

Osteoporosis and you



OSTEOPOROSIS
NEW ZEALAND
Better bones, fewer fractures

Find out about the implications of osteoporosis and what you can do for your bone health

Osteoporosis New Zealand

Better Bones, Fewer Fractures

Osteoporosis New Zealand is dedicated to improving care and outcomes for osteoporosis sufferers.

Osteoporosis New Zealand provides advice, educational material and information for the public and makes recommendations for the management of osteoporosis by the medical profession. All our decisions are based on scientific evidence and we advocate for improved access to bone scans for the diagnosis of osteoporosis, as well as medications to treat the disease.

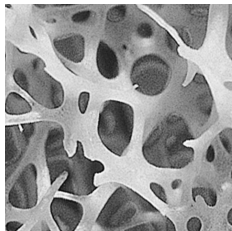
Osteoporosis New Zealand is recognised Nationally and Internationally as the organisation representing Osteoporosis in New Zealand.

We are here to help New Zealanders have Better Bones and Fewer Fractures.

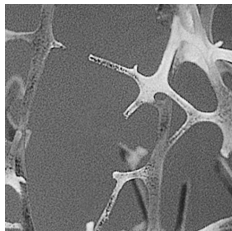
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What is osteoporosis?



normal bone



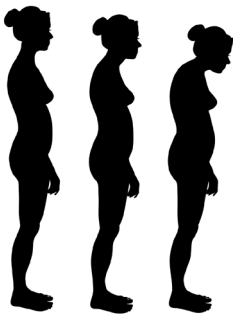
osteoporotic bone

Osteoporosis, which literally means “porous bone”, is a disease in which the density and quality of bone are reduced. As the bones become more porous and fragile, the risk of fractures is greatly increased. The loss of bone occurs “silently” and progressively. Often there are no symptoms until the first fracture occurs.

Fractures associated with osteoporosis occur most commonly at the wrist, hip and spine. In the short term, spine fractures (vertebral compression fractures) can cause intense pain, and may eventually result in a gradual loss of movement and the inability to carry out daily chores. They can lead to loss of height, and in severe cases the spine may curve to form what is termed a “dowager’s hump”. Hip fractures almost always require surgery and in about a third of patients, result in loss of independent living and the need to transfer to institutional care. Fractures caused by osteoporosis in women over 45 years are responsible for more days spent in hospital than most other diseases, including breast cancer or heart attack. The lifetime risk for a woman or man of dying from hip fracture complications is the same as for dying of breast or prostate cancer respectively.

The good news is that testing for osteoporosis is quick, easy and painless, and there are a number of different treatments available that have been shown to act quickly, to maintain bone density and to reduce the risk of having fractures.

How osteoporosis develops



Vertebral compression fractures can lead to loss of height and "dowager's hump".

Bones are made of living, dynamic tissue. Throughout life old bone tissue is removed and new bone tissue is formed. The critical years for building bone mass are during childhood and adolescence. This is when new bone is formed more quickly than old bone is removed, causing bones to become larger and denser. This pace continues until around the mid 20's when peak bone mass is normally reached. Although a person's peak bone mass is determined largely by genetic factors, other factors such as nutrition, physical activity and disease also influence bone development.

Bone tissue loss generally begins after the age of about 40 years, when we are no longer able to replace bone tissue as quickly as we lose it. In women, however, the rate of bone tissue loss increases after menopause, when oestrogen production stops and bones no longer benefit from its protective effect. Men also suffer from loss of bone tissue, but the rate of loss is much slower than in women. At this stage in life, taking preventive measures will help to slow the rate of bone tissue thinning and reduce the risk of having osteoporosis-related fractures.

The best time in life to ensure bone health for the future is while we are still young. Exercise and good nutrition, with plenty of calcium-rich foods accompanied by enough regular sunshine to maintain vitamin D production in our bodies, make for strong bones. This does not mean, however, that we cannot contribute positively to our bone health later on in life. The same things that make bones strong in youth will also help later on. For patients diagnosed with osteoporosis, there are also various treatments available that slow down the rate of bone loss.

How common is osteoporosis?

One in two women and about one in three men over the age of 65 years will suffer an osteoporotic fracture. The hormonal changes that take place at menopause are one reason why women are at greater risk than men.

Osteoporosis is a global problem. Current estimates for the total number of sufferers set the figure at 75 million for Europe, the United States and Japan. This figure is projected to double within 50 years. It is also estimated that around 225 million people in Europe, the United States and Japan have low bone mass – termed 'osteopenia'. Statistical data suggests that up to 10% of all New Zealanders are affected by osteoporosis.

Spinal compression fractures are one of the most common types of osteoporotic fractures. They can result in severe back pain, loss of height, deformity, immobility, increased number of bed days, reduced pulmonary function, and even premature death. People who develop a vertebral fracture are at substantial risk of additional fractures within the next 1-2 years.



Risk factors for osteoporosis

Knowing your risk factors is the first step in successfully fighting osteoporosis. Some risk factors may be modifiable through changes in lifestyle, others are non modifiable risk factors (such as age, family history etc) which cannot be changed. Secondary risk factors include other diseases, and certain medications, that directly or indirectly affect bone health.

Modifiable risks

- Alcohol
- Smoking
- Low body mass index
- Poor nutrition
- Eating disorders such as anorexia
- Insufficient exercise
- Low dietary calcium intake
- Vitamin D deficiency
- Frequent falls

Non modifiable risks

- Age
- Female gender
- Family history (parental history of hip fracture)
- Previous fracture
- Race/ethnicity (more common in Caucasians and Asians)
- Early menopause/hysterectomy
- Long term glucocorticoid therapy
- Primary/secondary hypogonadism in men

Secondary risk factors

The following disorders can affect the skeleton and raise the risk of osteoporosis: asthma, rheumatoid arthritis, nutritional and gastrointestinal diseases (e.g. Crohn's disease, coeliac disease), haematological disorders or malignancy, hypogonadal states (e.g. Turner syndrome, Klinefelter's syndrome, amenorrhea), endocrine disorders (e.g. Cushing's syndrome, hyperparathyroidism, diabetes), and long term immobility.

Some medications may have side effects that directly weaken bone or increase the risk of broken bones due to falls or trauma. Patients taking any of the following medications should consult their doctor about increased risk to bone health: glucocorticosteroids, certain immunosuppressants, thyroid hormone treatment, certain steroid hormones, aromatase inhibitors, certain antipsychotics, anticonvulsants, or antiepileptic drugs, lithium, methotrexate, antacids and proton pump inhibitors.

Are you at risk?

The IOF One-Minute Osteoporosis Risk Test

19 easy questions to help you understand the status of your bone health

What you cannot change – your family history

- 1 Have either of your parents been diagnosed with osteoporosis or broken a bone after a minor fall (a fall from standing height or less)?
 yes no
- 2 Did either of your parents have a “dowager’s hump”?
 yes no

Your personal clinical factors

These are fixed risk factors that one is born with or cannot alter. But that is not to say that they should be ignored. It is important to be aware of fixed risks so that steps can be taken to reduce loss of bone mineral.

- 3 Are you 40 years old or older?
 yes no
- 4 Have you ever broken a bone after a minor fall, as an adult?
 yes no
- 5 Do you fall frequently (more than once in the last year) or do you have a fear of falling because you are frail?
 yes no
- 6 After the age of 40, have you lost more than 3 cm in height (just over 1 inch)?
 yes no
- 7 Are you underweight (is your Body Mass Index less than 19 kg/m²)?
 yes no

- 8 Have you ever taken corticosteroid tablets (e.g. cortisone, prednisone) for more than 3 consecutive months (corticosteroids are often prescribed for conditions like asthma, rheumatoid arthritis, and some inflammatory diseases)?
 yes no
- 9 Have you ever been diagnosed with rheumatoid arthritis?
 yes no
- 10 Have you been diagnosed with an over-reactive thyroid or over-reactive parathyroid glands?
 yes no

FOR WOMEN

- 11 For women over 45: Did your menopause occur before the age of 45?
 yes no
- 12 Have your periods ever stopped for 12 consecutive months or more (other than because of pregnancy, menopause or hysterectomy)?
 yes no
- 13 Were your ovaries removed before age 50, without you taking Hormone Replacement Therapy?
 yes no



FOR MEN

- 14 Have you ever suffered from impotence, lack of libido or other symptoms related to low testosterone levels?
- yes no

What you can change – your lifestyle factors

Modifiable risk factors which primarily arise because of diet or lifestyle choices.

- 15 Do you regularly drink alcohol in excess of safe drinking limits (more than 2 units a day)?
- yes no
- 16 Do you currently, or have you ever, smoked cigarettes?
- yes no
- 17 Is your daily level of physical activity less than 30 minutes per day (e.g. housework, gardening, walking, running)?
- yes no
- 18 Do you avoid, or are you allergic to milk or dairy products, without taking any calcium supplements?
- yes no
- 19 Do you spend less than 10 minutes per day outdoors (with part of your body exposed to sunlight), without taking vitamin D supplements?
- yes no

UNDERSTANDING YOUR ANSWERS

You can get more information from Osteoporosis New Zealand

If you answered “yes” to any of these questions it does not mean that you have osteoporosis. Positive answers simply mean that you have clinically-proven risk factors which may lead to osteoporosis and fractures.

Please show this risk test to your physician or health care professional who may encourage you to have a bone mineral density test (BMD), and who will advise on what treatment, if any, is recommended.

If you have no or few risk factors you should nevertheless discuss your bone health with your physician and monitor your risks in the future. You should also discuss osteoporosis with your family and friends and encourage them to take this test.

www.osteoporosis.org.nz

The importance of early diagnosis

Men and women over 60 years are at higher risk of osteoporosis than younger people. Nevertheless, it is possible to have osteopenia (low bone mass) or osteoporosis at a much earlier age. As osteoporosis has no obvious symptoms other than a fracture when the bone is already significantly weakened, it is important to go to the doctor if any of the risk factors apply to you.

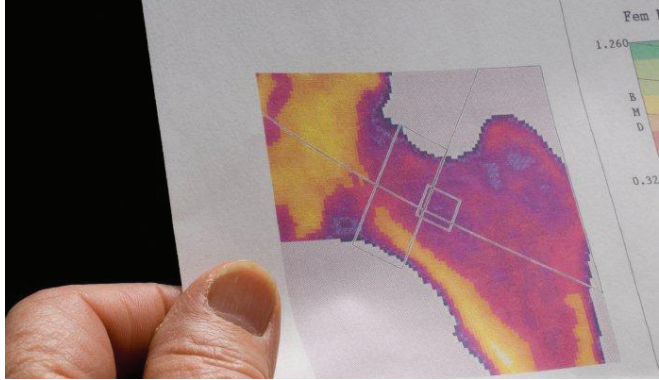
The doctor will make a clinical assessment that may include the FRAX® risk assessment calculation, and may determine that the next step is to have a bone mineral density (BMD) test.

A number of different types of BMD tests are available, but the most accurate is DEXA (dual energy X-ray absorptiometry). DEXA is a low radiation X-ray capable of detecting quite low percentages of bone loss. It is used to measure spine and hip bone density.

Heel ultrasound is a useful screening tool for low bone density and is often available through pharmacies and health shops. However, it is not diagnostic and results indicating low bone density should be confirmed by DEXA (where available) prior to considering treatment.

Bone mineral density testing is a simple and non-invasive procedure.

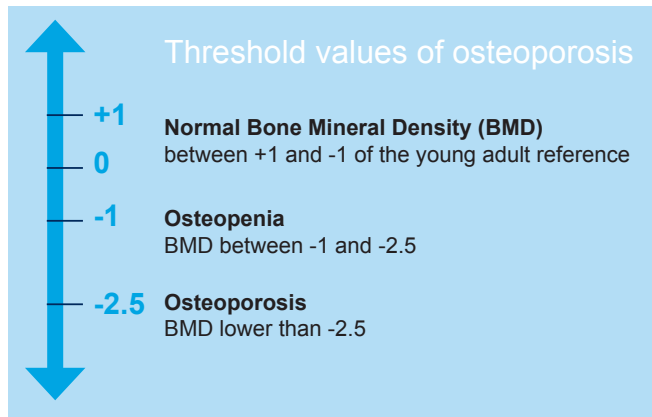




The World Health Organisation has defined a number of threshold values for osteoporosis. The reference measurement is defined as healthy bone density in a young female of around 25 years.

Osteoporosis is diagnosed when a person's BMD is more than 2.5 standard deviations below this reference measurement. Osteopenia – decreased bone mass, but not as severe as osteoporosis – is diagnosed when the measurement lies between 1 and 2.5 standard deviations below the young adult reference measurement.

If the results of your BMD test show osteopenia or osteoporosis it does not automatically mean that you will have a fracture. There are a number of therapies available that your doctor might prescribe that slow down the rate at which bone loss occurs and help prevent fractures. In addition, there are important nutritional and lifestyle changes that you can make to help reduce your risk of fracture.



Making lifestyle changes

Once osteoporosis or osteopenia has been diagnosed, it might not be possible to completely halt the process of bone loss, but it is possible to slow it down significantly and remove or reduce certain factors that contribute to its rapid progress.

Exercise is not just important to general health, it helps build bone mass in youth and slows down bone loss in adults. Exercise also strengthens muscles, increases flexibility, and improves coordination and balance. These factors are significant in helping to reduce the risk of falls.

Weight-bearing exercise in particular is good for bone health. This type of exercise includes walking, jogging, tennis and similar sports, aerobics and dancing. In terms of bone health, you will benefit more from “high-impact” activities like aerobics and jogging but they may not be suitable for you if you have any other medical conditions or problems with your joints, or if you have already had a fracture. **Resistance training**, also known as weight or strength training, is also good for muscles and helps maintain bone mass. Speak to your doctor to find out which sort of exercise is best for you according to your age and health condition.



Both **calcium** and vitamin D are essential to maintain healthy bones. As we grow older we absorb calcium from food less efficiently. This means that over time we need higher amounts of calcium (*see tables*).

Calcium rich foods include dairy foods such as milk, cheese and yoghurt; certain greens (e.g. broccoli, bok choy); whole canned fish with bones, such as sardines or salmon; nuts (almonds and brazil nuts in particular) and tofu set with calcium. In addition, calcium-fortified foods – most commonly orange juices, breads and breakfast cereals – are increasingly available.

Recommended daily calcium allowance

	Calcium (mg/day)
Children:	
1 - 3 years	500
4 - 8 years	700
9 - 13 years*	1000-1300
Adolescents:	
14 - 18 years	1300
Women:	
19 - 50 years	1000
51 - 70 years	1300
>70 years +	1300
Pregnancy	
14 - 18 years	1300
19 - 50 years	1000
Lactation:	
14 - 18 years	1300
19 - 50 years	
Men:	
19 - 50 years	1000
51 - 70 years	1000
>70 years +	1300

**There are separate recommendations for children aged 9-11 years and 12-13 years because of growth needs.*

Reference: Ministry of Health, Australian Government Department of Health and Aging, National Health and Medical Research Council (2006).

Nutrient Reference Values for Australia and New Zealand - Executive Summary. Canberra; NHMRC

Approximate calcium content in foods

MILKS

200ml glass of yellow lid	400mg
200ml glass of light green lid	300mg
200ml glass of light blue lid	275mg
200ml glass of dark blue lid	230mg
200ml glass of calcium enriched soy milk	228mg
200ml glass of calcium enriched rice milk	240mg

YOGHURTS/CHEESE

40g cheddar	300mg
1 x pottle of yoghurt	200 - 400mg

A pottle of yoghurt can range from approximately 200 - 400mg so choosing wisely can make a huge difference to your calcium intake.



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Other food containing calcium*

Small tin canned sardines	450mg
1 cup fortified breakfast cereal	200-400mg
1 cup of tofu	270mg
1/2 cup ice cream	110-275mg
100g cooked, peeled prawns	190mg
1/2 cup steamed spinach	130mg
Small tin canned salmon, drained	70mg
1 cup steamed broccoli	60mg
1/2 cup steamed silver beet	60mg
1 tablespoon tahini	50mg
10 almonds	30mg
1/2 cup cooked red kidney beans	30mg

Adequate intake of vitamin D, which helps calcium absorption, is also essential. Vitamin D forms when the skin is exposed to sunlight. During the daylight saving months, people should obtain some sun exposure in early morning or late afternoon when the sun is not too strong.

Small amounts of vitamin D can also be obtained in foods such as fatty fish, eggs and liver. Recommended daily vitamin D intake ranges from 5 to 15 micrograms per day, with higher amounts recommended for older people.

Because dietary sources of vitamin D are few, for people who do not get sufficient daily exposure to direct sunlight (e.g. older people in rest homes or who remain indoors, people with pigmented skin, women who remain covered for cultural reasons) it is recommended they take a vitamin D supplement. It has been suggested that people in the southern regions of New Zealand should also consider the use of vitamin D supplements through the winter months. If you are concerned about your vitamin D levels, see your doctor.

Reference: Cancer Society of New Zealand. 2008. Position Statement: The Risks and Benefits of Sun Exposure in New Zealand.

Recommended vitamin D intake by age group, both as international units (IU) and micrograms (µg) per day

Age group	RNI (IU/d)	RNI (µg/d)
0-9 years	200	5
10-18 years	200	5
19-50 years	200	5
51-65 years	400	10
65+ years	600	15
Pregnancy	200	5
Lactation	200	5

Figures based on Western European, American and Canadian data.

Source: FAO/WHO: *Human Vitamin and Mineral Requirements, 2002.*

In order to maintain muscle function and bone mass, sufficient protein should also form part of a healthy diet. Good sources of **protein** include white meat, fish, milk, beans and tofu.

A number of other factors will also make a difference to your bone health:

Stop smoking – smokers lose bone density more rapidly than non-smokers;

Drink alcohol in moderation – excess alcohol is a risk factor for osteoporosis;

Ensure healthy body weight – excessive weight loss should be avoided.

Take an additional measure to reduce the risk of fractures by **fall-proofing your home**. Reduce clutter at floor level, wear well-fitting shoes or slippers and make sure surfaces are slip-proof: rugs should have a skid-proof backing. Have grab rails installed in the bathroom and toilet and make sure that lighting is bright enough. It is also a good idea to have regular eye checkups – your vision is crucial in judging distances and detail.

Treating osteoporosis

In addition to recommending lifestyle changes, doctors may prescribe **drug therapy** if osteoporosis is diagnosed. Today there are a number of effective treatment options available that have been shown to act quickly (within one year), to maintain bone density and to reduce the risk of having fractures. It is important that the choice of treatment be tailored to a patient's specific medical needs and lifestyle.

Common treatments that are currently available (although not in all countries) are: bisphosphonates (alendronate, ibandronate, risedronate, zoledronic acid), calcitonin, raloxifene, strontium ranelate, teriparatide and tibolone. Hormone replacement therapy (HRT), although not specifically for the treatment of osteoporosis, has also been shown to have a beneficial effect on bone.

Sufficient calcium, vitamin D and protein intake not only helps to prevent osteoporosis, but is also important in helping to maintain bone density and muscle function in patients diagnosed with osteoporosis. For individuals at high risk of fracture calcium and vitamin D supplements may, in consultation with a doctor, be prescribed to ensure an adequate daily intake and maximise the effectiveness of drug therapy.

Nutrition and lifestyle factors as well as exercise play an important role in osteoporosis prevention and management. By improving balance, muscle strength and agility, **individually tailored exercise programs** can also help to prevent falls. Special exercise programs, under professional supervision, can help with rehabilitation and pain relief after a fracture.

Other major aspects of treatment are **psychological and emotional support**, which can be provided by health professionals and osteoporosis patient support groups. Such support can be of great help in lessening the feelings of isolation and depression experienced by many patients with severe osteoporosis. **Practical help** such as advice on how to reduce the risk of falling, assistive devices such as walkers and hip protectors, and techniques for 'safe movement' in everyday activities such as walking, reaching/ lifting, housework and gardening, is also very important.

Osteoporotic fractures often occur as a result of a minor fall. Falls prevention strategies for older people should also include exercises to improve balance and strengthen muscles.



PHOTO BY Kerstin Zillmer

What you can do

Help Osteoporosis New Zealand improve care and outcomes for osteoporosis sufferers by making a donation. This could be used to fund research, support our education programmes and for advocacy work.

If you would like to discuss making a bequest please call us on 04 499 4862 or email info@osteoporosis.org.nz You may also donate at www.osteoporosis.org.nz

Despite the fact that osteoporosis is widespread and also on the increase, few people are aware of the risk factors involved, how the disease progresses and what can be done to slow its progress. Greater awareness and preventive measures could lower the human, social and economic costs of the disease.

If you suspect you are at risk

- Take the IOF One-Minute Risk Test.
- Talk to your doctor about having a bone mineral density measurement and completing a FRAX® assessment at www.shef.ac.uk/FRAX/.
- If you have osteoporosis, find out from your doctor which is the best treatment for you.



International
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We would be delighted to put your name on our mailing list and we will send you newsletters and updates, as well as an invitation to our You Deserve a Medal Awards. There is no charge for this, however if you would like to give a donation to help us print more of these booklets so we can reach more people, it would be a great help.

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PO Box 688
Wellington 6140
New Zealand

T. 04 499 4862
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www.osteoporosis.org.nz