

1 **NATIONAL INSTITUTE FOR HEALTH AND CARE**
2 **EXCELLENCE**

3 **Guideline**

4 **Osteoporosis: risk assessment**

5 **Draft for consultation, January 2026**
6

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.

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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 1.1 Risk factors for fragility fractures

2 People aged 50 and over

3 1.1.1 Assess [fragility fracture](#) risk in people aged 50 and over who have any of
4 the following risk factors:

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

9 1.1.2 Consider assessing fragility fracture risk:

- 10 • in all women aged 65 and over and all men aged 75 and over
- 11 • in women aged 50 to 64 and men aged 50 to 74 if any of the following
12 risk factors are present:
 - 13 – history of 2 or more falls in the last year (see also [NICE's guideline](#)
14 [on falls](#))
 - 15 – history of hip fracture in a [first-degree relative](#) (particularly if the
16 family member was aged under 80 at the time of hip fracture)
 - 17 – low body mass index (BMI; less than 18.5 kg/m²)
 - 18 – smoking
 - 19 – alcohol intake of more than 14 units per week
 - 20 – other causes of secondary osteoporosis (see table 1).

21

1 **Table 1 Other causes of secondary osteoporosis**

Type of cause	Examples
Endocrine	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Rheumatoid arthritis • Spondyloarthritis (see also NICE's guideline on spondyloarthritis in over 16s) • Other inflammatory arthropathies
Haematological	<ul style="list-style-type: none"> • Multiple myeloma • Haemoglobinopathies • Systemic mastocytosis
Respiratory	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)
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1 **People aged under 50**

2 1.1.3 Assess fragility fracture risk in people aged under 50 who have had
3 either:

- 4 • a previous hip or vertebral fragility fracture or
- 5 • 2 or more [major osteoporotic fragility fractures](#).

6 1.1.4 Consider assessing people aged under 50 who do not meet the criteria in
7 recommendation 1.1.3 only if they have a different major risk factor, such
8 as:

- 9 • a previous non-hip, non-vertebral fragility fracture
- 10 • current or frequent use of systemic glucocorticoids (for example, a daily
11 dose of 5 mg or more prednisolone or equivalent for over 3 months, or
12 intermittent use of higher doses)
- 13 • 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](#).

14 **1.2 Electronic health records**

15 NICE has made a [research recommendation on using electronic health records to](#)
16 [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 **1.3 Assessing fragility fracture risk**

2 1.3.1 Offer a dual-energy X-ray absorptiometry (DXA) scan to measure bone
3 mineral density (BMD) when assessing [fragility fracture](#) risk (unless not
4 needed for treatment decisions or monitoring) in people aged between 50
5 and 90 who have had either:

- 6
 - a previous hip or vertebral fragility fracture or
 - 7 • 2 or more fragility fractures.

8 1.3.2 When assessing fragility fracture risk with a risk prediction tool ([FRAX](#) or
9 [QFracture](#)) determine the 10-year risk of major osteoporotic fracture.

10 1.3.3 Use either FRAX or QFracture when assessing fragility fracture risk in
11 people aged between:

- 12
 - 50 and 90 who do not meet the criteria in recommendation 1.3.1
 - 13 • 40 and 49.

14 1.3.4 Use QFracture when assessing fragility fracture risk in people aged
15 between 30 and 39.

16 1.3.5 Complete a full clinical risk assessment alongside the risk prediction tool
17 because FRAX and QFracture do not include all factors associated with
18 an increased risk of fracture (for example, if a person is taking medicines
19 associated with accelerated bone loss such as aromatase inhibitors or
20 androgen deprivation therapy).

21 1.3.6 Use the same risk prediction tool throughout a person's care because
22 FRAX and QFracture assess risk differently (for example, alcohol intake).

23 1.3.7 When assessing risk, take into account that fragility fracture risk is
24 decreased while taking hormone replacement therapy (HRT) and this
25 benefit:

- 26
 - is maintained during treatment but decreases once treatment stops
 - 27 • may continue for longer in those who take HRT for longer.

28

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

3 1.3.8 Use clinical judgement to decide how to assess fragility fracture risk for
4 people aged over 90.

5 1.3.9 When assessing fragility fracture risk in people aged under 30:

- 6
- seek specialist advice and
 - 7 • 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](#).

8 **1.4 Bone density assessment**

9 **Fracture risk threshold for BMD measurement with a DXA scan**

10 1.4.1 Consider BMD measurement with a DXA scan to help guide treatment
11 decisions for people with a 10-year risk of major osteoporotic fracture of
12 10% or more.

13 **DXA scans before treatment**

14 1.4.2 Ensure a baseline BMD measurement with a DXA scan is done when
15 starting treatment, except if not possible (see recommendation 1.4.4).

16 1.4.3 If there is likely to be a significant delay in getting a DXA scan, then
17 consider:

- 18
- fast-tracking people for a DXA scan if they are likely to need anabolic
19 (bone-forming) treatment because a baseline BMD measurement is
20 needed to determine treatment eligibility or

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

3 **If a DXA scan is not possible or not needed**

4 1.4.4 Make a shared decision with the person about whether to treat (see the
5 [section on deciding whether treatment is appropriate](#)) without a DXA scan
6 for people:

- 7 • who have a 10-year risk of major osteoporotic fracture of 10% or more
8 and for whom a DXA scan is not tolerated or technically feasible, or
9 • for whom a DXA scan is not needed for treatment decisions or
10 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](#).

11 **Identifying vertebral fragility fractures**

12 **1.5 DXA-based vertebral fracture assessment (VFA) scan**

13 1.5.1 Consider doing a VFA when doing a DXA scan in people aged 50 and
14 over.

15 1.5.2 Consider doing a VFA when doing a DXA scan in people aged under 50
16 who have any of the following:

- 17 • a previous [major osteoporotic fragility fracture](#)
18 • signs or symptoms of vertebral fracture, for example:
19 – back pain or radiating rib pain

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

9 1.5.3 Do not do a VFA when doing a DXA scan if:

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

14 1.5.4 Do not routinely do spinal imaging after positive VFA to confirm the
15 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](#).

16 **1.6 Using artificial intelligence to identify vertebral fractures**

17 NICE has published early value assessment guidance on [artificial intelligence \(AI\) technologies to aid opportunistic detection of vertebral fragility fractures](#) that can be
18 used in the NHS, while more evidence is generated.
19

1 Deciding whether treatment is appropriate

2 1.7 Criteria for treatment

3 1.7.1 Make a shared decision with the person about whether to treat based on:

- 4 • 10-year risk of major osteoporotic fragility fracture obtained from FRAX
- 5 or QFracture (if available)
- 6 • BMD score (if available)
- 7 • the number and skeletal sites of previous [fragility fractures](#), especially if
- 8 they have had a hip or vertebral fracture
- 9 • time since last fragility fracture
- 10 • clinical assessment of risk factors.

11 1.7.2 Consider pharmacological treatment for men aged 50 and over and

12 women who have experienced menopause, if the criteria for a DXA scan

13 are met (see [recommendations 1.3.1](#) and [1.4.1](#)) and they have any of

14 following:

- 15 • a previous hip or vertebral fragility fracture
- 16 • BMD T-score of -2.5 or less
- 17 • BMD T-score of -1.5 or less and any of the following:
 - 18 – any fragility fracture
 - 19 – current or frequent use of systemic glucocorticoids (for example, a
 - 20 daily dose of 5 mg or more prednisolone or equivalent for over
 - 21 3 months, or intermittent use of higher doses)
 - 22 – medicines or other factors known to be associated with accelerated
 - 23 bone loss (for example, aromatase inhibitors or androgen deprivation
 - 24 therapy, or having primary hyperparathyroidism not treated with
 - 25 surgery)
- 26 • BMD T-score of -1.0 or less and both of the following:
 - 27 – aged over 65 and
 - 28 – current use of high-dose systemic glucocorticoids (for example,
 - 29 15 mg or more a day).

1 1.7.3 Seek advice from a specialist regarding management for men aged
2 between 30 and 50 and women who have not experienced menopause, if
3 the criteria for a DXA scan are met (see recommendation 1.4.1) and they
4 have either:

- 5 • a previous [major osteoporotic fragility fracture](#) or
- 6 • 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](#).

7

8 **Follow up for people not having treatment**

9 **1.8 People who have declined or delayed treatment**

10 1.8.1 Advise people who have declined or delayed treatment:

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

14 **1.9 People whose condition did not meet the criteria for** 15 **treatment**

16 1.9.1 For people with a 10-year risk of major osteoporotic fracture of less than
17 10%, consider reassessing their risk using the same risk prediction tool
18 used at the baseline assessment:

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

1 1.9.2 For people with a 10-year risk of major osteoporotic fracture of 10% or
2 more, or who had a DXA scan to assess their bone health, but whose
3 condition did not meet the criteria for treatment:

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

16 1.10 Timing of follow up DXA scans

17 1.10.1 Do not routinely repeat a DXA scan within 2 years of the person's most
18 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](#).

19

20 Terms used in this guideline

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

22 First-degree relative

23 Parent, child, or sibling.

1 **Fragility fracture**

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

11 **Major osteoporotic fragility fractures**

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

13 **Recommendations for research**

14 The guideline committee has made the following recommendations for research.

15 **Key recommendations for research**

16 **1 Using electronic health records to help identify adults who should** 17 **have a fragility fracture risk assessment**

18 What is the clinical and cost effectiveness of searching and analysing electronic
19 health records and social care records (including GP practice lists) to help identify
20 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 **2 Risk prediction tools**

- 2 What is the validity of the CFracture risk prediction tool for predicting the risk of
3 fragility fractures in adults, including those who have had a previous fragility
4 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](#).

5 **3 Bone assessment methods**

- 6 What is the accuracy of radiofrequency echographic multi spectrometry (REMS) for
7 predicting fragility fractures in adults, including those who have had a previous
8 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](#).

9 **4 DXA-based VFA scan**

- 10 What is the diagnostic accuracy of DXA-based VFA scan for identifying vertebral
11 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](#).

1 **5 Identifying vertebral fractures**

2 What is the clinical and cost effectiveness of Vfrac (vertebral fracture clinical decision
3 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](#).

4 **Rationale and impact**

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

7 **Risk factors for fragility fractures**

8 [Recommendations 1.1.1 to 1.1.4](#)

9 **Why the committee made the recommendations**

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

13 **People aged 50 and over**

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

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

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

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

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

21 **People aged under 50**

22 The committee agreed osteoporosis is uncommon in people aged under 50 and
23 therefore this group should not be routinely assessed. However, as with people aged
24 50 and over they also agreed that if someone was known to have had a hip or
25 vertebral fragility fracture, or 2 or more major osteoporotic fragility fractures then they
26 should be assessed for the risk of further fracture. These fractures have a significant
27 impact on a person's quality of life and may mean the person is at risk of having
28 another fracture. Similarly, people who currently, or frequently, use systemic
29 glucocorticoids and those with untreated early menopause or premature ovarian
30 insufficiency could be at increased risk of fracture despite being under 50.

1 **How the recommendations might affect practice**

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

9 [Return to recommendations](#)

10 **Electronic health records**

11 **Why the committee made no recommendations**

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

17 [Return to recommendations](#)

18 **Assessing fragility fracture risk**

19 [Recommendations 1.3.1 to 1.3.9](#)

20 **Why the committee made the recommendations**

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

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

3 When assessing risk in other people in this age category or in people aged between
4 30 and 49, the committee agreed that using risk prediction tools first is best because
5 it helps avoid unnecessary DXA scans. The 2012 NICE guideline on osteoporosis
6 recommended the use of either FRAX or QFracture risk prediction tools to assess
7 risk of fracture. Recent evidence has not shown an advantage of using 1 tool over
8 the other, so both continue to be recommended in this update. FRAX only applies to
9 people over the age of 40 therefore the committee recommended using QFracture in
10 people between the ages of 30 and 39.

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

20 Risk prediction tools may not provide an accurate assessment of risk in people over
21 90 and the benefits of treatment may be outweighed by other factors. Therefore, the
22 committee agreed healthcare professionals would need to use their judgement on
23 how to assess risk for this age group. The committee decided that this should apply
24 over the age of 90 because FRAX and QFracture only estimate the 10-year risk of
25 major osteoporotic fragility fracture or hip fracture up to the age of 90. Although
26 QFracture can provide a risk score for people up to the age of 99 it covers fewer
27 years. For example, it will estimate an 8-year risk score for people aged 92 or a 7-
28 year risk score for people aged 93.

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

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

4 A single study was found on the risk prediction tool CFracture (developed in 2023)
5 that uses the same risk factors as QFracture. A [recommendation for research to
6 validate the CFracture tool](#) was made because there is limited evidence and the
7 calculator is not currently available. There was 1 study (limited to women aged
8 65 and over) on the vertebral fracture clinical decision tool (Vfrac) that was
9 developed to identify people with a suspected vertebral fracture. The committee
10 made a [recommendation for research on identifying vertebral fractures](#) because
11 there is limited evidence.

12 **How the recommendations might affect practice**

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

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

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

23 [Return to recommendations](#)

24 **Bone density assessment**

25 [Recommendations 1.4.1 to 1.4.4](#)

26 **Why the committee made the recommendations**

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

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

4 **Fracture risk threshold for BMD measurement with a DXA scan**

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

17 **DXA scans before treatment**

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

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

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

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

3 **If a DXA scan is not possible or not needed**

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

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

17 **How the recommendations might affect practice**

18 Using a DXA scan to assess BMD reflects current practice.

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

27 [Return to recommendations](#)

28 **Identifying vertebral fragility fractures**

29 [Recommendations 1.5.1 to 1.5.4](#)

1 **Why the committee made the recommendations**

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

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

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

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

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

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

1 detecting vertebral fractures. Therefore, the committee made [a research](#)
2 [recommendation on the accuracy of DXA-based VFA.](#)

3 **How the recommendations might affect practice**

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

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

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

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

22 [Return to recommendations](#)

23 **Deciding whether treatment is appropriate**

24 [Recommendations 1.7.1 to 1.7.3](#)

25 **Why the committee made the recommendations**

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

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

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

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

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

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

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

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

17 **How the recommendations might affect practice**

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

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

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

3 [Return to recommendations](#)

4 **Follow up for people not having treatment**

5 [Recommendations 1.8.1 to 1.10.1](#)

6 **Why the committee made the recommendations**

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

10 **People who have declined or delayed treatment**

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

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

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

23 **People whose condition did not meet the criteria for treatment**

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

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

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

7 The committee agreed that it was important to consider reassessing people who had
8 10-year risk of major osteoporotic fracture of 10% or more, or who had a DXA scan
9 to assess their risk of fracture, but whose condition did not meet the criteria for
10 treatment. They agreed their BMD should be assessed with a DXA scan rather than
11 a risk assessment tool alone. This is because the effect of age means the person's
12 10-year risk of major osteoporotic fracture is unlikely to show a lower risk score
13 whereas their bone density is likely to have changed with age. If a person's condition
14 was originally close to meeting the criteria for treatment, then the committee agreed
15 that 2 to 3 years was enough time for the person's bone density to have changed to
16 a point that treatment may be advisable. This is particularly the case in people with a
17 significant risk of accelerated bone loss including people with primary
18 hyperparathyroidism not treated with surgery, or taking aromatase inhibitors,
19 androgen deprivation therapy, or systemic glucocorticoids. For other people, the
20 committee agreed there was no need to reassess them for 5 years unless their
21 clinical circumstances change.

22 **Timing of follow up DXA scans**

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

28 **How the recommendations might affect practice**

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

1 reassessment in some areas by clarifying minimum durations between
2 reassessments.

3 [Return to recommendations](#)

4 **Finding more information and committee details**

5 To find NICE guidance on related topics, including guidance in development, see the
6 [NICE topic page on musculoskeletal conditions](#).

7 For details of the guideline committee see the [committee member list](#).

8 **Update information**

9 **July 2026:** This guideline is an update of NICE guideline CG146 (published August
10 2012) and will replace it. We are updating this guideline in 2 stages:

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

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

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

24 ISBN:

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