

Osteoporosis

Overview

In the UK, one in two women over the age of 50 will break a bone, mostly because of osteoporosis¹. Osteoporosis happens when our bones begin to thin and weaken, making them more prone to break or fracture after a minor fall or bump¹.

Our bones are made of a thick outer shell and a strong inner mesh, which looks similar to honeycomb¹. They are constantly being renewed by two types of cell – one that makes new bone and another that breaks down old bone¹. The process of bone growth and bone loss stays constant in adults until we hit 35 when bone loss increases due to ageing¹. When we reach the menopause, bone loss becomes even more rapid¹. By the time we get to 75, over half of us will have osteoporosis¹.

Drug treatments can help rebuild bone but there are many steps you can take to prevent bone loss¹.

Symptoms

Osteoporosis is known as the silent disease because you can't see it happening¹. You won't know you have it until you fracture a bone or begin to lose height¹. Our wrists, hips and spines are most commonly affected by the condition¹.

Wrists

Early indication is a broken wrist¹. Healthy bones can usually withstand a fall from standing height.¹ But once we reach middle-age, we can suffer wrist fractures just by using an arm to break a fall¹.

Hips

Falls leading to broken hips happen most commonly in your late 70s or 80s.

¹Breaking a hip can be very debilitating and have a huge effect on your quality of life and independence¹.

Spine

Only one in four fractures in the spine are caused by a fall¹. Others can be caused by minor incidents like reaching into a cupboard or lifting a heavy bag, or even after a coughing fit¹. They usually occur in the lower back or upper area of the spine, described as a compression fracture when the bones become squashed¹. Although they will heal, they won't return to their previous shape, causing height loss or stooping¹. This in turn can lead to shortness of breath, protruding stomach, indigestion problems and incontinence¹.

Who is most at risk?

If you have¹:

- gone through the menopause¹. We stop producing the hormone oestrogen, which protects our bones from weakening¹
- a hysterectomy before you're 45, especially if both ovaries are removed¹
- a family history of osteoporosis, particularly if your mother has broken her hip¹
- to take high doses of corticosteroid tablets for asthma and arthritis¹
- medical conditions which leave you immobile for a long time¹
- Crohn's disease and coeliac disease which affects food being absorbed properly¹
- low body weight. A BMI less than 19¹. If you missed periods for six months or more (excluding pregnancy) as a result of over-exercising or over-dieting¹
- medical conditions, such as rheumatoid arthritis, hyperthyroidism, parathyroid disease, diabetes and HIV¹

Prevention

You can help build healthy bones to reduce your risk of osteoporosis¹.

Exercise

Your bones, like muscles, need exercising to make them stronger¹. Any regular exercise, where you support the weight of your body, will strengthen them, including brisk walking, aerobics, tennis, jogging and dancing³. Resistance exercises like weightlifting are also excellent. Aim for 30 minutes of exercise every day¹.

Evidence also suggests that exercising regularly during our adolescence is very important for maintaining bone strength when we get older³. A study published in *British Journal of Sports Medicine* in 2008 showed women involved in high impact sports between 12 and 18 had significantly greater bone mineral content in the spine and the thigh bone post-menopause than those who had not exercised³. The women with the strongest bones weren't doing any weight bearing exercise at the time of the study, suggesting that the benefits exercise during adolescence last for over 40 years³.

If you have osteoporosis, it's important to stay active, although you will have to avoid high-impact sports³. Swimming, walking, golf and Tai Chi can help improve muscle strength and balance, reducing your risk of falling and breaking bones³. Talk to your GP before starting any new exercise³.

Balanced diet

Eating a balanced diet means your bones will receive all the essential vitamins and minerals^{1,4}. Try to aim for at least 700 mg (a pint) of milk a day to boost calcium levels^{1,4}. Good sources of calcium are dairy products such as milk, cheese and

yoghurt although choose low fat sources. Sardines, green leafy vegetables like broccoli and cabbage, soya beans and tofu are also good sources^{1,4}.

Vitamin D is also important for healthy bone^{1,4}. We get most of it from the sun's rays, which is then stored under our skin^{1,4}. It's essential because it helps us to absorb calcium^{1,4}. About 15 to 20 minutes of sun exposure to the face and arms every day during the summer should provide enough vitamin D throughout the year, but make sure you don't burn^{1,4}. Good dietary sources of vitamin D are oily fish and eggs, or foods with added vitamin D such as margarine and breakfast cereals^{1,4}.

Calcium and vitamin D supplements

Calcium and Vitamin D supplements may be effective for preventing fractures if you take them every day⁶. This was the message from a 2006 US study of more than 36,000 healthy postmenopausal women who took standard calcium and vitamin D supplements for seven years⁶. Women who took the supplement at least four days out of five had 29 percent fewer hip fractures, and women over 60 suffered 21 percent fewer broken hips compared to women who didn't take their supplements regularly⁶.

Older people, who find it difficult to get out, will also benefit from calcium and vitamin D supplements. As we age, we absorb nutrients less efficiently and we may not eat enough, because of reduced appetite or difficulty in eating^{1,4}.

If you're being treated for osteoporosis, you'll be given calcium and vitamin D supplements alongside your treatment. (See **Treatments**)

Phytoestrogens

These are chemicals found in plants which act like a weak version of the hormone oestrogen when absorbed by our bodies^{1,5}. Soya products contain high levels of phytoestrogens^{1,5}. Observational studies have noted that rates of osteoporosis and hip fracture in Japanese women, who traditionally eat lots of soya, have far lower rates of osteoporosis and hip fracture^{1,5}.

There is limited clinical data on their effects on bone density but results of short-term human studies suggest small protective effects in the lumbar spine^{1,5}.

Foods to avoid¹. [11]

Too much:

- protein may upset the body's acid balance which then uses calcium from the bones to neutralise it
- salt can increase the amount of calcium the body gets rid of in urine
- fizzy drinks and caffeine can affect the balance of calcium

Healthy weight

Don't let your weight drop to a Body Mass Index (BMI) of below 19¹.

Stop smoking

Smoking stops the cells that build our bone from doing their job properly¹.

Drink in moderation

Enjoying the odd glass of wine could actually help your bones¹. But drinking too much damages our bones and increases risk of fracture because you are less stable on your feet¹. The recommended daily amount is between three to four units for men and between two to three units for women¹.

Preventing falls

If you're worried about falling, speak to your GP to find out what help is available^{1,7}. A physiotherapist can give you exercises to help with balance and co-ordination, or your local hospital may provide a falls prevention service^{1,7}.

To avoid falls around the home^{1,7}:

- walk up and down stairs slowly and hold onto the rail
- check for loose rugs or carpets, wires and slippery floors
- make sure lighting is bright enough, and get your eyes and hearing checked
- talk to your GP about any medications you take as some can affect balance

Hip protectors

Hip protector pants have two hard shells built into cotton pants covering your hips to absorb any impact. Studies have yet to prove conclusively if they prevent broken bones¹.

Diagnosis

Speak to your GP if you think you're at risk of osteoporosis.¹ Your GP will study your medical history, including whether you have broken any bones or lost height, and then may decide to send you for a scan¹. Dual Energy X-ray Absorptiometry (DXA) scans measure the density of bones¹. It's the most accurate and reliable way to determine the strength of bones and your risk of a break¹.

Treatment

If you're diagnosed with osteoporosis from a scan, it doesn't mean you're at a high risk of breaking a bone¹. Your doctor will take into account your age and your lifestyle and talk to you about changing your lifestyle¹.

If you are aged over 75 and have already suffered a fracture, then your GP may prescribe drugs without a scan¹. Drugs aim to lower your risk of future breaks¹. Some drugs work by slowing down the cells that break down bone, or stimulate the cells to build more bone, while others work on both sets of cells¹.

You need to ask to your GP about the risks and side effects of treatments¹.

- **Bisphosphonates** are the most commonly prescribed drugs used to treat osteoporosis, especially to reduce the risk of fractures in the spine and less commonly, the hip^{1,2}. They act on the bone to reduce thinning and are usually taken as a tablet weekly^{1,2}. Examples include alendronate and risedronate^{1,2}. Side effects include irritation of the gullet (connecting your throat to your stomach)^{1,2}. They may not be suitable for people with stomach or bowel trouble, or kidney problems^{1,2}.
- **SERM** (selective estrogen receptor modulator) therapy works like an oestrogen to protect bones and is taken as a tablet daily^{1,2}. Drugs include raloxifene which reduces the risk of spinal fractures and may be used if bisphosphonates aren't suitable^{1,2}.
- **Calcium and vitamin D supplements** are usually taken with all these treatments but can be used alone for bone protection, particularly for elderly people living in care homes¹. (See **Calcium and vitamin D supplements**)
- **Strontium ranelate** is a relatively new treatment that helps build up bones, as well as preventing loss to reduce the risk of broken bones in the hip and spine^{1,2}. It's the first drug to build new bone while slowing down the breakdown of old bone and is an alternative to the bisphosphonate treatments^{1,2}. You can take it as a sachet of powder dissolved in water once a day^{1,2}.
- **Parathyroid hormone injections** are occasionally used for women with severe osteoporosis, who have spinal fractures and have failed to respond to other therapies^{1,2}. It works by building new bone^{1,2}. You self-administer injections daily for between 18 and 24 months^{1,2}.

Less common treatments

- **Calcitonin** is available as a nasal spray for long-term use and an injection.¹The injection is given every day and is effective as a short-term treatment after spinal fractures². It can also act as a pain relief².
- **Calcitriol** is effective in reducing fractures in women and is taken as a daily dose of tablets². It needs careful monitoring².
- **Hormone replacement therapy (HRT)** replaces oestrogen in women and used to be commonly used as a treatment for osteoporosis². However, because of long-term health risks, HRT isn't used very often, except for women who have started the menopause early².

More information

National Osteoporosis Society

Helpline: 0845 4500230

Website: www.nos.org.uk

For falls advice:

Age Concern

www.ageconcern.org.uk

Sources

1. National Osteoporosis Society
www.nos.org.uk
2. British Menopause Society
www.thebms.org.uk
3. British Journal of Sports Medicine <http://press.psprings.co.uk/bjism/december/sm52308.pdf>
4. Food Standards Agency
www.good.gov.uk
5. Toxicity of Chemicals in Food, Consumer Products and the Environment '*Phytoestrogens and Health*' report 2003
<http://cot.food.gov.uk/pdfs/phytoreport0503>
6. JAMA 2006.
<http://pubs.ama-assn.org/media/2006a/0424.dtl#calcium>
6. Age Concern
www.ageconcern.org.uk

A wide range of women's health resources are available at www.healthywomen.org.uk

Disclaimer: This article is for general information only and is not intended to replace a consultation with a healthcare professional, nor is it intended to provide specific medical advice and should not be used for the diagnosis or treatment of medical conditions.

© Copyright Bayer plc 2009 Last reviewed: April 7th 2009 Doc ID: Oi108 Version: 1
