractures because there is limited evidence.

How the recommendations might affect practice

The recommendation to go straight to a DXA scan in people with a hip or vertebral fragility fracture or 2 or more fragility fractures without needing a risk assessment first may be a change in practice in some areas. It is considered unlikely to result in a substantial resource impact to the NHS however because an appointment would still be needed to discuss referral for a DXA scan and DXA scan referral numbers are likely to be similar.

The recommendation about choice of risk prediction tool reflects current practice and recommendations from the 2012 NICE guideline on osteoporosis.

The costs of using FRAX and QFracture are similar because they take a similar amount of time to complete, and both have freely available online calculators.

Return to recommendations

Bone density assessment

Recommendations 1.4.1 to 1.4.4

Why the committee made the recommendations

Most of the evidence to assess fracture risk was on DXA scans and this is the method used in current practice. The evidence for other bone density assessment techniques was limited and did not support a change to current practice. A single

study found possible utility using radiofrequency echographic multi spectrometry (REMS), an ultrasound-based bone density assessment technique, and a recommendation for research on bone assessment methods was made.

Fracture risk threshold for BMD measurement with a DXA scan

A 10-year major osteoporotic fracture risk of 10% or more was used to decide who should have a DXA scan (if they did not meet the criteria for recommendation 1.3.1 in the section on assessing fragility fracture risk). The decision on this threshold was made by committee consensus after consideration of various risk thresholds and their impact. The committee agreed that a 5% threshold could lead to over investigation with DXA scans and increased burden on the healthcare system, while a 20% threshold could lead to missed opportunities for early treatment and prevention of fragility fractures. There was also uncertainty about treatment benefits at lower risk levels because people included in treatment trials were not likely to have a risk score below 10%. A single threshold was considered to have advantages over age-dependent thresholds because it was simpler to implement for non-specialists, and this may improve the implementation of risk assessment.

DXA scans before treatment

BMD measurement can inform decisions about whether treatment is appropriate, inform discussions with people about the need for treatment, impact treatment choice and provide a baseline for future monitoring of treatment.

A BMD assessment is needed before an anabolic treatment can be started. The committee noted that it is not advisable to start an antiresorptive treatment then stop and switch to an anabolic treatment. Therefore, the committee recommended that people who are likely to need an anabolic treatment could be fast-tracked for a DXA scan, if this is likely to be more than 6 weeks (in line with the NHS England 6-week diagnostic target), to prevent a delay to the start of their treatment.

If it is unlikely that anabolic treatment will be needed, then the committee agreed that the person can start antiresorptive treatment while waiting for a DXA scan. They made this recommendation because BMD is unlikely to change much within 2 years, and they agreed it is important that treatment is not delayed if a DXA scan is not

available. A DXA score would still be needed as a baseline to compare with future measurements of BMD when assessing the effectiveness of treatment.

If a DXA scan is not possible or not needed

DXA scans are not always technically feasible (for example, if there is a metal implant in both the hip and lumbar spine), or tolerated (for example, people for whom a DXA scan is not suitable, such as people who are living with frailty or are housebound). In those circumstances the committee agreed that treatment should be considered based on the other factors, listed in recommendation 1.7.1 in the section on criteria for treatment, if the person's condition has met the criteria for a DXA scan. This is to ensure people are not left without treatment because no DXA score is available.

DXA scans may not always be needed to decide whether to treat. This can be the case for older people, who are likely to have a low BMD and high risk of fracture. If a DXA scan is not needed to decide whether to treat, which treatment to give or for monitoring then the committee agreed a discussion should be had with the person on whether to treat without a DXA scan.

How the recommendations might affect practice

Using a DXA scan to assess BMD reflects current practice.

The recommendation to use a 10-year major osteoporotic fracture risk estimate threshold of 10% to determine eligibility for DXA scans in people with a single non-hip non-vertebral fragility fracture or no prior fracture but other clinical risk factors is a change from the recommendation in the 2012 NICE guideline on osteoporosis and is common current practice. Many areas will currently be using the National Osteoporosis Guideline Group (NOGG) age-dependent criteria for BMD assessment. This updated guidance is likely to result in lower DXA-related resource use if risk assessment rates remain the same.

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Identifying vertebral fragility fractures

Recommendations 1.5.1 to 1.5.4

Why the committee made the recommendations

Several studies suggested that doing a vertebral fracture assessment (VFA) when doing a DXA scan had a low risk of misdiagnosing vertebral fractures with high specificity reported in the per-vertebral analysis from low-quality evidence. So, if DXA-based VFA positively identifies a person as having a fracture, it is highly likely to be accurate. Because of this the committee recommended that if a person's VFA is positive then there is no need to do further spinal imaging.

The committee discussed that vertebral fractures are the most common type of osteoporotic fracture but people often have no symptoms and so they can go undiagnosed. Identifying a vertebral fracture is important because it may mean someone's condition is eligible for treatment that would not be otherwise or that a different treatment is needed. VFA adds a few minutes to a DXA scan and a few additional minutes for reviewing and reporting, but it was found to be cost effective in the studies. It could reduce reliance on conventional radiography to identify vertebral fractures and exposure to higher doses of ionising radiation. From a person's perspective, it is also beneficial to have all relevant scans on the same visit rather than having a DXA scan and then needing to return for further VFA scans.

Therefore, the committee agreed that people aged 50 and over who are having a DXA scan should also be considered for VFA at the same visit.

People under the age of 50 are less likely to have a vertebral fracture so the committee agreed that DXA-based VFA should only be for those at high risk of having a vertebral fracture in this age group.

The committee agreed that DXA-based VFA should not be done if the person has had recent spinal imaging and no symptoms because it is unlikely to identify a fracture. They also agreed that it should not be done if the person has scoliosis or their BMI exceeds local guidelines because the scan results would not be easy to interpret accurately.

Most evidence on accuracy of DXA-based VFA scans uses older scanners and shows low specificity. Recent scanners have increased image quality and resolution, which should result in better accuracy (for both sensitivity and specificity) for

detecting vertebral fractures. Therefore, the committee made a research recommendation on the accuracy of DXA-based VFA.

How the recommendations might affect practice

Incorporating VFA scans into DXA scan appointments for people over 50 will be a change in practice. Currently VFA is limited to some groups of people or not used at all. Additional staff time will also be needed to carry out, review and report VFAs. There may also be additional staff training costs to enable expanded access. Increased capital investment is not anticipated because current DXA scanners have the capacity to do VFA.

In some areas it is common to do spinal imaging to confirm a vertebral fracture identified on VFA. Where VFA is currently in use, the recommendation not to do this routinely is anticipated to reduce the number of confirmatory spinal images. Where VFA is not currently in use, the number of referrals for spinal images may increase slightly because a small proportion of VFA results may need a subsequent spinal image when there is uncertainty. Overall, a net reduction is spinal images is anticipated.

Increased use of VFA in the NHS is expected to increase identification of vertebral fractures, which are often missed in current practice. This is expected to result in increased and better targeted treatment that will reduce fractures.

The committee concluded that the overall financial impact of the new recommendations on the NHS is not likely to be significant over the long term.

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Deciding whether treatment is appropriate

Recommendations 1.7.1 to 1.7.3

Why the committee made the recommendations

The committee agreed that determining who would benefit from treatment is not straightforward. Based on their knowledge and experience they agreed that several factors need to be taken into account.

A person's 10-year risk of major osteoporotic fragility fracture obtained from FRAX or QFracture gives a percentage estimate of how likely it is they will develop a hip, (symptomatic) spine, shoulder, or wrist fragility fracture. However, the committee agreed predicted risk alone should not be used to determine whether treatment is appropriate, beyond being used to determine eligibility for DXA scans. While it gives a probability of fracture, it still needs to be put into the context of a person's risk factors and clinical circumstances.

Previous fragility fractures increase the likelihood of getting another fracture. The committee agreed this is particularly the case when there have been multiple fragility fractures, or people have had a hip or vertebral fracture. There is also a higher risk after a recent fragility fracture, which reduces over time. Overall fracture risk increases with age; however, the magnitude of additional risk associated with recent fracture is more pronounced in younger people.

The committee discussed the role of BMD in deciding whether a person would benefit from treatment. They highlighted that BMD is a continuum and that the lower a person's BMD the lower their bone strength. They agreed that while the World Health Organization use BMD T-score to define osteoporosis and osteopenia (T-score of -2.5 or less for osteoporosis, and between -2.5 and -1 for osteopenia) there is no specific BMD threshold below which treatment becomes effective. They highlighted that most of the evidence relating to treatment is in people with a low BMD and that much of that evidence is in people with a BMD T-score of -2.5 or less. Overall, the committee agreed that a BMD measurement allows clinicians and people at risk of fragility fracture to make informed choices about whether treatment is appropriate, and which one would be the best option.

For men aged 50 and over and women who have experienced menopause the committee made recommendations based on their own experience and expertise. They agreed that BMD T-score of -2.5 or less in most circumstances indicates a high risk of fracture and that treatment should be considered. It was less clear for people with osteopenia, and most people would not be at risk. However, treatment should be considered depending on certain risk criteria. People with a BMD T-score of -1.5 or less and a fragility fracture, current or frequent systemic glucocorticoid use, or medicines or secondary causes known to be associated with accelerated bone loss

are likely to be at increased risk and should be considered for treatment. People aged over 65 and taking high-dose systemic glucocorticoids were agreed to be at particularly high risk of fracture therefore the committee agreed that treatment should be considered for anyone meeting these criteria with osteopenia (BMD T-score of less than -1). The committee discussed what constituted a high dose of systemic glucocorticoids (for example, 15 mg or more a day) but could not define a specific dose because glucocorticoid-induced bone loss is dose dependent and is affected by other risk factors such as age.

Fragility fracture in men aged between 30 and 50 and women who have not experienced menopause is uncommon, therefore the committee agreed that specialist advice would be needed to establish the cause and consider the need for treatment if they have had a major osteoporotic fracture or significant decrease in BMD on serial measurements.

We were unable to make specific recommendations for trans and non-binary people because the information available at the time of development for these groups of people was too limited.

How the recommendations might affect practice

The committee discussed that, in current practice, criteria for DXA scans and for treatment vary locally but that in England they were most commonly based on NOGG guidance. They agreed that, based on the cost analysis, the new recommendations covering revised DXA scan and treatment criteria should be associated with lower DXA-related resource use than the approach based on NOGG guidance. Treatment-related resource use was not anticipated to increase and may decrease because of better targeting of treatment.

However, the committee highlighted that risk assessment rates are currently low, particularly in people who have not had a fragility fracture. If risk assessment increases, resource use associated with DXA scans and treatment will also increase because more people will be identified. This will be irrespective of which criteria for DXA scans and treatment are used. The committee reiterated the importance of limiting risk assessment in people who have not had a fragility fracture to those with

clinical risk factors to ensure resource use is best targeted to those most likely to benefit from treatment and to avoid unnecessary DXA scans.

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Follow up for people not having treatment

Recommendations 1.8.1 to 1.10.1

Why the committee made the recommendations

There was no evidence on follow up for people who had a risk assessment but had not started treatment. The committee agreed it was important to advise people when they could be reassessed and therefore made consensus recommendations.

People who have declined or delayed treatment

Some people whose condition has met the criteria for treatment may decline or delay treatment. There can be several reasons for this including:

- to try lifestyle changes first
- to treat a different condition first (such as dental problems or cancer)
- adverse effects of treatment
- personal reasons such as caring responsibilities.

In all of these situations, the committee agreed it was important to agree an appropriate time to revisit the person's decision with them, to ensure they have access to treatment should they wish, and to re-evaluate their risk because this will increase with aging, even if they have no new risk factor. Advice should also be given on who to contact should their clinical circumstances change, or they change their mind.

People whose condition did not meet the criteria for treatment

People who had a risk assessment but did not meet the criteria for treatment are still likely to be at increased risk of fracture compared with the general population, and this risk is likely to increase as they get older.

Therefore, the committee agreed that those who had a 10-year fracture risk of less than 10% should be considered for reassessment at 5 years, unless their clinical

circumstances change. This time period would be long enough to see an age-related change. However, if there was a change in clinical circumstances that would negatively impact bone health within 5 years, this could imply a change in risk and warrant reassessment. The committee agreed the same risk assessment tool used at the person's baseline assessment should be used again to give an accurate reflection of a change to their risk score.

The committee agreed that it was important to consider reassessing people who had 10-year risk of major osteoporotic fracture of 10% or more, or who had a DXA scan to assess their risk of fracture, but whose condition did not meet the criteria for treatment. They agreed their BMD should be assessed with a DXA scan rather than a risk assessment tool alone. This is because the effect of age means the person's 10-year risk of major osteoporotic fracture is unlikely to show a lower risk score whereas their bone density is likely to have changed with age. If a person's condition was originally close to meeting the criteria for treatment, then the committee agreed that 2 to 3 years was enough time for the person's bone density to have changed to a point that treatment may be advisable. This is particularly the case in people with a significant risk of accelerated bone loss including people with primary hyperparathyroidism not treated with surgery, or taking aromatase inhibitors, androgen deprivation therapy, or systemic glucocorticoids. For other people, the committee agreed there was no need to reassess them for 5 years unless their clinical circumstances change.

Timing of follow up DXA scans

The committee agreed that a DXA scan should not be repeated within 2 years. This is because this time period is too short to show a clinically meaningful change in BMD. There are exceptions to this, including if the person has a high risk of accelerated bone loss, for example if they are using medicines known to cause a reduction in bone density such as high-dose systemic glucocorticoids.

How the recommendations might affect practice

These recommendations are likely to be cost-neutral or cost-saving because they will not lead to a substantial change in clinical practice and may reduce unnecessary

reassessment in some areas by clarifying minimum durations between reassessments.

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Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on musculoskeletal conditions.

For details of the guideline committee see the committee member list.

Update information

July 2026: This guideline is an update of NICE guideline CG146 (published August 2012) and will replace it. We are updating this guideline in 2 stages:

- Part 1 (this update) covers identifying adults who should be assessed for fragility fracture risk, methods of risk assessment, identifying vertebral fractures, treatment criteria and repeat risk assessment (timing and methods) for people not receiving treatment.
- Part 2 will cover risk assessment for people with a learning disability, treatment (pharmacological, exercise, calcium, and vitamin D), and treatment monitoring and pauses.

During consultation on the part 1 guideline update we will also be consulting on a multiple technology appraisal (MTA) scope covering pharmacological treatments to reduce the risk of fragility fractures and osteoporosis.

Part 2 of the guideline update will incorporate recommendations from the MTA along with additional treatment practice recommendations to help healthcare professionals provide the most effective treatments (publication date TBC).

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