Osteoporosis and breast cancer treatment

This booklet is for people who have been treated for breast cancer and may be concerned or want more information about their risk of developing osteoporosis.
Some treatments for breast cancer can affect your bones which can then increase your risk of developing osteoporosis in the future.

This booklet explains what osteoporosis is, why the treatment you have had for breast cancer could increase your risk, and how you can help protect your bones with simple lifestyle changes.

**What is osteoporosis?**

Osteoporosis is a condition where your bones lose their strength and become 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 struts of bone.

Osteoporosis means some of these struts of bone become thin (and can disappear altogether) and can fracture easily with little or no force.

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 break.
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. 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 maintain bone density and strength. Women who have gone through the menopause are at increased risk of osteoporosis and fractures because their ovaries no longer produce oestrogen (low levels of oestrogen are still produced in body fat).

Risk factors

Risk factors for osteoporosis include:

- increasing age (women and men)
- low levels of the hormone oestrogen because of:
  - an early (before the age of 45) natural menopause or hysterectomy with removal of the ovaries
  - treatment for cancer (such as chemotherapy, hormone therapy and ovarian suppression)
  - the eating disorder anorexia nervosa
- a family history of osteoporosis or hip fracture
- previous wrist, spine or hip fracture resulting from little or no trauma
- long-term use of corticosteroid tablets (for conditions such as arthritis and asthma)
- medical conditions that affect how food is absorbed, such as Crohn’s disease, coeliac disease or ulcerative colitis
- conditions that leave you immobile for a long time
- low body weight
- regularly drinking more than the recommended amount of alcohol
- smoking
- a diet that is low in calcium and vitamin D (calcium can help to maintain bone density).
Breast cancer treatment and bone health

Both women who haven’t yet gone through the menopause (pre-menopausal) and women who have gone through the menopause (post-menopausal) may have an increased risk of osteoporosis related to breast cancer treatment.

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 post-menopausal women who have chemotherapy may notice greater loss of bone density than they would have had without chemotherapy.

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, which can also reduce bone density. Ovarian suppression can be done using a type of hormone therapy, surgery or radiotherapy.

Tamoxifen
Tamoxifen can be given to both pre-menopausal and post-menopausal women. It blocks the effect of oestrogen, which helps stop breast cancer cells from growing.

In pre-menopausal 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 post-menopausal women, taking tamoxifen slows down bone loss and can reduce the risk of osteoporosis.

Aromatase inhibitors
Aromatase inhibitors (including anastrozole, letrozole and exemestane) are mainly used to treat breast cancer in post-menopausal women.
These drugs reduce the amount of oestrogen circulating in the body, which can reduce bone density.

Some pre-menopausal women have an aromatase inhibitor at the same time as ovarian suppression. Having these two treatments 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.

**How is osteoporosis diagnosed?**

Generally osteoporosis is 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 lower spine and hips.

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 (low bone density).
- T score below -2.5 is defined as osteoporosis.

If your scan result shows you have osteopenia you will be given advice about changes you can make to your lifestyle, such as diet and exercise. You won’t usually need treatment, but your doctor will discuss this with you.

When assessing your osteoporosis risk, your doctor may also 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. Research has shown that bone fragility can be assessed more accurately by including other risk factors, such as your
Do I need a DEXA scan?

The National Institute for Health and Care Excellence (NICE) – an independent organisation responsible for providing national guidance on promoting good health and preventing and treating ill health – recommends that women at risk of developing osteoporosis should have their bone mineral density assessed.

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

NICE guidance

NICE recommends that people with early invasive breast cancer should have a DEXA scan to assess bone mineral density if 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.
Looking after your bones

Some simple changes to your lifestyle can help keep your bones strong and healthy. If there is already bone thinning, changes to diet can’t cure the problem but may help 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:

- some starchy carbohydrate foods such as bread, potatoes, pasta and cereals
- plenty of fruit and vegetables
- some protein-rich foods such as meat, fish, eggs, beans, lentils and nuts
- some milk and dairy foods
- not too much fat, salt or sugar.

It’s recommended that you eat at least five portions of fruit and vegetables every day. This includes fresh, frozen, tinned or dried fruit and vegetables.

Drinking too much alcohol can affect your bone density. It’s recommended that men and women should not regularly drink more than 14 units of alcohol a week.

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 which includes dairy products. Three portions of dairy a day will give you the recommended amount of calcium if you do not already have osteoporosis.

People with osteoporosis may be prescribed a calcium and vitamin D supplement on top of consuming dairy foods in their diet.

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 curly kale
- pulses, beans and seeds such as kidney beans, green beans, baked beans and tofu (a vegetable protein made from soya beans)
- 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, although someone with osteoporosis may be advised to have around 1,000-1,200mg a day. See the table below for a guide to the calcium values of some common foods (all figures are approximate).

<table>
<thead>
<tr>
<th>Portion of food</th>
<th>mg of calcium per portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>200ml of semi-skimmed milk</td>
<td>240mg</td>
</tr>
<tr>
<td>30g of Cheddar cheese</td>
<td>220mg</td>
</tr>
<tr>
<td>100g of sardines in oil</td>
<td>500mg</td>
</tr>
<tr>
<td>100g of tinned salmon</td>
<td>91mg</td>
</tr>
<tr>
<td>20g (1/4 bunch) watercress</td>
<td>34mg</td>
</tr>
<tr>
<td>200g of baked beans</td>
<td>106mg</td>
</tr>
<tr>
<td>100g (about 5) dried figs</td>
<td>250mg</td>
</tr>
<tr>
<td>50g (about 15) brazil nuts</td>
<td>80mg</td>
</tr>
<tr>
<td>one slice of white bread</td>
<td>53mg</td>
</tr>
</tbody>
</table>
**Vitamin D**

Vitamin D is needed to help your body absorb calcium. The best source is sunlight, which your body uses to make this vital vitamin in your skin. About 15–20 minutes’ exposure to sun a day during the summer will usually provide most people with enough vitamin D for the year. The body stores vitamin D for use during the winter months.

If you regularly go walking, do gardening or any other outdoor activity, you probably get enough exposure to sunlight without even thinking about it. However, as you get older the body is less able to make vitamin D from sunlight and so your dietary intake becomes more important.

A vitamin D supplement may be necessary if you:

- are over 65
- are unable to go outside
- cover all of your skin when outside.

Other sources of vitamin D include:

- margarine
- low-fat spreads
- egg yolks
- oily fish such as herrings and sardines
- cod liver oil
- vitamin D fortified breakfast cereals.

If you think you may not be getting enough vitamin D or calcium in your diet, your GP (local doctor) or specialist team can prescribe supplements or refer you to a dietitian for further advice.

**Physical activity**

Regular weight-bearing exercise helps 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 exercises include:

- running
- skipping
- aerobics
- tennis.
Low-impact exercises include:

- walking
- dancing
- stair climbing
- elliptical (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 risk of fractures you may need to avoid high-impact exercise and some bending and twisting because of a higher chance of injury. It is often useful to discuss this with your doctor 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. You may find it easier to do shorter periods of activity at first and build up to 30 minutes a day especially if you are fatigued or new to exercise. Any amount of activity is better than none, so try to minimise the time you are inactive as much as you can.

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.

If you choose an activity that you enjoy, you’re more likely to do it regularly. You should consult your doctor before starting any new exercise routine.

If you need some ideas on how to start introducing exercise, our DVD Eat well, keep active after breast cancer features an exercise class that is suitable for people who have had treatment for breast cancer. It also features the experiences of other people getting back to activity after breast cancer.
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

Treatment for osteoporosis
Although osteoporosis cannot be cured, treatments are available to try to stop the bones getting any weaker and to make them less likely to fracture.

Osteoporosis in people who have had breast cancer is most commonly treated with a group of drugs called bisphosphonates. 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 (exemestane, letrozole or anastrozole).

Denosumab is a drug that may be recommended to prevent fractures. It is given as an injection twice a year and slows the process of bone loss in osteoporosis. It’s a treatment for post-menopausal women who are unable to take certain bisphosphonates and who have particular risk factors for fracture.

You should see your dentist for a check-up before starting treatment and tell them that you are being treated with bisphosphonates or denosumab, particularly if you’re due to have any dental work.

Strontium ranelate is another drug that may occasionally be used to treat severe osteoporosis in post-menopausal women. It is taken as granules dissolved in water. Like denosumab, it can only be prescribed in certain circumstances, such as in people who are at high risk of fracture.

If you are found to have osteoporosis, you will be advised about appropriate drug treatment and its possible side effects. You will also be given guidance on any changes to your diet or lifestyle that may be helpful.
The National Osteoporosis Society has more information on these drugs on its website www.nos.org.uk

Bisphosphonates and denosumab are also used to treat breast cancer that has spread to the bones (secondary breast cancer in the bone). This is not the same as having osteoporosis.
Helping you face breast cancer

Treatments for breast cancer can be complex and if you’re wondering where to turn for support in making treatment decisions or coping with side effects, we can help with practical and emotional support.

Ask us
Our free Helpline is answered by specialist nurses and trained staff with personal experience of breast cancer. They understand your issues and can answer questions. Or you can Ask the Nurse by email on our website.

Free Helpline 0808 800 6000 (Text Relay 18001)
Monday–Friday 9am–5pm, Saturday 10am–2pm
www.breastcancercare.org.uk/ATN

Talk to someone who understands
Our Someone Like Me service puts you in contact by phone or email with someone else who’s had breast cancer and who’s been trained to help.

Online, you can chat to other people going through breast cancer on our professionally moderated discussion Forum.

In your area
We provide a variety of services in person across the UK, including:

HeadStrong prepares you for the possibility of losing your hair because of cancer treatment. In a private meeting, trained volunteers talk with you about how to look after your scalp before, during and after treatment. They’ll also share ideas on how to make the most of scarves, hats and other headwear.

Moving Forward Information Sessions and longer courses on adjusting to life after treatment. Both have expert speakers and offer the chance to talk to other people in the same situation as you.

Find out about all our services for people affected by breast cancer at www.breastcancercare.org.uk/services or phone the Helpline. We can help you decide which of our services are right for you.
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.

We want to be there for every person facing the emotional and physical trauma of a breast cancer diagnosis. Donate today and together we can ensure that everyone affected by breast cancer has someone to turn to.

Donate by post
Please accept my donation of £10/£20/my own choice of £
I enclose a cheque/PO/CAF voucher made payable to Breast Cancer Care

Donate online
You can give using a debit or credit card at www.breastcancercare.org.uk/donate

My details
Name ____________________________________________________________
Address _________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
Postcode ______________________
Email address _____________________________________________________

We might occasionally want to send you more information about our services and activities

☐ Please tick if you’re happy to receive email from us
☐ Please tick if you don’t want to receive post from us

We won’t pass on your details to any other organisation or third parties.

Please return this form to Breast Cancer Care, Freepost RRKZ-ARZY-YCKG, 5–13 Great Suffolk Street, London SE1 0NS
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
Email publications@breastcancercare.org.uk

You can order or download more copies from www.breastcancercare.org.uk/publications

For a large print, Braille, DAISY format or audio CD version:

Phone 0345 092 0808
Email publications@breastcancercare.org.uk
Breast Cancer Care is the only UK-wide charity providing specialist support and tailored information for anyone affected by breast cancer.

Our clinical expertise and emotional support network help thousands of people find a way to live with, through and beyond breast cancer.

Visit www.breastcancercare.org.uk or call us free on 0808 800 6000 (Text Relay 18001).

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