

Bone Health and Cancer



The information in this factsheet will help you to understand more about keeping your bones healthy after a cancer diagnosis. We hope that it answers some of your questions, including what can affect your bones, how you can look after your bones and what drug treatments are available. If you have any other questions or concerns, talk to your doctor, call the **National Cancer Helpline** on **1800 200 700** or visit **www.cancer.ie**.

Why is bone health important?

Bone health is important throughout your life, but it is even more important as you get older. This is because bone loss gradually increases as a person gets older, causing bones to become weaker. If you have a diagnosis of cancer, your bones may be more at risk. This can be from the cancer or from treatment for cancer.

How does bone grow and repair itself?

To understand how your bones can be affected by cancer or cancer treatments, it helps to know how normal bone grows and repairs itself.

Your bones are made of living tissue and are always changing. In healthy bones old bone cells are replaced with new ones. Cells called osteoclasts ('bone eaters') get rid of old bone cells and osteoblasts ('bone builders') build new bone. This keeps your bones strong and healthy.

Sometimes your body's ability to repair and grow healthy bone cells is affected. This causes the bones to become thin and porous (full of tiny holes), making them weaker and more likely to break. This is called bone loss. It can result in a condition called osteoporosis.

National Cancer Helpline **1800 200 700**

What causes bone loss?

Bone loss can happen for many reasons including:

- Getting older (being 65 or older).
- Smoking.
- Being diagnosed with low bone density, which is a measure of the thickness and strength of your bones.
- Being postmenopausal (a woman who is no longer having periods).
- Not having enough calcium and vitamin D in your diet.
- Having a chronic condition such as rheumatoid arthritis, ulcerative colitis, lupus or Crohn's or thyroid disease.
- Being underweight.
- Too much tea and coffee (more than 4 cups daily).
- A history of fractures or broken bones or a family history of hip fracture.
- Some cancer treatments such as hormone therapy, chemotherapy and, in limited cases, radiotherapy and surgery.
- Being confined to bed for long periods due to illness.
- History of treatment with corticosteroid medications.

How could cancer affect the bones?

• Cancer spread to the bones

Cancers such as breast, prostate, lung and kidney can spread to the bones. This can cause weakening of the bone, fractures (breaks) and pain. If cancer has spread to the bones of the spine (vertebrae), it can cause pressure on the spinal cord. This is called spinal cord compression. Spinal cord compression can result in numbness and loss of power in the legs.

Breakdown of bone cells can also release extra calcium into your blood. A high calcium level in your blood is called hypercalcaemia. This can make you feel thirsty, sick, constipated or drowsy.

It is very important to tell your doctor immediately if you have any of these symptoms.

• Cancer treatment

Some cancer treatments may affect your bones and lead to bone loss (osteopenia) or bone thinning (osteoporosis):

- Some chemotherapy drugs that reduce the production of hormones in the body. This can lower calcium levels.
- Radiation therapy to the pelvic region, especially for women over the age of 65. This risk may be greater for women who had osteoporosis before treatment.
- Some hormone therapies used for breast and prostate cancer patients.
- Steroid treatment.
- Some cancer treatments used for chronic myeloid leukaemia (CML), advanced multiple myeloma and gastrointestinal tumours.
- Surgery to remove the ovaries in premenopausal women or the testes in men.

• Other cancers

Some cancers such as multiple myeloma and osteosarcoma start in the bones. This can damage the bone and cause pain.

How can I check my bone health?

The health of your bones can be checked by a DEXA scan. DEXA is short for dual energy X-ray absorptiometry. It uses a very low-dose X-ray to measure the thickness (density) of your bones. The DEXA scan is the most reliable way of checking the strength of your bones and your risk of breaking a bone. It is a simple, painless procedure. You will be asked to lie down on a table for about 15 minutes while your spine and hips are scanned.

If you are at risk of bone loss, early detection is important. A DEXA scan is often done before you start any cancer treatments that may increase your risk of bone loss. You may have a scan before, during and after your cancer treatment.

What do the results of my DEXA scan mean?

The result of your DEXA scan will be a special number called a T-score:

- If your T-score is between 0 and -1 this means you have normal bone density.
- If your T-score is between -1 and -2.5 you have a condition called osteopenia. This means you are at risk of developing osteoporosis.
- If your T-score is greater than -2.5 you have osteoporosis.

Osteopenia occurs when the bones become slightly less dense. It is much more common than osteoporosis. Osteoporosis is when your bones have become thin and porous (full of tiny holes).

A diagnosis of osteopenia or osteoporosis means that you must start looking after your bones, as you are at increased risk of breaking a bone (fracture). You may also need to start taking special supplements or bone-strengthening drugs. If you are prescribed bone-strengthening drugs, your doctor will probably send you for a DEXA scan every 2 years.

What can I do to look after my bones?

There are many changes you can make to your lifestyle to reduce your risk of bone loss and promote strong, healthy bones. For more information on healthy living call the National Cancer Helpline on 1800 200 700 or visit www.cancer.ie.

• Get physically active

Physical activity is good for bone health. It encourages the production of bone-forming cells. Exercise also helps to build muscles, providing more stability for your body.

It is important to keep exercising regularly to get the greatest benefit. In general, 30 minutes of weight-bearing exercise a day is recommended. Weight-bearing activities include tennis, football, running, jogging and dancing. Walking is a weight-bearing exercise, but it is important to change your pace occasionally.

Your doctor can refer you to a physiotherapist who can advise you on the best exercise for you. If you have cancer in your bones, it is important to check with your doctor before starting an exercise programme.

• Eat well and get enough calcium and vitamin D

A balanced diet with plenty of calcium and vitamin D is vital for healthy bones.

Calcium is a mineral that helps to keep your bones healthy and strong. Vitamin D is essential to help your body to absorb calcium. Calcium is best absorbed from dairy products, like milk and cheese. The best source of vitamin D is sunlight. Try to expose your hands, face and arms to sunlight for 5 to 15 minutes two to three times a week during the summer. Foods with vitamin D include egg yolks and fish like salmon, mackerel and sardines. Some milk, spreads and breakfast cereals have vitamin D added. Our booklet *Diet and Cancer* has lots of information on healthy eating. Download it at www.cancer.ie or get a free copy by calling the Helpline or visiting a Daffodil Centre.

Get more calcium



Hints & tips

- Calcium-rich foods include cheese, yogurt, green vegetables and tinned fish such as sardines, pilchards and salmon.
- Try to eat at least three portions of calcium-rich foods every day.
- A portion could be a matchbox-sized piece of hard cheese, 2 pilchards or sardines with bones, a glass of milk or a pot of yogurt.
- Look for foods with added calcium, such as orange juice and milk.
- Choose milky drinks and make meals that include cheese and other calcium-rich foods.
- Calcium levels decrease as we age, so it may be necessary to increase your intake or take a supplement as you get older.

- **Stay a healthy weight**

Being a healthy weight is best for the health of your bones. If you are underweight or overweight you may be more prone to bone loss and fractures. Ask your doctor for advice if you are trying to lose or gain weight. He/she can refer you to a dietitian.

- **Cut down on caffeine**

Caffeine is found in tea, coffee, energy drinks and colas. Caffeine may cause you to pass more calcium in your urine. Limit your intake of energy drinks and colas and do not drink more than 4 cups of tea or coffee per day.

- **Stop smoking**

Smoking is bad for your bone health. Smoking kills the bone-making cells and upsets the balance of hormones that bones need to stay strong. Smoking also damages blood vessels in the body, including the toes and feet. This can lead to more falls and breaks and poorer healing in the event of a break.

- **Limit alcohol**

Too much alcohol may affect your bones and increase your risk of osteoporosis. You can limit your risk by drinking no more than 11 standard drinks for women and 17 for men. It is best to have no more than 5 standard drinks at one time and keep 3 alcohol free days. A standard drink is ½ pint beer or stout, 1 measure spirits, or a small glass of wine.

- **Prevent falls**

Poor balance, decreased muscle and bone strength, reduced vision or hearing, and unsafe conditions in and around your home can increase your chance of falling.

If you feel unsteady on your feet talk to your GP. He or she can refer you to an occupational therapist (OT). The OT can assess your needs and organise equipment like walking aids and grab bars. This equipment can help to keep you and your home safe.

Prevent falls – make your home and yourself safer



Protect yourself at home

- Avoid slippery surfaces like icy paths and wet/highly polished floors.
- Get rid of tripping hazards, like loose cords or things lying on the ground, both in the house and the garden.
- Keep your house and garden well lit.
- Try not to rush, especially when getting out of your bed or chair – this can make you dizzy. Also take care when going up and down the stairs.
- Keep the things you use a lot in easy-to-reach places. Store heavy items in lower cupboards.

Tips to avoid falls

- Don't be embarrassed to use aids to daily living – they can keep you safe and active.
- If you need glasses and/or a hearing aid... wear them!
- Comfortable shoes that provide good support can help to prevent falls.
- Find out about other gadgets that can make your life safer: reachers, anti-slip soles, hip protectors, etc.
- Always ask for help with any tasks that you feel you can't do safely.

Bone-strengthening drugs

Your doctor may prescribe bone-strengthening drugs for you. There are many different types of bone-strengthening drugs. Two types commonly used for patients with cancer are bisphosphonates and monoclonal antibodies:

- **Bisphosphonates.** There are many different drugs in this category. For example, zoledronic acid (Zometa®) and ibandronate (Bonviva®).
- **Monoclonal antibodies.** There is currently one drug in this category called denosumab (Xgeva®).

Some patients may require other treatments. These patients will be referred to the osteoporosis clinic.

How do bone-strengthening drugs work?

The aim of all bone-strengthening drugs is to slow down or prevent bone damage, help increase bone strength and thickness, and reduce bone pain.

Who may be offered bone-strengthening drugs?

Both bisphosphonates and denosumab can be used to treat cancer that started in another part of your body and has spread to your bone (secondary cancer). The most common types of secondary cancer are secondary breast cancer, secondary prostate cancer and secondary lung cancer.

Bisphosphonates may also be prescribed to treat patients with an early cancer diagnosis who are also suffering from bone loss and need cancer treatments. Studies have found that bisphosphonates may slow down or prevent multiple myeloma and secondary bone cancers. Cancer cells appear to be attracted to areas where bones are being broken down. It is hoped that stopping this process could slow the growth of cancer and help people live longer, as well as reducing bone damage.

Denosumab is also used to reduce the risk of fractures in patients with secondary cancer.

You may also be offered these drugs as part of a clinical trial. For more information, call the National Cancer Helpline on 1800 200 700 and ask for a free copy of our factsheet on clinical trials or visit www.cancer.ie.

How are bone-strengthening drugs given?

The way you will take any bone-strengthening drugs depends on the type of drug that has been recommended for you.

Bisphosphonates are commonly given into a vein in a drip, which can take from 15 minutes up to 3 hours. The treatment may be given every 3 to 4 weeks. These bisphosphonates include zoledronic acid, pamidronate disodium, sodium clodronate and ibandronic acid. Sodium clodronate and ibandronic acid can also be given as a tablet.

Denosumab is given as an injection just below the skin (subcutaneously). Denosumab is usually given every 4 weeks.

Bisphosphonates can be given in tablet form. The tablets are taken daily or weekly and are best absorbed on an empty stomach. Certain medications such as antibiotics can affect how they are absorbed. It is important to get instructions from your doctor or pharmacist before taking them.

How long will I be on bone-strengthening drugs?

The length of time you will take bone-strengthening drugs will depend on why they have been prescribed for you and how well they are working. Your doctor will advise you when and if you should stop taking these drugs.

If you have been prescribed bone-strengthening drugs to strengthen your bones or reduce pain for secondary cancer, your doctor will decide how long you should continue to take them for, based on how well they are working.

If you are taking a medication to improve bone strength while on hormone therapy for cancer, you may be advised to take it for a number of years.

If you are prescribed bone-strengthening drugs with other treatments such as chemotherapy or as part of a clinical trial, treatment may be for a shorter time.

What are the side-effects of bone strengthening drugs?

Like any treatment, bone-strengthening drugs can cause side-effects. Everyone reacts differently to drugs and some people have more side-effects than others.

Ask your specialist for details of the side-effects of the drug you will be taking. Do let him or her know if you have any troublesome symptoms. It is best not to become pregnant while on bone-strengthening drugs due to the harmful effect the treatment might have on your baby. Talk to your doctor or nurse about contraception before you start the treatment.

Bisphosphonates side-effects

Common side-effects include:

- Headache.
- Bone or muscle pain and discomfort in your joints.
- Flu-like symptoms such as fever, hot flushes or chills that last only a short while.

Less common side-effects include:

- Inflammation at the injection site that can become red or painful.
- Diarrhoea, nausea and vomiting.

Rare side-effects include:

- Muscle cramps, abdominal pain, feeling dizzy or drowsy and kidney problems.
- Jaw damage known as osteonecrosis of the jaw (dead cells in the jaw), which may lead to loss of teeth.

Denosumab side-effects

Common side-effects include:

- Nausea.
- Diarrhoea.
- Tiredness.
- Shortness of breath.

Less common side-effects include:

- Headaches.
- Cough.
- A rash which may be itchy and become sore.
- Sweating more than usual.
- Aching joints.
- Low calcium levels – you will have blood tests to check your calcium levels and you may need to take a calcium and vitamin D supplement.
- Jaw damage known as osteonecrosis of the jaw (dead cells in the jaw) which may lead to loss of teeth.

Rare side-effects include:

- Swelling of an area of skin, with reddening that feels hot and tender.
- An allergic reaction, which could cause wheezing or difficulty breathing, swelling of the face, lips, tongue or other parts of the body, and a rash or itchy skin. Contact your doctor straight away if you have any of these side-effects.

It is extremely important to take bone-strengthening medications exactly as prescribed to get the best benefit. Not taking them properly can affect how they work and increase your risk of breaking a bone.

Dental care and bone-strengthening drugs



Special dental care is advised while you are taking bone-strengthening drugs:

- Have a dental check-up before starting your treatment.
- See your dentist regularly during your treatment.
- Tell your doctor before you have any dental treatment and always tell your dentist you are on bone-strengthening medication.
- Do not have any teeth removed while on treatment unless your doctor says it is safe to do so.
- Tell your doctor or dentist immediately if you develop any problems with your teeth or gums, or swelling, pain, heaviness or numbness of your jaw.

Take care of your mouth:

- Brush your teeth regularly with a soft toothbrush.
- Use a non-alcohol-based mouthwash.
- Floss gently daily.
- Change your toothbrush every 6 months.

For further information on dental care, ask your dentist for an appointment with a dental hygienist.

Do I need calcium and vitamin D supplements?

With some bone-strengthening drugs you may be prescribed a calcium and vitamin D supplement to prevent low calcium levels. Calcium supplements can interfere with your body's ability to absorb oral bisphosphonates, so you will usually be advised to take them at different times.

It is important to take these supplements daily and to carefully follow your doctor's instructions.

Taking bone-strengthening drugs with other drugs

Bisphosphonates: Certain antibiotics should be avoided, as the combination of drugs can interfere with the calcium level in your blood. You will be given advice by your pharmacist if you need to take any special precautions. If you are taking oral bisphosphonates, do not take any indigestion remedies or medications at home before taking your tablet as they can affect its absorption.

Denosumab: Some anti-cancer medications, corticosteroids and immunosuppressants will not be prescribed at the same time. Your doctor will advise you.

What should I do if I have any concerns?

If you are troubled by side-effects or have any concerns, do discuss them with your doctor or nurse. In many cases there are medications that can help control and relieve side-effects of bone-strengthening drugs.

Tell your doctor immediately if you develop any problems with your teeth or gums, or swelling, pain, heaviness or numbness of your jaw.

Useful organisations and websites

Osteoporosis Ireland

Website: www.irishosteoporosis.ie

Osteoporosis Australia

Website: www.osteoporosis.org.au

Get Ireland Active website

Tips on being more active

Website: www.getirelandactive.ie

Irish Nutrition and Dietetic Institute

Information on healthy eating

Website: www.indi.ie

Skeletal Care Academy

Education to promote the highest standard of care for patients with cancer-related bone disease.

Website: www.skeletalcareacademy.com

Daffodil Centres

The Irish Cancer Society's Daffodil Centres provide cancer information, support and advice in local hospitals. Daffodil Centres aim to provide a wide range of information locally to anyone affected by or concerned about cancer.

For details of your nearest Daffodil Centre call the National Cancer Helpline on 1800 200 700 or visit www.cancer.ie.



For more information on bone health and cancer or for confidential advice from our cancer nurse specialists, call the **National Cancer Helpline on Freefone**

1800 200 700

(Monday–Thursday, 9am–7pm,
Friday 9am–5pm) or email
helpline@irishcancer.ie



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