

## Osteoporosis

Osteoporosis means 'bones with holes'. It does not cause pain or illness except through increased risk of bone breaks. Bones lose their strength and density, become fragile and break (fracture) more easily because of calcium loss. Breaks are most common in the spine, hip and wrist and often occur after only a minor fall or knock. Osteoporosis particularly affects women in their middle and later years, although some men are also affected.

Most people show no signs of developing osteoporosis until a fracture occurs. Both men and women can take steps from a young age to avoid developing the condition in later life. Reduce your risk of fractures by taking steps to prevent and treat osteoporosis (or brittle bones) and avoid falls wherever possible. Activity and a healthy diet rich in calcium and vitamin D are both important.

### Osteoporosis and bone growth

Bone is formed by specialised cells. Like the rest of the body, bone is constantly being broken down and renewed. It is living tissue that needs exercise to gain strength, just like muscle. In the early years of life, more bone is made than is broken down, resulting in bone growth. By the end of your teens, bone growth has been completed and 'peak bone mass' is achieved.

Sex hormones, such as oestrogen and testosterone, have a fundamental role in maintaining bone strength in men and women. The fall in oestrogen blood levels that occurs during menopause results in accelerated bone loss. During the first five years after menopause, the average woman loses up to 10 per cent of her total body bone.

Fractures of the spine caused by osteoporosis can lead to loss of height, pain and changes in posture such as the 'Dowager's hump'. This hump is caused when spinal fractures are compressed due to the force of gravity, resulting in an abnormal bending of the spine (kyphosis).

### Symptoms of osteoporosis

Osteoporosis causes no specific pain or symptoms. However, it does increase the risk of serious or debilitating fractures. If you think you may be at risk of developing osteoporosis, see your doctor.

### Risk factors for osteoporosis

Several factors can place a person at risk of osteoporosis. Risk factors include:

- Family history of osteoporosis (mother, sister or grandmother) or fractures at older age
- Inadequate amounts of dietary calcium
- Low vitamin D levels
- Cigarette smoking
- Alcohol intake of more than two standard drinks per day
- Caffeine intake of more than three cups of tea, coffee or equivalent per day
- Lack of physical activity
- Early menopause before the age of 45
- Loss of menstrual period if it is associated with reduced production of oestrogen, which is vital for healthy bones (the menstrual cycle can cease following excessive dieting and exercise)
- Long-term use of medications such as corticosteroids for rheumatoid arthritis and asthma.

Some conditions place people at a higher risk of osteoporosis. These conditions include:

- Thyroid disease or an overactive thyroid gland

- Rheumatoid arthritis
- Chronic liver and kidney disease
- Conditions that affect the body's ability to absorb nutrients, such as Crohn's disease, coeliac disease and other inflammatory bowel conditions.

## Preventing osteoporosis

Both men and women can take steps from a young age to prevent osteoporosis by making sure that they:

- Have a healthy and varied diet with plenty of fresh fruit, vegetables and whole grains
- Eat calcium rich foods
- Absorb enough Vitamin D
- Avoid smoking
- Limit alcohol consumption
- Limit caffeine
- Do regular weight-bearing and strength-training activities.

## A varied and calcium-rich diet is the key

We need calcium to build and maintain strong and healthy bones, help our muscles work and support our nervous system. Good sources of calcium include:

- **Dairy foods** – low-fat varieties are available to reduce the risk of weight gain or raised cholesterol levels
- **Canned fish with edible bones** – for example, sardines.

The minimum recommended daily intake of dietary calcium is:

- Infants (under 12 months) – 210–270mg calcium per day
- Children (over four years) – 700–1,000mg calcium per day
- Adolescents – 1,300mg calcium per day
- Women under 50 and men under 70 – 1,000mg calcium per day
- Postmenopausal women and men over 70 – 1,300mg calcium per day.

## Adequate vitamin D

Vitamin D levels are increased with sun exposure. People who are housebound, or who dress with most of their body covered, are at risk of vitamin D deficiency. The majority of Australian women have inadequate levels of vitamin D during winter months. All that is needed is 10–20 minutes of sun exposure to the arms and face daily, without sunscreen and not through glass. Sun exposure is safest before 11am or after 3pm.

## Avoid smoking

Evidence has shown that smokers have a lower bone density. Nicotine is known to be toxic to bone cells.

## Limit alcohol intake

Excessive alcohol consumption is associated with the development of osteoporosis. Restrict your alcohol intake to no more than two standard drinks on any one day for both men and women to reduce your risk. Everyone should have at least two alcohol-free days each week.

## Reduce caffeine intake

A large amount of caffeine (more than two to three cups per day of cola, tea or coffee) has also been associated with an increased risk of osteoporosis.

## Do regular weight-bearing and strength-training activities

You should exercise at least 30 minutes three to four times a week to maintain healthy bones. Recommended activities are:

- Walking
- Jogging
- Tennis
- Dancing
- Using weights.

This helps maintain bone strength and balance so falls are reduced. It does not treat established osteoporosis.

## Diagnosis for osteoporosis

The most reliable way to diagnose osteoporosis is to measure bone density using a DEXA scan. This is done with x-ray technology that involves minimal radiation, is accurate and can be used to follow up treatment.

Ultrasound tests are available at many pharmacies and involve an ultrasound measurement of the heel. These tests are not as accurate in assessing for osteoporosis as a DEXA study and are not recommended by doctors.

## It's never too late for treatment

If you have osteoporosis, it is never too late to seek treatment. Indeed, age is one of the main risk factors for osteoporosis and breaks. Treatment can halt bone loss and significantly reduce the risk of fractures. It is important that your doctor excludes other medical conditions that can cause osteoporosis, including vitamin D deficiency.

Medications and treatments are available to strengthen bones and prevent fractures by slowing down bone loss. They may improve bone density in women with osteoporosis after the menopause.

Available medical treatments include:

- **Bisphosphonates** – such as alendronate, risedronate and zoledronic acid, which can be combined with vitamin D and calcium
- **Strontium ranelate** – sold in Australia under the brand name Protos
- **Selective oestrogen receptor modulators (SERMs)** – in the form of raloxifene
- **Vitamin D derivatives and calcium supplements**
- **Hormone replacement therapy (HRT)** – short-term use of oestrogen and progestogen at menopause.

Other potential therapies that may be used as treatment include parathyroid hormone.

## Hormone replacement therapy

All treatments for osteoporosis aim to prevent fractures. Oestrogen replacement at menopause prevents bone loss and fractures, but the effect lasts only as long as oestrogen is used.

Oestrogen can be used to prevent fractures mainly for younger women with premature menopause. This is because most fractures do not occur until after the age of 65 and long-term oestrogen use is not recommended.

## Falls are a risk for people with osteoporosis

For people with osteoporosis, even minor trauma – such as coughing, knocks on the limbs and simple falls – can lead to fractures. Falls are a particular problem in the elderly as they are often more likely to result in fractures, particularly of the hip. Any fracture occurring from minimal trauma should be investigated as it may indicate underlying osteoporosis.

There are several ways to reduce your risk of falls. It may be necessary to see a physiotherapist and/or occupational therapist to provide assistance with walking aides and ensure your home environment is safe. Talk with your doctor or contact your community health centre to find the services you need.

## Where to get help

- Your doctor
- A specialist (endocrinologist or rheumatologist)
- Local community health service
- Specialised women's health clinic
- The Jean Hailes Medical Centre for Women Tel. (03) 9562 7555
- An Accredited Practising Dietitian, contact the Dietitians Association of Australia

## Things to remember

- Osteoporosis occurs when bones lose their density and strength.
- A healthy lifestyle throughout life (adequate dietary calcium and regular physical activity) can help prevent osteoporosis.
- Oestrogen replacement helps maintain bone density in women with premature menopause.

**This page has been produced in consultation with, and approved by:**

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