

Osteoporosis and breast cancer treatment



This booklet is for people who have been treated for breast cancer and may be concerned about their risk of developing osteoporosis, or have been diagnosed with osteoporosis. It includes information on looking after your bones and possible treatments.



This information is by Breast Cancer Care.

We are the only specialist UK-wide charity that supports people affected by breast cancer. We've been supporting them, their family and friends and campaigning on their behalf since 1973.

Today, we continue to offer reliable information and personal support, over the phone and online, from nurses and people who've been there. We also offer local support across the UK.

From the moment you notice something isn't right, through to treatment and beyond, we're here to help you feel more in control.

For breast cancer care, support and information, call us free on **0808 800 6000** or visit **breastcancercare.org.uk**



Introduction

Some treatments for breast cancer can affect your bones, which can increase your risk of developing osteoporosis.

This booklet explains what osteoporosis is, why the treatment you've had for breast cancer could increase your risk, how you can help protect your bones with some lifestyle changes and what treatment is available to prevent or slow down osteoporosis.

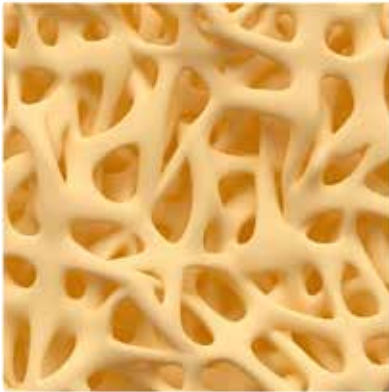
Although a lot of this information is aimed at women, men with breast cancer may find a lot of it useful.

What is osteoporosis?

Osteoporosis is a condition where your bones lose their strength and density. This leads to bones becoming fragile and more likely to break (fracture).

Bones have a thick outer shell and a strong inner mesh filled with collagen (protein), calcium salts and other minerals. The inside looks like a honeycomb, with blood vessels and bone marrow in the spaces between.

Healthy bone



Bone affected by osteoporosis



Osteoporosis means some of the outer shell and inner structure of the bone become thin. Sometimes the structure starts to break down causing wider spaces and bones can fracture easily with little or no force. These fractures are often described as 'fragility fractures'.

Generally, osteoporosis causes no general pain or symptoms, so often a person won't realise they have the condition until a fracture happens. The most common sites for a fracture to occur are the wrist, hip and back (spine).

Although osteoporosis cannot be cured, treatments are available to try to keep the bones strong and less likely to fracture.

What causes osteoporosis?

Our bones increase in density and strength until we reach our late 20s. Around the age of 35 we start to lose bone density as part of the natural ageing process. This happens gradually over time but is much more significant after the menopause. A large reduction in bone density is known as osteoporosis. About half the population will have osteoporosis by the age of 75.

The hormone oestrogen protects against bone loss and helps to keep bones strong. Women who have gone through the menopause are at increased risk of osteoporosis and fractures because their ovaries no longer produce oestrogen (small amounts of oestrogen are still produced by fat cells).

Risk factors

Risk factors for osteoporosis include:

- being a woman
- increasing age

Low levels of the hormone oestrogen increases the risk of osteoporosis. Women may have low levels of oestrogen because of:

- an early natural menopause (before the age of 45)
- an oophorectomy (surgery to remove the ovaries) with or without a hysterectomy (surgery to remove the womb)
- treatment for cancer (such as chemotherapy, hormone therapy or ovarian suppression)
- the eating disorder anorexia nervosa

Other risk factors for osteoporosis include:

- a family history of osteoporosis or hip fracture
- previous wrist, spine or hip fracture from little or no trauma
- medical conditions such as Crohn's disease, coeliac disease, ulcerative colitis, overactive thyroid (hyperthyroidism) and diabetes
- medication (usually long-term use) including corticosteroid tablets (for conditions such as arthritis and asthma), anticonvulsants (for conditions such as epilepsy)
- some antidepressants
- conditions that leave you immobile for a long time
- low body weight

Certain lifestyle factors can make you more likely to have low bone density, such as regularly drinking more than the recommended amount of alcohol (see page 11), smoking or a diet that is low in calcium and vitamin D.

Breast cancer treatment and bone health

Breast cancer treatments can reduce bone density and increase the risk of osteoporosis in both premenopausal women (women who haven't yet gone through the menopause) and postmenopausal women (women who have gone through the menopause).

Chemotherapy

Chemotherapy can affect the function of the ovaries, causing an early menopause in some women. This means less oestrogen is produced, which can reduce bone density.

Women aged 45 or under whose periods have stopped for at least a year as a result of treatment may also be at risk of osteoporosis, even if their periods restart.

Some research has shown that postmenopausal women who have chemotherapy may have a greater loss of bone density than they would have had without chemotherapy.

Find more information about chemotherapy in our **Chemotherapy for breast cancer** booklet.

Ovarian suppression

Ovarian suppression is when the ovaries are removed, or temporarily or permanently stopped from working. This means there's less oestrogen in the body to stimulate the cancer to grow. However, having less oestrogen in the body can also reduce bone density. You can find out more about ovarian suppression in our **Ovarian suppression and breast cancer** booklet.

Tamoxifen

Tamoxifen blocks the effect of oestrogen on cancer cells.

In premenopausal women, taking tamoxifen may cause a slight reduction in bone density. This is unlikely to lead to osteoporosis unless ovarian suppression is given as well. However, your risk may be higher if you're 45 or under and your periods have stopped for at least a year.

In postmenopausal women, taking tamoxifen slows down bone loss and can reduce the risk of osteoporosis.

You can read our **Tamoxifen** booklet for more information.

Aromatase inhibitors

Aromatase inhibitors (such as anastrozole, letrozole and exemestane) are mainly used to treat breast cancer in postmenopausal women. These drugs reduce the amount of oestrogen in the body, which can reduce bone density.

They are mainly used to treat breast cancer in postmenopausal women, but some premenopausal women take an aromatase inhibitor at the same time as having ovarian suppression. Having these two treatments together can reduce bone density.

The likelihood of developing osteoporosis while taking aromatase inhibitors also depends on how healthy your bones were before your breast cancer treatment.

We have printed and online information on anastrozole, letrozole and exemestane.

How is osteoporosis diagnosed?

Osteoporosis is usually diagnosed using a bone density scan, often referred to as a DEXA (dual energy x-ray absorptiometry) or DXA scan. A DEXA scan is used to measure bone mineral density (BMD). BMD is the amount of calcium and other minerals in an area of bone and is a measurement of bone strength. The lower your BMD, the more likely osteoporosis will be diagnosed.

A DEXA scan uses a very small amount of radiation, and is quick and painless. While you are lying down, an x-ray scanner will pass over your body taking pictures of your hips and sometimes lower spine. Your results will include a T score. The T score measures how your BMD compares to a range of young healthy adults with average BMD.

The BMD score ranges:

- T score above -1 is normal
- T score between -1 and -2.5 is classified as osteopenia (see below)
- T score below -2.5 is defined as osteoporosis

Find out more about DEXA scans on the National Osteoporosis Society website nos.org.uk and nhs.uk

If you are found to have osteoporosis, you will be advised about any appropriate drug treatment (see page 15). You will also be given guidance on any changes to your diet or lifestyle that may be helpful.

Osteopenia

Some people's results show they have lower bone density than average, but not enough to be classed as osteoporosis. This is called osteopenia. If you have osteopenia you will be given advice about changes you can make to your lifestyle, such as diet and exercise, to reduce the risk of losing further bone density and developing osteoporosis. You may need treatment, but your doctor will discuss this with you.

Do I need a DEXA scan?

If your treatment team has a concern about your risk of developing osteoporosis they may suggest a DEXA scan to check your BMD before you start treatment.

Your treatment team will follow guidance when deciding whether to recommend a DEXA scan. In England and Wales, they follow guidance from NICE (National Institute for Health and Care Excellence) – an independent organisation that produces evidenced-based guidance on effective ways to prevent, diagnose and treat ill health. Scotland and Northern Ireland have similar guidance.

NICE guidance

NICE recommends that people with early invasive breast cancer (cancer that has the potential to spread to other parts of the body) should have a DEXA scan to assess BMD if they are not having bisphosphonate treatment (see page 15) and they:

- are starting aromatase inhibitor treatment
- have treatment-induced menopause
- are starting ovarian suppression therapy

Follow-up DEXA scans may be recommended every two years for some people.

Fracture risk

Research has shown that your risk of breaking a bone (fracture risk) can be assessed more accurately by including other risk factors, such as your age, family history of hip fracture or whether you have had a fracture in the past. When assessing your fracture risk, your doctor will take these factors into account as well as your BMD score.

Your doctor may use an online fracture risk assessment tool such as FRAX or Qfracture to predict your risk of fracture over a period of time and help decide if you need treatment. These tools are designed for the general population and do not take into account breast cancer treatment.

You can read more about the FRAX and Qfracture online assessment tools on the National Osteoporosis Society website nos.org.uk and nhs.uk

Some people are more at risk of fracture than others. The lifestyle changes mentioned below and treatments to strengthen bones can reduce the risk.

Many fractures are the result of having a fall. If you are over 65 there is a simple self-assessment test to identify if you are at risk of falling on the NHS website:

nhs.uk/Livewell/healthy-bones/Pages/falls-risk-assessment-tool.aspx

You can read their guide Get up and go: a guide to staying steady here:

nhs.uk/Conditions/Falls/Documents/SAGA_Falls-Prevention.pdf

Looking after your bones

Some changes to your lifestyle can help keep your bones strong and healthy. If you have already lost some bone density, or have osteoporosis, changes to your lifestyle can't cure or reverse the problem but may help to stop it getting worse.

Food and drink for healthy bones

A varied, balanced diet will give you the nutrients that are important for strong, healthy bones. A healthy, balanced diet should include:

- plenty of fruit and vegetables
- some starchy carbohydrate foods such as bread, potatoes, pasta and cereals
- some dairy or dairy alternatives
- some beans, pulses, fish, eggs, meat and other protein
- not too much fat, salt or sugar

It's recommended that you eat at least five portions of a variety of fruit and vegetables every day. It's important to have fresh food in your diet, but frozen and tinned fruit and vegetables are also full of nutrients. Choose tinned fruit in juice rather than syrup and tinned vegetables that have less salt.

The Eatwell Guide shows how much of what we eat overall should come from each food group to achieve a healthy, balanced diet. You can read more about this at on the NHS website.

Drinking too much alcohol can affect your bone density. Additionally, studies have shown drinking alcohol increases the risk of getting breast cancer, although it's less clear if this affects the prognosis (outlook) for people who have had breast cancer. Therefore, NICE (National Institute for Health and Care Excellence) recommend people who've had breast cancer limit their alcohol intake to below five units per week.

You can find out how many units are in your drinks by using an online unit calculator. As a general guide:

- half a pint of average-strength (4%) beer = 1 unit
- a 175ml glass of wine (12.5%) = 2 units
- a single 25ml measure of spirits (40%) = 1 unit

Calcium

Calcium is a vital mineral for teeth and bones because it gives them strength and hardness. Our bodies contain about 1kg of calcium and 99% of it is found in our bones.

Our main dietary source of calcium is dairy produce. Most people are able to get enough calcium through a healthy diet that includes dairy products. Three portions of dairy a day will give you the recommended amount of calcium if you do not already have osteoporosis.

If you don't eat or drink any dairy products, it's important to ensure you still get enough calcium in your diet from other non-dairy sources. Milk alternatives such soya, rice and almond milk do not naturally contain as much calcium as cow's milk. Choosing dairy alternatives with added calcium can be helpful.

Good sources of calcium include:

- milk and dairy products (including low-fat varieties) such as yoghurt, fromage frais and cheese
- calcium-fortified breakfast cereals
- dried fruit such as apricots and figs
- fish with edible bones such as anchovies, sardines, pilchards and whitebait
- green leafy vegetables like broccoli, watercress and kale
- pulses, beans and seeds such as kidney beans, green beans, baked beans and tofu
- nuts and seeds such as almonds, brazil nuts, hazelnuts and sesame seeds
- okra

The calcium content of drinking water varies greatly across the UK. Some bottled mineral waters are calcium enriched (and are healthier than fizzy drinks). You may need to take a calcium supplement if you don't get enough calcium from diet alone.

How much calcium do I need?

Adults need around 700mg of calcium a day. Someone with or at risk of osteoporosis may be advised to have around 1,000–1,200mg a day. See below for a guide to the calcium values of some common foods (all figures are approximate).

portion of food	calcium per portion
200ml milk (all types)	240mg
120g yoghurt	200mg
30g Cheddar cheese	220mg
100g sardines in oil	500mg
100g tinned salmon	91mg
20g (1/4 bunch) watercress	34mg
200g of baked beans	106mg
100g (about 5) dried figs	250mg
50g (about 15) brazil nuts	80mg
one slice of white bread	53mg
One pitta bread/chapatti (65g)	60mg
Boiled broccoli (two spears)	34mg
One medium orange	75mg

There are calculator tools available online that can tell you how much calcium is in the different foods you eat.

Vitamin D

Vitamin D is needed to help your body absorb calcium. The main source is sunlight, which your body uses to make this vitamin in your skin.

From April to September, the ultraviolet light from the sun is strong enough that we can make vitamin D on exposed skin such as the face,

legs, and arms, but it's important to be safe in the sun. The body stores vitamin D for use during the winter months but it's recommended that all adults take a vitamin D supplement especially in the winter months.

You can get some vitamin D from food. However, even if you have a healthy, well-balanced diet that provides all the other vitamins and goodness you need, it's unlikely to provide enough vitamin D. Good food sources of vitamin D include:

- egg yolks
- red meat
- mushrooms
- oily fish such as herrings and sardines
- cod liver oil
- margarine, yoghurts and breakfast cereals that have added vitamin D (vitamin D-fortified)

Physical activity

Regular weight-bearing exercise or activities help stimulate growth and strength of the bones. Weight-bearing exercise is any exercise where you support the weight of your own body. Weight-bearing exercises can be high-impact or low-impact.

High-impact activities include:

- running
- skipping
- aerobics
- tennis

Low-impact activities include:

- walking
- dancing
- stair climbing
- cross training machines

The type of activity you do will depend on your individual needs and current abilities, such as your fitness levels, any effects of treatment or other health problems you might have.

If you have osteoporosis and are thought to have a high fracture risk you may need to avoid high-impact exercise and awkward or sudden bending and twisting because of a higher chance of injury. It might be

useful to discuss this with your GP, treatment team or a physiotherapist to find out what is right for you.

In addition to helping strengthen bones, exercise during and after treatment for breast cancer may also improve some of the other side effects of treatment – such as cancer-related fatigue and weight gain.

Some studies have also shown that regular exercise after treatment may help reduce the risk of breast cancer coming back.

It's recommended that adults should do at least 150 minutes (2 hours 30 minutes) of moderate-intensity activity a week. Moderate-intensity activity should make your heart beat faster. You'll feel warmer and breathe slightly harder, but you should still be able to hold a conversation.

You may find it easier to do shorter periods of activity at first and build up to 30 minutes a day especially if you have fatigue or are new to exercise. If you choose an activity that you enjoy, you're more likely to do it regularly. Any amount of activity is better than none, so try to minimise the time you are inactive as much as you can.

You should consult your doctor before starting any new exercise routine. They may refer you to a physiotherapist if you need extra guidance or support.

Muscle-strengthening activities

As well as activities like walking, aim to do muscle-strengthening activities at least twice a week. These activities can help strengthen your muscles after treatment, and include:

- sitting to standing
- squats
- press-ups against the wall
- lifting light weights, (you could use tins of food or small bottles of water)
- gardening
- activities that involve stepping and jumping such as dancing
- using fitness equipment such as a static bike or cross trainer
- yoga or Pilates

Talk to your GP before beginning a new muscle-strengthening activity.

Smoking

Smoking has been linked to a higher risk of fractures, so it's a good idea to stop or cut down if you smoke. If you need help to stop smoking, speak to your GP or visit the NHS Smokefree website nhs.uk/smokefree

Prevention and treatment of osteoporosis

There are a range of ways to prevent and treat osteoporosis. Although osteoporosis cannot be cured, treatments are available to try to stop the bones losing more density and to make them less likely to fracture. You will be advised about any appropriate drug treatment and its possible side effects. The National Osteoporosis Society has more information on drugs to prevent and treat osteoporosis on their website nos.org.uk

Supplements

Your GP may recommend a calcium and vitamin D supplement. You may be prescribed a tablet that contains both, such as Adcal D3.

Bisphosphonates

Osteoporosis in people who have had breast cancer is most commonly treated with a group of drugs called bisphosphonates. This includes zoledronic acid, risedronate, ibandronate or alendronate. Bisphosphonates help strengthen your bones and reduce your risk of fractures. Bisphosphonates may also be prescribed to protect your bones if you're taking an aromatase inhibitor (such as exemestane, letrozole or anastrozole).

Bisphosphonates can be used as a treatment to reduce the risk of primary breast cancer spreading. See our website for more information. They are also sometimes given as a treatment for secondary breast cancer in the bone (when cancer cells have spread from the breast to the bones). This is not the same as having osteoporosis.

Denosumab

Denosumab is a drug that may be recommended to reduce the risk of fractures. It is given as an injection twice a year and slows down bone loss in people with osteoporosis. It's a treatment for postmenopausal women who are unable to take certain bisphosphonates and who have particular fracture risk factors.

Raloxifene

Raloxifene is given for the prevention and treatment of osteoporosis in postmenopausal women. Raloxifene is only prescribed for women who have had breast cancer if they have completed their breast cancer treatment.

Calcitriol

Calcitriol is a form of vitamin D also shown to reduce spine fracture risk in some postmenopausal women with osteoporosis, but it is only used in certain circumstances.

Teriparatide

Teriparatide is also prescribed for osteoporosis but is usually only recommended if someone is unable have bisphosphonates or denosumab. It may be suggested if someone has a very high risk of fracture, particularly of the spine.

Getting support

If you are concerned about your bone health and osteoporosis it may help to talk about it with one of our Helpline experts on **0808 800 6000**. You can also chat to other women about the side effects of breast cancer treatment on our online Forum.



Four ways to get support

We hope this information was helpful, but if you have questions, want to talk to someone or read more about breast cancer, here's how you can.



Speak to our nurses or trained experts. Call our free Helpline on **0808 800 6000** (Monday to Friday 9am–4pm and Saturday 9am–1pm). The Helpline can also put you in touch with someone who knows what it's like to have breast cancer.



Chat to other women who understand what you're going through in our friendly community, for support day and night. Look around, share, ask a question or support others at forum.breastcancercare.org.uk



Find trusted information you might need to understand your situation and take control of your diagnosis or order information booklets at breastcancercare.org.uk



See what support we have in your local area. We'll give you the chance to find out more about treatments and side effects as well as meet other people like you. Visit breastcancercare.org.uk/in-your-area

We're here for you: help us to be there for other people too

If you found this booklet helpful, please use this form to send us a donation. Our information resources and other services are only free because of support from people such as you.

Donate today and together we can ensure that everyone affected by breast cancer has someone to turn to.

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In addition, we'd love to keep you updated about our work and provide you with other opportunities to get involved with Breast Cancer Care. Please tell us how you would like to hear from us (by ticking these boxes you confirm you are 18 or over)

- I'd like to hear from you by email
- I'd like to hear from you by text message or SMS
- Please do not contact me by post
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We never give your information to other organisations to use for their own purposes. To change your preferences, or find out more information on how we use your data, please view our privacy policy at breastcancercare.org.uk or contact supporter services on 0345 092 0800.

Please return this form to Breast Cancer Care, Freepost RRRKZ-ARZY-YCKG, Chester House, 1-3 Brixton Road, London SW9 6DE

Code: LP



About this booklet

Osteoporosis and breast cancer treatment was written by Breast Cancer Care's clinical specialists, and reviewed by healthcare professionals and people affected by breast cancer.



For a full list of the sources we used to research it:

Phone **0345 092 0808**

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When you have breast cancer, everything changes. At Breast Cancer Care, we understand the emotions, challenges and decisions you face every day, and we know that everyone's experience is different.

For breast cancer care, support and information, call us free on **0808 800 6000** or visit **breastcancercare.org.uk**

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