

Osteoporosis

Causes, prevention and treatment

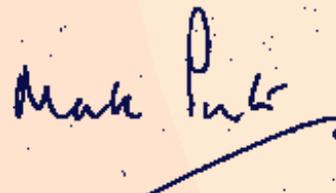
Most of us rarely give our bones a second thought. We can't see or feel what's happening to our skeleton and we naturally assume it will support us for life. In most cases it will, but bone is a living tissue that needs as much looking after as the rest of our bodies.

Our bones are at their strongest in our mid-thirties after which some thinning is inevitable with advancing years. The majority of us never notice the changes but for 1 in 3 women and 1 in 12 men over the age of 50 this progressive weakening leads to osteoporosis, where their bones become so fragile that they can break following the simplest knock or fall.

Osteoporosis can be a major cause of pain and disability but it doesn't have to be inevitable and, to varying degrees, is both treatable and preventable. This booklet contains the information you need to understand osteoporosis and outlines the steps that you and your doctor can take to prevent it or, if you already have it, to minimise the impact that it will have on your day to day life.

The National Osteoporosis Society (NOS) is the only national charity dedicated to osteoporosis and I am a staunch supporter of their work. If, after reading this booklet, you need more information on any aspect of the condition then please turn to the back for a list of other information booklets, or phone their helpline on 01761 472721 and speak to a nurse.

Look after your bones and they will look after you – it's never too late to start.

A handwritten signature in black ink that reads "Mark Porter". The signature is written in a cursive style with a long, sweeping underline that extends to the right.

Dr Mark Porter

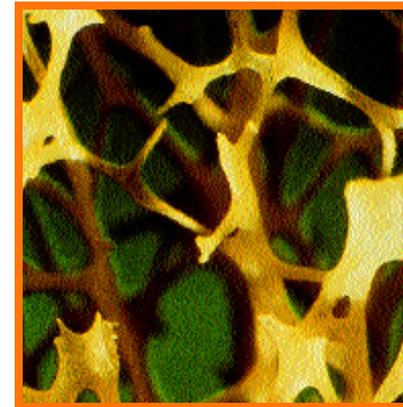


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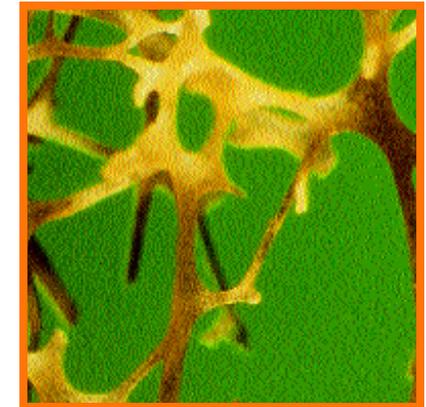
What is osteoporosis?

Osteoporosis literally means 'porous bones'

The bones in our skeleton are made of a thick outer shell and a strong inner mesh filled with collagen (protein), calcium salts and other minerals. The inside looks like honeycomb, with blood vessels and bone marrow in the spaces between bone. Osteoporosis occurs when the holes between bone become bigger, making it fragile and liable to break easily. Osteoporosis usually affects the whole skeleton but it most commonly causes breaks (fractures) to bones in the wrist, spine and hip.



Strong, dense bone



Fragile, osteoporotic bone

What causes osteoporosis?

Bone is alive and constantly changing. Old, worn out bone is broken down by cells called osteoclasts and replaced by bone building cells, called osteoblasts. This process of renewal is called bone turnover.

In childhood, the cells that make new bone work faster, enabling the skeleton to increase in density and strength. During this period of rapid bone growth it takes the skeleton just two years to completely renew itself; in adults this takes seven to ten years. Bones stop growing in length between the ages of 16-18 but continue to grow in strength into your mid-twenties. By this age your bones have reached their maximum potential strength (peak bone mass). Up until the age of 35 a balance between bone breakdown and new bone formation means that bone density stays stable. After this age bone loss increases as part of the natural ageing process. This can lead to osteoporosis and an increased risk of fracture.

Women are more at risk of developing osteoporosis than men. They have smaller bones which are less dense and they also experience the menopause, which greatly accelerates bone loss. At the menopause (normally around the age of 50) the ovaries stop producing the female hormone oestrogen, which is essential to bone health, and a lack of oestrogen causes an increase in bone loss. Younger women can similarly be at risk of osteoporosis if they have low circulating levels of oestrogen. Over-exercising and eating disorders (anorexia nervosa and bulimia) can upset the normal hormone balance and lead to bone loss.

Men generally have bigger, denser bones than women and do not undergo the rapid bone loss associated with the female menopause. Osteoporosis in men is often the result of another health problem. Low levels of the male hormone, testosterone can lead to osteoporosis. This can be due to a problem with the testes themselves or the pituitary gland, which controls hormone levels. There may be no obvious signs or symptoms but some men do find they need to shave less regularly, have a low sex drive and feel excessively tired.

In nearly half of all men with osteoporosis the cause is unknown (called idiopathic osteoporosis) and further research is needed to establish why this bone loss occurs.

Am I at risk?

There are many factors, which can increase your risk of osteoporosis.

For women

A lack of oestrogen, caused by

- early menopause (before the age of 45)
- early hysterectomy (before the age of 45), especially if both ovaries are removed (oophorectomy)
- missing periods for six months or more (excluding pregnancy) as a result of over-exercising or over-dieting

For men

- Low levels of the male hormone, testosterone (hypogonadism)

For men and women

- long-term use of corticosteroid tablets (for conditions such as asthma)
- maternal history of a hip fracture
- malabsorption, inflammatory bowel disease (Crohn's disease or ulcerative colitis) and gastric surgery
- long-term immobility
- heavy drinking
- smoking
- low body weight

If you think you may have one or more of these risk factors you are at increased risk of developing osteoporosis. You need to discuss your risk with your doctor and find out how to prevent and treat the disease.

Warning signs

If you have already broken a bone after a minor bump or fall you may already have osteoporosis. Other warning signs include height loss and kyphosis (curvature of the spine). If you have one of these warning signs you may want to discuss your risk of osteoporosis with your doctor.



Anna Richman was 15 when she began suffering from anorexia nervosa. Four years later, just as she was finally recovering from the eating disorder, Anna's back gave way one morning. At first she was told that she had slipped a disc and was prescribed bed rest. It was when she was on her feet again that her mother noticed she was no longer taller than her sisters; Anna had lost two inches in height due to spinal fractures. Since being diagnosed with osteoporosis Anna has been prescribed high dose contraceptive pills to boost her oestrogen levels. She takes regular weight-bearing exercise and has a calcium-rich diet, helping to increase her bone density. Anna has now qualified as a doctor and helps the NOS to alert young women to the risks of osteoporosis.

Can I prevent osteoporosis?

There is much you can do to try to build and maintain strong, healthy bones that will help to prevent osteoporosis. Your genes determine the potential height and strength of your skeleton but lifestyle factors can influence the amount of bone you invest in your bone 'bank' during your youth and how much you save in later life.



During childhood, adolescence and early adulthood, when your skeleton is increasing in bone density, it's vitally important that you try to maximise your peak bone mass. Making the most of your bone mass will put your skeleton in a better position to withstand the natural bone loss that occurs later in life. If you are in your mid-thirties or older you should aim to maintain the strength of your bones.

What is a 'bone-friendly' diet?

Healthy eating is essential for healthy bones; incorporating minerals and vitamins from four different food groups, including bread and cereals; fruit and vegetables; milk and dairy products; meat, fish, eggs, pulses, nuts and seeds. You especially need to ensure that your diet is rich in calcium. Calcium is the most abundant mineral found in our bones and helps to give them strength and rigidity. Men and women need different amounts of calcium at different stages of life, so check your needs in the table shown on the next page.

Calcium recommendations	RNI* (mg)
Adults	
Men	700
Women	700
Teenagers	
Boys 11–18	1000
Girls 11–18	800
Children	
1–3 years	350
4–6 years	450
7–10 years	550
Infants (breast fed only)	
0–12 months	525
Pregnancy and Lactation	
Pregnant women	700
Breastfeeding women	700 + 550*

Based on the Department of Health Committee on Medical Aspects of Food and Nutrition Policy (COMA) 1998.

*COMA notes that the additional increment may not be necessary with more recent evidence.

If you have been diagnosed with osteoporosis you may need to boost your calcium levels to approximately 1200mg for adults and consequently may be given a calcium supplement with your treatment. In the trials that have shown bisphosphonates to reduce fractures, the calcium supplementation used was 500–1000mg. Therefore, extra calcium may be taken as part of the diet or as a supplement but the upper limit must not be exceeded.

Weight (g) (oz)	Food	Calcium content (mg)
$\frac{1}{3}$ pint (190ml)	Whole milk	224
$\frac{1}{3}$ pint (190ml)	Semi-skimmed milk	231
$\frac{1}{3}$ pint (190ml)	Skimmed milk	235
150g (5oz)	Low-fat yogurt	225
112g (4oz)	Ice-cream	134
28g (1oz)	Cheddar cheese	202
112g (4oz)	Boiled spinach	179
112g (4oz)	Baked beans	59
28g (1oz)	White bread (1 slice)	33
	1 large orange	58
100g ($3\frac{1}{2}$ oz)	Dried apricots	92
100g ($3\frac{1}{2}$ oz)	Brazil nuts	170
56g (2oz)	Whitebait (fried)	482
56g (2oz)	Salmon (tinned)	52
100g ($3\frac{1}{2}$ oz)	Tofu	480



The best sources of calcium are milk and dairy products such as cheese and yogurt. Don't worry if you're watching your weight as low-fat varieties contain just as much calcium as their full-fat counterparts. If you don't like or are unable to eat dairy products, you should be able to get enough calcium from non-dairy sources but it might take a bit more planning. Non-dairy foods such as bread, green leafy vegetables and baked beans all contain calcium. Be careful not to have too much animal protein, salt or caffeine because in excessive quantities these can reduce your body's ability to absorb or retain calcium. See the table opposite for more guidance.

Vitamin D is needed to help the body absorb calcium. Although foods such as dairy produce, margarine and fish oils contain vitamin D, the major source of this vitamin is from the action of sunlight on skin. About 15-20 minutes of sunlight a day on the face and arms during the summer months is adequate to enable the body to store enough vitamin D to last the rest of the year. Be careful not to stay out in the sun too long to avoid burning or increasing your risk of developing skin cancer. Elderly people living in nursing homes who rarely get outside may become deficient in vitamin D; supplements of calcium and vitamin D may then be needed.



How can I exercise my bones?

Like muscles and other parts of the body, bones suffer if they are not used. They need regular weight-bearing exercise, which puts force through the bone, stimulating growth and therefore strength. Good bone-building exercises include running, skipping, aerobics, tennis and weight-training. Even a brisk walk can be of some benefit to your bones. Swimming and cycling are excellent for overall fitness but do not directly benefit bone as you are not supporting your own weight.

Try to exercise at least three times a week for a minimum of 20 minutes but most importantly choose an activity that you enjoy and stick to a regular routine. If you haven't exercised for a while, start gently and check with your doctor if you have another health problem and are concerned about exercising. For information about exercise as a treatment see page 20.

What else can I do?

If you are a smoker – give up! Smoking has a toxic effect on bone in men and women. It can cause women to have an earlier menopause and may increase the risk of hip fracture in later life. Not smoking will benefit bone and general health and fitness.

Watch what you drink! Drinking too much alcohol is damaging to bone turnover. Limit your alcohol intake to a maximum of 3–4 units per day for men and 2–3 units for women. These limits are not targets to drink up to and having alcohol free days is advisable. One unit of alcohol is equivalent to a glass of wine; a measure of spirits; or half a pint of normal strength beer or cider. The good news is that a moderate intake of one to two glasses of red wine a day may have beneficial effects on the skeleton as well as the heart.

What about hormone replacement therapy (HRT)?

For women at the menopause, HRT provides the body with the oestrogen it lacks and can be a very effective means of preventing osteoporosis. It is licensed as a treatment for post-menopausal women to prevent osteoporosis and may be useful for older women. Research has shown that taking HRT for at least five years can reduce your risk of fractures by 50% whilst you are taking it. Turn to pages 15-18 for further information on treatments.

How do I know if I have osteoporosis?

Because you cannot see or feel your bones getting thinner you will probably be quite unaware of any problems with your bone health. Osteoporosis is a silent disease and for most people, the first sign that something is wrong can be when they break a bone, often in the wrist or spine, after a minor bump or fall.

Wrist fractures are particularly common in women in their fifties but sadly osteoporosis frequently goes undiagnosed. In the spine, osteoporosis can cause the small vertebrae to crush or wedge, often causing chronic pain. However, some people may not experience pain and the first indication of osteoporosis might be the resulting loss of height. If several bones crush and form wedge shaped fractures the spine can start to curve. Severe curvature of the spine can reduce the space under the rib cage, cause digestive and breathing problems and sometimes incontinence, as the internal organs are pressed onto the bladder. Hip fractures are most common in older people, usually after a fall, and can have a big impact on quality of life.



Iris Swain, a retired deputy headmistress, spent more than two years caring for her mother who suffered from osteoporosis. During this time, Iris broke her wrist after a minor fall, often an early warning sign of osteoporosis, but was not given advice about osteoporosis or its treatment. She was later diagnosed with the disease at the age of 65. Iris probably developed osteoporosis as a result of an early menopause. She was treated with hormone replacement therapy and then with a bisphosphonate called etidronate and her bone density has improved. Iris campaigns to raise awareness of osteoporosis and improve support for people with the disease. She is one of three lay members on the NOS Council of Management.

Can I be tested for osteoporosis?

A normal x-ray of bone can highlight a fracture but osteoporosis only shows on an x-ray when at least 30% of your bone density has been lost.

A bone density scan, called a Dual Energy X-ray Absorptiometry (DXA) scan, is used to measure the density of bones. This test is currently the most accurate and reliable means of assessing the strength of your bones and your risk of fracture. It is a simple, painless procedure that uses very low doses of radiation. You will be asked to lie down on the machine for 10-15 minutes whilst an x-ray arm passes over you to take an image of your spine and hip. Some centres may have forearm machines which measure the density of the wrist. A bone density scan can diagnose osteoporosis, assess risk of fracture and monitor the effects of treatment.

How can I get a bone density scan?

Bone density scans are only recommended for people who are at high risk of osteoporosis, so discuss your medical history with your doctor, who can decide whether to refer you to hospital for a scan. Your doctor may use the results to decide on treatment for you, or you may be asked to see a specialist consultant. In some areas of the UK access to bone density scans is very limited, so your doctor may go ahead and prescribe treatment without a scan if he has identified a fracture by x-ray, or he feels there is sufficient medical evidence (such as an early menopause). Women who are going to take HRT at the menopause probably won't need a bone density scan.



What will the results tell me?

The results will show how your bone density compares to the average bone density of both a young adult of the same sex and someone of the same age (and sex) as yourself. The results can be given as a percentage of the normal value, or as a standard deviation, which means the number of units above or below the average for the population. If your bone density is significantly lower than average this is diagnosed as osteoporosis and your bones are at increased risk of fracture. If your bone density is between the normal range and the range defined as osteoporosis this is called osteopenia, which means you have low bone density.

Other methods of assessment include urine tests (biochemical markers) and ultrasound measurement. These are developing technologies that need further investigation.

Urine tests measure bone breakdown products excreted during the bone remodelling process and are a way of monitoring the rate of bone loss in people with osteoporosis. The test can tell if you are losing bone too fast and is an effective way for your doctor to monitor your response to treatment. It cannot yet be used alone to diagnose osteoporosis or to accurately assess your risk. This test is more likely to be performed in specialist centres.

Ultrasound is used to build up an electronic image of bone structure and mass. Portable ultrasound machines usually measure the heel bone (calcaneus) in a simple painless procedure that involves either a small water bath machine or a dry machine using gel on the heel. For peri and post-menopausal women (during and after the menopause) heel ultrasound appears to give an accurate assessment of hip fracture risk. However, ultrasound cannot currently be used to diagnose osteoporosis, monitor bone loss or assess response to treatment.

What treatment can I take?

The treatment of osteoporosis depends on a number of factors including your age, sex, medical history and which bones you have broken. Lost bone cannot be replaced but your doctor can prescribe treatment aimed at strengthening existing bone to help prevent further bone loss and fractures.

Hormone replacement therapy (HRT)

For women, HRT is a common means of preventing and treating osteoporosis. Taking HRT may help relieve distressing menopausal symptoms such as hot flushes, night sweats, headaches and vaginal dryness. HRT may also reduce your risk of heart disease. Some women may experience side effects such as breast tenderness and temporary nausea but these symptoms usually stop after the first few months or with a change of the type or dose of HRT. There are numerous types of HRT available in the form of tablet, implants, patches, nasal spray and gels.

For women who have had a hysterectomy, oestrogen alone will be given. For women who have not had a hysterectomy another hormone, progestogen is also given to prevent over-stimulation of the womb lining (endometrium) and the possibility of developing endometrial cancer. Progestogen can be taken over a short period of time, giving a regular monthly or three monthly bleed, or taken with oestrogen in a continuous combined preparation that prevents thickening of the womb lining and the monthly bleed.

There are some risks associated with HRT, such as a slight increase in both the risk of breast cancer (after five years of HRT use) and the risk of a blood clot (deep vein thrombosis). Your doctor can help you to balance these risks against the benefits of HRT in helping to prevent fractures.

Testosterone therapy

For men with osteoporosis caused by hypogonadism (low testosterone levels), testosterone replacement can be given by tablets, patches, injection or implants. Testosterone may increase the general sense of well-being, sexual interest and, occasionally, aggression, so careful counselling and monitoring is essential. Treatment may also increase the risk of prostate problems and heart disease and the potential risks and benefits need to be considered.

In men with normal levels of testosterone who have osteoporosis, some research has been done which shows an improvement in bone density when given testosterone treatment. However, testosterone is not yet a licensed treatment for these men.

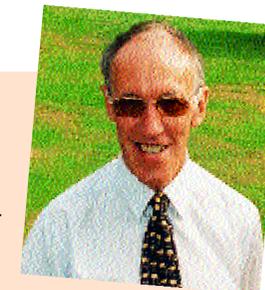
There are no specific licensed treatments for men with idiopathic osteoporosis but your doctor may decide to offer you a treatment having assessed your needs and discussed this with you.

Bisphosphonates

Bisphosphonates are non-hormonal drugs that work by slowing down the cells which break down bone (osteoclasts), enabling the bone building cells (osteoblasts) to work more effectively and increase bone density. Currently there are three bisphosphonates used to treat osteoporosis called alendronate, etidronate and risedronate.

Alendronate is licensed for osteoporosis treatment in post-menopausal women and has been shown to increase bone density and reduce fractures in the spine, wrist and hip. The treatment is taken either once a day in tablet form or once weekly in a larger dose. Alendronate can affect the digestive system, causing stomach pain and occasional inflammation of the oesophagus. It is also licensed for men and women with osteoporosis on corticosteroids.

Etidronate is licensed for the treatment of osteoporosis in post-menopausal women; for the prevention of osteoporosis in women with low bone density (osteopenia) and for the prevention and treatment of corticosteroid-induced osteoporosis in men and women. Etidronate is taken in a three month cycle with a prescribed calcium supplement. The treatment can sometimes affect the digestive system, causing nausea and diarrhoea.



Ron Fellows, a chartered civil engineer, was diagnosed with osteoporosis at the age of 59, after falling and breaking a bone in his spine. Ron has idiopathic osteoporosis, which means there is no known cause for why he has developed the disease. He is being treated with etidronate and his bone loss has now stabilised.

Like many people with osteoporosis, Ron is worried about falling and is now more cautious in his daily life. He is keen to make other people aware that osteoporosis is not just a woman's disease; it can affect men too.

Risedronate is licensed to reduce the risk of vertebral fractures in post-menopausal women with established osteoporosis, and for the prevention of osteoporosis in post-menopausal women with increased risk of osteoporosis. It also maintains or increases bone mass in post-menopausal women undergoing long-term high dose corticosteroid treatment. There are hopes that risedronate may be less likely to cause gastro-intestinal problems.

SERMS (Selective Estrogen Receptor Modulators)

SERMs mimic the action of oestrogen on certain organs or tissues whilst simultaneously blocking the effects of oestrogen in other areas. In this way it is hoped that they will reproduce the beneficial effects of oestrogen in protecting against osteoporosis and heart disease, whilst avoiding the small increased risk of breast cancer in long-term use of HRT.

Raloxifene is a SERM licensed for post-menopausal women with low spinal bone density, to reduce risk of vertebral fracture and treat existing vertebral osteoporosis. In research, raloxifene has increased bone density at the hip and spine and provided beneficial changes in blood fats (lipids) which may help to reduce the risk of coronary heart disease, similar to HRT. It does not appear to increase the risk of breast or endometrial (womb) cancer and indeed it may reduce breast cancer risk. The effect of using raloxifene in women who have already had treatment for breast cancer or have a strong family history is not yet known. There is some evidence that it may increase the risk of a blood clot in a similar way to HRT.

Raloxifene is prescribed once daily in tablet form. It does not stimulate the womb lining and should not cause bleeding. SERMs do not help to reduce menopausal symptoms (flushes and sweats) and in some women these symptoms may become worse.

Calcium and vitamin D supplements

Calcium and Vitamin D supplements have been shown to be beneficial to older people as they can reduce the risk of hip fracture. They are also effective for people who are housebound and those who don't get enough calcium from their diet. Levels of 800iu per day of vitamin D and 1000mg of calcium per day are recommended, depending on the intake of calcium in the diet.

Calcitriol

Calcitriol is an active form of vitamin D that improves calcium absorption from the gut and its metabolism into bone. It can be prescribed to post-menopausal women with osteoporosis and needs to be taken twice a day. It is less commonly prescribed than the other treatments described.

Calcitonin

Calcitonin is a hormone produced by the thyroid gland, which stops the cells that break down bone from working properly, allowing the osteoblast cells to build bone more effectively. Calcitonin is not often prescribed as it can only be given by injection. It can be used in short-term treatment after spinal fractures as it has an analgesic effect that can help with acute pain. Calcitonin which can be given by nasal spray or as tablets may be available soon.

What about diet, exercise and lifestyle?

If you have been diagnosed with osteoporosis it's very important that you follow the diet, and lifestyle advice given on pages 7-11 and the exercise advice on page 20. Taking regular weight-bearing exercise, having a calcium-rich balanced diet and giving up smoking will help to protect your bone health.

How can I relieve pain?

The process of osteoporosis in itself is not usually painful but broken bones can cause immediate pain and long-term discomfort or disability. A break will normally take about six to eight weeks to heal and if you are suffering with a spinal fracture or recovering from a broken hip or wrist you may be in considerable pain.

Simple painkillers bought over the counter may help relieve the pain. Ask your pharmacist or doctor for advice. If they are not working, your doctor may need to prescribe you with a stronger analgesic.

A TENS (Transcutaneous Electrical Nerve Stimulation) machine can be applied around painful areas, which sends electrical impulses to block or lessen the pain messages from getting through to the brain. It can be particularly useful to help relieve the back pain that can occur after a spinal fracture. You will need to discuss whether a machine would be suitable with your GP, consultant or physiotherapist. You may find that hot water bottles or ice packs, or using both, can bring pain relief but do use with care.

Many people find that complementary medicines, such as aromatherapy, homeopathy and acupuncture, can help to relieve pain and increase well-being.

How can I improve my mobility?

Exercise plays an important role in the treatment of osteoporosis. If you are recovering from a fracture, physiotherapy can help you to regain muscle strength, improve posture and mobility and help to maintain bone strength. Physiotherapy can also assist in reducing discomfort and your risk of falling. Your doctor may refer you to a physiotherapist who will be able to teach you exercises that you can do at home. Some hospitals have hydrotherapy pools where heated water helps to relax tight muscles and joints, relieving pain and increasing mobility.

Exercise can help to reduce the risk of falling by improving balance and co-ordination. Most older people fall in the home, so it's important to try and reduce hazards that could cause you to trip and fall. Take your time using stairs and hold onto the rail. Loose rugs or carpets, trailing wires, slippery floor surfaces and poor heating and lighting can increase your risk of falling. Other health problems such as Parkinson's disease, arthritis or having a stroke are common causes of falls and some medications can increase your risk of falling by affecting your balance. If your tablets are causing dizziness or drowsiness let your doctor know. Check your eyesight and hearing. Poor eyesight can increase your risk of falling and some forms of deafness can affect your balance.

For older people who may be at risk of falling, hip protector pants are available which can help to cushion the force of a fall. These underwear garments have two protective hard shells built into cotton pants covering your hips to absorb the impact of the fall.

What can I do next?

If you want to prevent osteoporosis:

- put into practice the bone-friendly diet, exercise and lifestyle messages in **Can I prevent osteoporosis?** on pages 7-11. All the family need to take action to protect their bone health but it's particularly important for children and teenagers during this critical time for bone development
- if you have read **Am I at risk?** on page 5 and think you may be at risk of osteoporosis, make an appointment to see your doctor or practice nurse. Your doctor may want to test your bone density and then prescribe treatment to help prevent bone loss and fractures

If you have been diagnosed with osteoporosis:

- make sure that you are following the diet, and lifestyle steps listed on pages 7–11 and the exercise advice on page 20, as it's very important that you protect your bone health. Although the disease cannot be cured or reversed you can help to prevent further bone loss and strengthen existing bone
- make an appointment with your doctor to discuss treatment for your osteoporosis and, if necessary, pain relief

If you would like more detailed information on aspects of osteoporosis and bone health please see the list of NOS booklets on page 26 and contact the NOS if you would like to order copies.

If you have particular queries or concerns you may like to telephone the NOS helpline to speak to a nurse on 01761 472721. The helpline is open from 10.00am to 5.30pm on Mondays and from 9.30am to 5.30pm Tuesdays to Fridays (the helpline is not open on Bank Holidays or between Christmas and New Year).

How the National Osteoporosis Society can help you

We offer support to people with osteoporosis, their families and carers, through a range of detailed information booklets, a national telephone helpline and a network of regional support groups. Increasing numbers of people develop osteoporosis and more people need our help every year.

- our telephone helpline is staffed by NOS nurses who answer over 20,000 calls each year, offering information and advice on all aspects of osteoporosis. Call 01761 472721 from 10am – 5.30pm on Monday, and 9.30am – 5.30pm Tuesday to Friday (the helpline is not open on Bank Holidays or between Christmas and New Year). The information we provide is free: you pay only for the cost of your call. Our nurses will also reply to medical queries by post, fax or e-mail, usually within ten days of receipt. The helpline may occasionally be closed due to staff training and your call may be monitored for training or quality purposes
- Over 130 support groups meet across the UK to share information, help raise crucial funds and offer support
- our national awareness campaigns aim to ensure every generation understands the importance of maintaining healthy bones, and knows how to try to prevent osteoporosis
- we work with healthcare professionals to facilitate greater understanding of the needs of people with osteoporosis
- we encourage the government, health authorities and opinion leaders to prioritise osteoporosis as a serious health problem which requires adequate services
- we fundraise for research into osteoporosis to increase understanding of the disease and improve treatment options and patient care

Please help us to help you by becoming a member of the National Osteoporosis Society



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fax: 01761 471104

helpline: 01761 472721

website: www.nos.org.uk

e-mail: info@nos.org.uk

What we offer you

- four copies of our newsletter *Osteoporosis News* a year, packed full of all the latest information on osteoporosis and bone health
- the choice of two of our information booklets free of charge and up to 30% discount on other NOS literature
- the opportunity to share information and experiences through our network of support groups across the country
- access to our annual Members' Day, looking at the latest advances in osteoporosis research, treatments and prevention



How you can support us

To join the NOS just complete the application form below and choose how you wish to pay.

PROFESSOR/DR/MR/MRS/MISS/MS _____

FIRST NAME _____

SURNAME _____

ADDRESS _____

POSTCODE _____

DAYTIME TELEPHONE NO. _____

E-MAIL _____

DATE OF BIRTH _____

Please tick appropriate box

- £15 single annual membership £24 overseas annual membership
 £10 single annual membership £20 professional annual membership
(for people with osteoporosis UK only)
 £15 joint annual membership £34 professional annual overseas
 I wish the NOS to keep me informed of all future activities

I do not need to join but would like to make a donation of

- £100 £50 £25 £15 £10 £5
 Other £ _____ £250 or more (please specify £ _____)

Gift Aid

It is now possible to claim tax on your membership subscriptions and donations through Gift Aid if you are a UK tax payer.

This means that the NOS can claim an additional 28p on every £1 you pay.

You must have paid an amount of income tax and/or capital gains tax equal to the tax deducted from your donations.

If you would like the NOS to reclaim tax on your subscription and/or donation, making your gift to us even more valuable, please fill in the Gift Aid declaration below.

I would like the National Osteoporosis Society (NOS) to treat as Gift Aid my membership subscription and all donations I make from the date of this declaration until I notify the NOS otherwise.

SIGNATURE _____ TODAY'S DATE _____

Please find enclosed my payment of £ _____ (please tick appropriate box)

- Payment by cheque/postal order/CAF voucher**
(made payable to the National Osteoporosis Society)
 Payment by credit/switch card (please complete details below)

VISA/MASTERCARD/SWITCH CARD NUMBER _____

SWITCH CARD ISSUE NUMBER _____ DATE VALID FROM _____

EXPIRY DATE _____ NAME ON CARD _____

SIGNATURE _____ TODAY'S DATE _____

I do **not** wish my details to be given to the nearest NOS support group

Payment by Direct Debit saves *us* money and *you* time

Please contact us for more details.

**Please complete and return to the
National Osteoporosis Society, Camerton, Bath BA2 0PJ**

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Osteoporosis	Free	Free	
Corticosteroids and Bone	£2	£1.40	
Hormone Replacement Therapy (for the menopause and osteoporosis)	£3	£2.40	
Diet and Bone Health	£3	£2.40	
Exercise and Bone Health (to help prevent osteoporosis)	£3	£2.40	
Exercise and Osteoporosis (for people with osteoporosis)	£3.50	£2.90	
Treatments (booklet under revision)	Free	Free	
Osteoporosis in Men	£3	£2.40	
Osteoporosis in Pregnancy	£1	Free	
How to Make a Will	Free	Free	
Funding Research	£2	£1.40	
Bone Health and Fractures in Children	£3	£2.40	
Fit but Fragile (for athletes and dancers)	Free	Free	
Coping with a Hip Fracture	Free	Free	

If you are joining the NOS, or renewing your membership you may order any two of the above booklets for free.

Useful addresses

National Osteoporosis Society

Camerton, Bath BA2 0PJ
tel: 01761 471771
fax: 01761 471104
helpline: 01761 472721
website: www.nos.org.uk
e-mail: info@nos.org.uk

Age Concern

tel: 0800 009966 (for details of your local Age Concern branch)

Arthritis Care

18 Stephenson Way, London NW1 2HD
tel: 020 7380 6500

Carer's National Association

20-25 Glasshouse Yard, London EC1A 4JT
tel: 0808 808 7777

Complementary Medical Association

The Meridian, 142a Greenwich High Road, Greenwich, London SE10 8NN
website: www.the-cma.org.uk

Disabled Living Centres Council

Red Bank House, 4 St. Chad's Street, Manchester M8 8QA
tel: 0161 834 1044

Eating Disorders Association

First Floor, Wensum House, 103 Prince of Wales Road, Norwich,
Norfolk NR1 1DW
helpline: 01603 621414

Help The Aged

207-211 Pentonville Road, London N1 9UZ
tel: 020 7278 1114

Keep Fit Association

Astra House, Suite 1.05, Arklow Road, London SE14 6EB
tel: 020 8692 9566



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