



About osteoporosis and weaker bones

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About this information

This information is for you if you have been diagnosed with osteoporosis or been told that your bones are weak. It's also for you if you have broken a bone because of osteoporosis and want to know what to expect.

If you have had a bone density scan, you may have questions about your results. You may have been recommended an osteoporosis drug treatment (medication) to strengthen your bones. You may want to know more about the drug treatments available to you.

Ultimately, you will want to know what osteoporosis means for you, what the future holds and what your treatment options are. This booklet will help you to feel more in control of your bone health. It gives you information about how you can help yourself to keep on living a fulfilling and independent life.

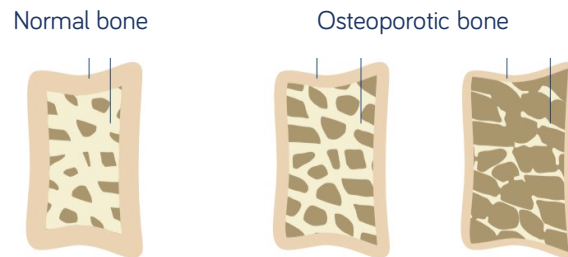
Each GP practice and hospital does things slightly differently. Use this booklet as a general guide about what to expect but be prepared to ask your GP or healthcare professional for more information. You can also visit our website (theros.org.uk) or speak to our specialist nurses. Call free on **0808 800 0035**, email nurses@theros.org.uk or contact us by post – see our details on page 10.

What is osteoporosis?

Osteoporosis is a condition where bones lose strength and are more likely to break. It mainly affects older people.

The word 'osteoporosis' means 'porous bone'. Bones have a thick outer shell with a strong structure inside that looks like a honeycomb. With osteoporosis, the holes in the structure get bigger and the bone

becomes less dense. Eventually, the inner structure begins to break down. This leads to bones getting weaker and makes them more likely to break.



Broken bones and fractures mean the same thing. When bones break because of osteoporosis, they are sometimes called osteoporotic fractures or fragility fractures. They break with little force or trauma.

These broken bones often occur in the wrist, hip, or spinal bones (the vertebrae). They usually happen after a fall. Spinal fractures (or ‘vertebral fractures’) can occur without a fall if your bones are weak. This is when bones in your back become squashed or compressed.

Broken bones caused by osteoporosis can have long-term effects even when they have healed. For example, people who have had a broken hip may be less mobile. They may need help with daily activities. Sometimes spinal fractures can cause height loss, a curved spine (often called ‘kyphosis’), and long-term pain. It’s important to understand that weaker bones with osteoporosis do not cause pain. It is only the broken bones (fractures) that are painful.

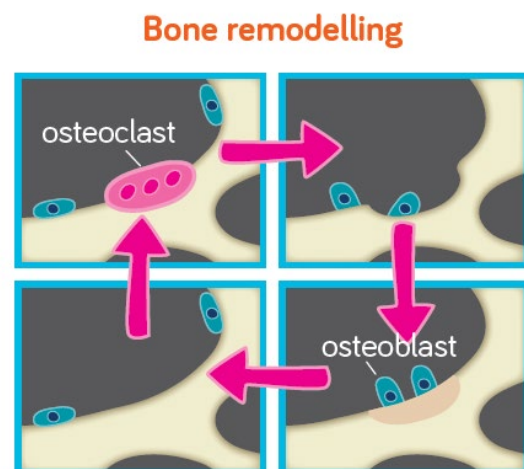
To understand this condition properly, it’s useful to know what normally happens in your bones and what changes with osteoporosis.

About your living skeleton

Your bones are alive and always changing throughout your life. Bone tissue is a scaffold of protein (collagen), made strong by calcium and other minerals. Older bone tissue is broken down by specialist cells called osteoclasts. New bone is then rebuilt by bone-building cells called osteoblasts. This is often described as ‘bone turnover’ or ‘bone remodelling’. This remodelling means old bone is renewed and replaced.

Until we reach about the age of 45, there is usually a balance between the amount of bone that is removed and created. This means the total amount of bone tissue you have stays the same, so your skeleton is strong and healthy.

In childhood, the osteoblasts work harder than the osteoclasts. This enables your skeleton to increase in size, density, and strength as you grow. During this period of rapid bone growth, it takes the skeleton just two years to completely renew itself. In adults, this process takes seven to ten years. Bones stop growing when you reach around 16–18 years old. But they continue to mature so the total amount of bone tissue you have increases slowly until your late twenties.



What happens inside your bones with osteoporosis?

Osteoporosis is usually linked to the natural bone loss that occurs as we get older and sometimes it is caused by other factors. As we age, we lose more bone than we gain. This means our natural process of bone renewal is out of balance. As a result, the amount of bone tissue we have reduces. This is often described as 'bone thinning'. It doesn't mean that your bones look any different from the outside, and you won't feel any different. It means the outer shell becomes thinner and the inner structure becomes more porous. This can lead to bones losing strength and breaking more easily.

This bone loss starts sometime before we reach the age of 45. But usually we do not lose enough bone to make a difference to our bone strength until we are older. For women, bone loss starts to increase after the menopause because oestrogen levels decrease. Men lose bone more gradually than women.

If you often fall over, talk to a healthcare professional. They can advise if you might benefit from a referral to a clinic in the community or a hospital for advice. They also can check if you have a condition that's causing you to fall and offer advice. **See our leaflet 'Exercises to improve balance and muscle strength' for exercises to help you avoid falling over.**

What causes bones to get weaker?

There are many things that can increase the risk of your bones getting weaker, potentially leading to osteoporosis and broken bones. These are often called 'risk factors'. Your risk of osteoporosis and broken bones increases as you get older and women are more likely to get osteoporosis than men. Broken bones are more common the older you get, with a broken hip most likely in your late 70s or older. The genes you have inherited from your parents also play a part. But there are no specific tests that can assess how your genes might affect your bone health.

Sometimes other medical conditions can cause osteoporosis. These include early menopause (before age 45), rheumatoid arthritis and anorexia nervosa. Medications can also cause osteoporosis and broken bones. For example, steroids or 'glucocorticoids' such as prednisolone, and some drugs used to treat breast or prostate cancer.

Bone strength can improve after treating the underlying condition or stopping a medication. But it's important to talk to your doctor before making changes to your medication. For example, reducing steroids must only happen under medical supervision. Positive lifestyle changes can also help - especially becoming more active if possible. **See our booklet 'Getting your bones checked to keep them healthy' for more information about causes of osteoporosis and broken bones.**

Who gets osteoporosis?

Osteoporosis is sometimes seen as a condition that only affects women. But one in five men over 50 will have a fracture caused by osteoporosis too.

Most people with osteoporosis and broken bones are over 50. But younger people can also sometimes have low bone density and may break bones easily. Diagnosis and treatment can be more complex in younger people and you may need to see a hospital specialist for advice. Our specialist nurses are also here to help.

Some very rare types of osteoporosis affect children and pregnant women. **See our fact sheets 'Osteoporosis in children' and 'Pregnancy associated osteoporosis' for more information.**

Getting your bone health checked and what a diagnosis means

Bone health checks are held at GP practices, hospitals, or community clinics. Here, you can find out if your bones are weak and whether you need medication to strengthen them. These often include bone density scans, and something called a 'fracture risk assessment'. These give a more complete picture of your bone health. Sometimes bone health checks also include blood tests or other investigations. And you may be given advice about positive lifestyle changes to help your bones.

- **Bone density scans** use an X-ray scanner often called DXA (dual energy X-ray absorptiometry scanner). The scanner measures how much 'bone mineral' is in certain areas of your skeleton, usually in your lower spine and one of your hips. Osteoporosis is usually diagnosed from a bone density scan result. Some bone density scans also include a 'vertebral fracture assessment', which creates specific pictures that are used to diagnose spinal fractures.
- **'Fracture risk assessments'** use a computer tool (such as FRAX). This calculates your chance of breaking a bone (your 'fracture risk') in the next 10 years. It takes into account the results of your bone density scan if you have had one. It also includes details such as your height and weight, and other risk factors linked to bone strength. Adding these in builds up a more accurate picture of how strong your bones are. Important risk factors include family history, some medications, older age, and if you have already broken a bone.

Bone density plays a big part in bone strength and your risk of fracture. But it can't give the full picture. Results should always be considered alongside other factors.

You may be diagnosed with osteoporosis without results from a scan. This could be because you have had many fractures, including spinal fractures, that aren't caused by another disease. Spinal fractures are generally diagnosed with an ordinary X-ray. Having several fractures is an obvious sign that you have weaker bones and this may be enough for your healthcare professional to diagnose osteoporosis.

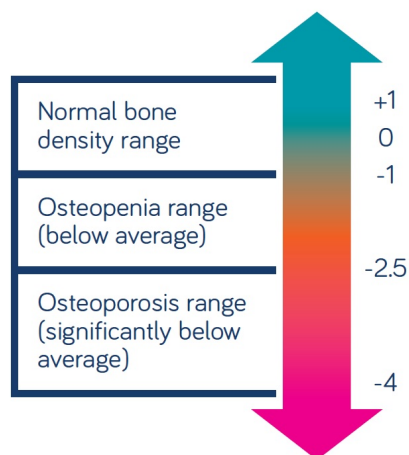
Research has proven that if you have already broken a bone due to osteoporosis then this increases your chances of breaking another. This is a very important risk factor.

What does your bone density scan result mean?

A bone density scan compares your bone density to 'average'. This is the normal range found in a healthy young adult, because this is when our bones are at their strongest. The lower your bone density measurement, the greater your risk of breaking a bone. This could be in the spine, hip or elsewhere in your skeleton.

Bone density is measured as a 'T-score':

- Any result down to -1 is described as normal or average for a young healthy adult.
- If your result is between -1 and -2.5 , it may be described as osteopenia.
- If your result is -2.5 or below, this is well below the range seen in most young adults. This is a level where broken bones can occur more easily. This result is described as showing osteoporosis



Osteopenia means that your bone density is lower than the average adult, but not low enough to be diagnosed as osteoporosis. This result is common in most older adults and is not a concern unless you have other risk factors. If you do have other risk factors, you may be prescribed a drug treatment to help strengthen your bones.

What does your fracture risk assessment result mean?

After your fracture risk assessment, your healthcare professional can tell you your risk of breaking a bone in the next 10 years. This is shown as a percentage, for example, 20%. However, it does not mean that you will be in the 20% of people who will break a bone over the next 10 years.

What does osteoporosis mean for you?

Have you been diagnosed with osteoporosis on a scan but not broken any bones?

We understand you may feel anxious if you have been diagnosed with osteoporosis. It can help to think of osteoporosis as a risk factor for breaking a bone, in the same way that high blood pressure is a risk factor for a stroke.

Any bone will break when enough force is applied to it. If you have osteoporosis, you are more likely to break a bone with little or no force. This doesn't mean that you will definitely have fractures or that you are at imminent risk of breaking a bone. It means that your overall chance of breaking a bone is higher. Most people with osteoporosis don't have very weak bones that could break in day-to-day activities. If you haven't broken many bones, you should feel quite safe continuing with your life as normal.

It's also important to remember that osteoporosis diagnosed with a scan is on a scale. So, when bone density moves into the osteoporosis range, it doesn't mean a significant change. It means it's more likely that the inside structure of your bones has broken down and that your bones are weaker. It's impossible to predict whether you will go on to break bones or how severely you will be affected.

But that doesn't mean you should ignore your diagnosis. Remember, you can make positive changes and take action to help yourself. What you decide to do now can make a real difference to what happens in the future.

Have you been diagnosed with osteoporosis and already broken a bone?

If you have broken one or several bones easily including in your spine, this means your bones are weaker. It's natural to feel concerned about this, but we are here to help and support you.

Broken bones caused by osteoporosis are no different from any normal broken bone. They heal in the same way and at the same rate - about 6-12 weeks - but sometimes longer. Some fractures, such as those in your wrist, will need a plaster and sometimes an operation. A broken hip will often need an operation to help it heal. But other fractures, such as in your spine, will heal on their own.

Weaker bones and osteoporosis do not cause pain. It's the resulting broken bones themselves that cause the pain. Many older people also have osteoarthritis in their joints, which can be painful. If you are young or have a good level of fitness, these fractures may be painful and even disabling at the time. But you will usually make a full recovery and should be able to get back to your previous lifestyle without any lasting effects. If you are older and frailer, it's more likely the fractures could have a lasting impact on your life. For example, a broken hip can make it difficult to look after yourself and continue to feel well. Regardless of your age, breaking many bones can be distressing and make you less confident. This is why reducing your chance of breaking a bone is so important.

It can be a challenge to balance the desire to carry on with your normal life while protecting yourself from further fractures. But we are here to support you to make your condition more manageable and live well with osteoporosis.

There are always positive steps you can take to improve your bone health at any age. **See our booklet 'Better bone health for everybody' for more information.**

Do you have spinal fractures?

Spinal fractures (or 'vertebral fractures') in osteoporosis are different from other broken bones. They are generally 'stable', which means they don't damage the spinal cord or cause paralysis. The bones don't snap but they can squash or compress down on themselves. It's possible to have a spinal fracture without knowing how it happened.

People's experiences of them also vary. Spinal fractures can be painful when they happen and throughout the healing period. The fractures will heal and your pain will improve, but your bones won't return to their previous shape. This can cause height loss, a curved spine (kyphosis), and sometimes other problems such as breathlessness or persistent pain.

But some spinal fractures are painless or cause minimal pain that doesn't cause problems. Some people don't know they've had a spinal fracture until it's spotted in a routine medical investigation. The fracture may have happened a long time ago and you might find a spinal fracture causes you temporary pain like any broken bone. After recovery, you may not have any long-term problems. Or you may have some mild back ache because of changes to the shape of your spine. **See our booklet 'Getting help with pain and other symptoms caused by spinal fractures' for more information on managing pain and symptoms after spinal fractures**

How is osteoporosis treated?

Treatments for osteoporosis refer to drug treatments (medicines) to strengthen bones. They don't help with pain after broken bones. There are other medicines that can help with pain.

Can living a healthy lifestyle replace a drug treatment?

A healthy lifestyle can help to keep your bones strong, even if you have osteoporosis and a high risk of breaking bones. It is a vital way of helping yourself to stay independent in later age. But a healthy lifestyle isn't always enough on its own to reduce your chance of breaking a bone. And complementary therapies are not proven to reduce your risk either.

The decisions you make about your treatment must be your own and right for you. These will be based on your personal beliefs, experiences and understanding. Your healthcare professional can help by explaining the benefits for your bones, as well as the risks.

What are my treatment options?

Your healthcare professional will usually recommend an osteoporosis drug treatment (medication) if you:

- are over the age of 45 or post-menopausal and;
- have a high chance of breaking a bone.

The decision is based on your 'fracture risk assessment' results and national guidelines.

A fracture risk assessment may include a bone density scan. But it's important to remember that a diagnosis on a scan doesn't tell you everything about your bone strength. So decisions about drug

treatments consider the results of your assessment as a whole - including your personal risk factors. **See page 6 for more information on how osteoporosis is diagnosed and what your test results mean.**

Drug treatments for osteoporosis can lower the chance of future broken bones. They are usually recommended to people who are high risk. For example, if you are older or have already had fractures.

Many osteoporosis drug treatments are suitable for both men and women. But some, including raloxifene and some types of hormone replacement therapy (HRT), are only prescribed for women.

If you are younger or pre-menopausal, you will not usually need a drug treatment. This is because you are not likely to have a high chance of breaking a bone, despite a diagnosis of osteoporosis. Some positive lifestyle changes may be recommended to improve your bone health.

Later, you may be advised to have a new discussion about your chances of breaking a bone. This is because as you get older, the structure of your bones is more likely to break down and become weaker.

Bisphosphonates	
<ul style="list-style-type: none"> alendronic acid / alendronate (Fosamax) risedronate (Actonel) ibandronate (Bonviva) alendronate and vitamin D combined (Bentexo, Fosovance) 	Tablets
<ul style="list-style-type: none"> alendronic acid oral solution effervescent table (Binosto) 	Liquid
<ul style="list-style-type: none"> zoledronic acid (Aclasta) ibandronate (Bonviva) 	Infusions and injections
Selective Estrogen Receptor Modulators	
<ul style="list-style-type: none"> raloxifene (Evista) 	Tablet
Parathyroid hormone (PTH) treatment	
<ul style="list-style-type: none"> teriparatide (Forsteo, Terrosa, Movymia, Teva) 	Injection
Other	
<ul style="list-style-type: none"> denosumab (Prolia) romosozumab (Evenity) 	Injection
Less commonly used drug treatments	
<ul style="list-style-type: none"> Strontium ranelate (Aristo) 	Sachet of granules, mixed with water
<ul style="list-style-type: none"> Hormone therapy or hormone replacement therapy (HRT) for women 	
<ul style="list-style-type: none"> Hormone therapy for men 	

How do osteoporosis drugs work?

The main aim of these drug treatments is to lower your chance of breaking a bone. Most drug treatments for osteoporosis work by slowing down the activity of the cells that break down old bone (osteoclasts). These are 'anti-resorptive' drugs. Some treatments stimulate the cells that build new bone (osteoblasts). These are 'anabolic' drugs. Other treatments combine both these actions. Both types of treatment are very effective at strengthening bone and reducing the chances of fracture.

How do I decide which drug treatment is right for me?

To make a decision about drug treatments, it is helpful to think about what is important to you. Consider the questions below and talk to your healthcare professional if you're unsure.

- Are you concerned about breaking a bone in the future?
- Are you concerned about protecting your spine?
- Are you worried about side effects?
- Do you feel you know enough about the possible benefits and side effects?
- Can you imagine yourself taking the medication? Are there any things that might make taking the medication difficult?
- How would you feel if you decided not to take the medication and then broke a bone that could have been prevented?

We have fact sheets about all the osteoporosis drug treatments, which explain possible side effects. Most are mild, but some are more serious – however, these are very rare. If you are worried, it can be difficult to balance the potential side effects and long-term risks of drug treatments against the benefits for your bones.

Any medication can cause side effects and it's natural to be concerned. But fear of side effects need not put you off trying. Most people will not experience any problems - especially if the osteoporosis drug treatment is taken correctly.

It's important to remember why you were offered the treatment. It's likely your assessment showed your chance of breaking a bone without treatment is higher than your chance of experiencing a side effect. And, if you do experience any side effects at first, these will often disappear after a short time. So, it's worth giving your drug treatment a good try, to help you stay independent and live well.

Our specialist Helpline nurses can help you find out more about side effects that worry you.

What might affect which treatment I'm prescribed?

There are lots of different drug treatments available for osteoporosis. They all lower the chance of fractures by about the same amount. Healthcare professionals consider many things when deciding which drug treatment to recommend you. These include:

- Local or NHS clinical guidelines. These research-based guidelines give evidence about the effectiveness and value of medicines.
- Which of your bones most need protection. This is because some drugs are only licensed to reduce the risk of spinal fractures.
- Potential side effects that might mean a drug isn't suitable for you.
- How seriously you are affected by fractures, especially in your spine. This is because some drug treatments may be more suitable if you have had several fractures.
- Which type of drug will best suit you. For example, a tablet, a medicine that you drink, an injection, or an infusion ('drip').
- Cost of medicines. Sometimes, a 'generic' non-branded drug is available more cheaply – and is essentially the same as the branded form. For example, the generic drug risedronate is also sold under the brand name Actonel.

When you first start taking an osteoporosis drug treatment, you will probably be prescribed a tablet such as alendronic acid. If this doesn't suit you, you may be offered a similar drug, perhaps via a drip or injection. Or you may be offered a different type of drug altogether.

How can I get the best out of my treatment?

Your healthcare professional will tell you when to take your drug treatment and how often. There are many things you can do while taking your treatment to give yourself the best possible benefit.

- Take the treatment for the amount of time prescribed by your healthcare professional. Try to take it at about the same time of day.
- Read the instructions that come with your treatment and follow them carefully. This will reduce the risk of side effects and ensure that your body absorbs the drug properly.
- Eat a well-balanced, calcium-rich diet. Your healthcare professional may also prescribe you with calcium and vitamin D supplements if you need them. Calcium gives your bones strength and vitamin D helps you to absorb calcium.
- If you have problems or side effects, talk to your doctor, nurse, or pharmacist. You can also ring our Helpline to discuss your concerns.

Visit our website (theros.org.uk) or call our Helpline for individual factsheets about each drug treatment. These provide more detailed information to help you understand what your doctor has prescribed.

How long will you take your treatment for?

Most tablet osteoporosis drugs are prescribed for five or more years. Long-term use of some drug treatments can sometimes increase the chance of some side effects. These are rare but become a little more common after treatment for several years. It is now considered good practice for doctors to review your osteoporosis drug treatment after about five years. For bisphosphonates and denosumab, this is particularly important to prevent rare side effects.

At your review, your healthcare professional will check that the treatment isn't causing you any side effects and that the benefits of continuing to take it still outweigh any potential harm.

Different drugs work differently over time. For example:

- After five years of taking a bisphosphonate, you will need to either continue taking the drug, have a pause in your treatment for between one and three years, or stop taking it altogether.
- If you are told to stop taking denosumab, you will need a follow-on treatment as it may stop working very quickly.

Your healthcare professional can talk to you about what is best for you, based on your individual circumstances.

How do you know your drug treatment is working?

The purpose of an osteoporosis drug treatment is to lower the chance of future broken bones. They don't relieve pain or other symptoms, so you won't feel any different after you start taking your treatment. However, all osteoporosis drug treatments have been tested and are proven to lower the chance of breaking bones. You can be confident that your treatment is working even though you can't feel it. Healthcare professionals can also assess if treatment is working. They may do this by checking if you have broken any bones while taking treatment and how many. You may also have repeat scans and blood tests.

You may be offered another bone density scan three to five years after you start your drug treatment. This can provide useful information, but it won't tell you everything about your bone strength or show for certain whether a drug is working. For this reason, there are no absolute rules about if, and when, people should have follow-up bone density scans. This will depend on usual practice in your local area.

If you break a bone while taking your treatment, it doesn't necessarily mean the drug is not working. No drug completely prevents fractures. But if you continue to break bones easily, your healthcare professional may suggest a different treatment depending on your circumstances.

Knowing more about osteoporosis and the steps you can take to improve your bone health can help you to feel positive about the future. And we are always here to support you. **To find out more about the lifestyle changes you can make to help your bones stay strong, see our booklet 'Better bone health for everybody'.**

More ways to get support

If you have any further questions or would like to speak to one of our specialist nurses, here's how to get in touch:

- Contact the specialist nurses on our Helpline. Call Freephone **0808 800 0035** (Monday–Friday, 9am - 12:30pm and 1:30pm - 5pm), email **nurses@theros.org.uk** or send a letter to us at **Royal Osteoporosis Society, St. James House, Bath, BA2 3BH**. Our specialist nurses are here to give you the information and support you need through a confidential service. You don't need to have a medical problem to use the service – you are welcome to ask any question you may have.
- Find expert information that will help you understand more about bone health on our website (**theros.org.uk**) or order more free printed information by calling **01761 471771**.
- Find your local support group and view the online programme at **theros.org.uk/support-groups** or email **volunteerengagement@theros.org.uk** or call **01761 473113**. We have a network of support groups across the UK, which are run by volunteers. Our groups provide support by organising regular meetings – both face to face and online. Regardless of where you live, you can join an online meeting from anywhere in the UK.
- Become a member. You'll have access to guidance and support from bone health experts - and all the latest information on osteoporosis to ensure you have everything you need to build strong healthy bones for life. Join today at **theros.org.uk/membership** or call **01761 473287**.
- Watch our #BoneMatters series of online events. We have a very popular series of online information events, where you can hear leading health experts discussing everything from drug treatments to nutrition and exercising safely. For details of upcoming sessions, and to watch past events, visit **theros.org.uk/bone-matters**

About the Royal Osteoporosis Society

We're the UK's largest national charity dedicated to improving bone health and beating osteoporosis. And we're here for people like you, to equip you with practical information and support to take action on your own bone health.

Working with healthcare professionals and policymakers, we also influence and shape policy and practice at every level. We drive the research and development of new treatments, to beat osteoporosis together.

As an independent charity, we don't receive any government funding, so we can only continue to provide our services through the generosity of our supporters. If you'd like to donate, visit theros.org.uk/donate or call **01761 473287**.

To find out more about volunteering, visit theros.org.uk/volunteers or call **01761 473113**.

Together, we can build a future without osteoporosis.