

Osteoporosis

Clinical guideline for
prevention and treatment

Information for patients

If you require any further information about osteoporosis,
you may find the following contacts very useful :-

National Osteoporosis Society
Camerton
Bath
BA2 0PJ

Email: info@nos.org.uk
Helpline: 0845 450 0230

Osteoporosis 2000
Learoyd Way
Hillsborough Barracks
Langsett Road
Hillsborough
Sheffield
S6 2LR

Email:
osteoporosis2000@btconnect.com
Helpline: 0114 234 4433

Osteoporosis Dorset
11 Shelley Road
Bournemouth
Dorset

Email: mail@osteodorset.org.uk
Phone: 01202 443064

Updated July 2010

Osteoporosis

Clinical guideline for prevention and treatment

Definition

Osteoporosis is a progressive disease causing weakening of the bones – if no action is taken it will get worse. The amount of bone decreases and what remains is of poorer quality. This increases the chance of bones breaking (especially at the hips, arms, wrists and spine)

Bone strength can be assessed indirectly by measuring bone mass or density using dual energy x-ray absorptiometry, a term that is shortened to DXA. It gives the doctor information on your future risk of fracture.

Having a DXA scan

A DXA (bone densitometry) scan is a safe and comfortable procedure. The dose of x-rays used is very low, roughly a tenth of that used for a chest x-ray and similar to the dose that you would get from a return transatlantic flight. When having a scan, it is best to wear loose fitting, light clothing, if possible, without any metal fastenings. A tracksuit is ideal, although trouser zips are not a problem. The actual test takes about 5 minutes and the whole appointment will be about 15-20 minutes. You will be helped onto a low couch and asked to lie on your back. The couch is open and not enclosed like some other types of scanners. The machine operator may gently position your leg for the picture of your hip and raise your knees for the examination of your back. Sometimes more detailed scans of your back may be undertaken to look for any broken bones in the spine (vertebral fractures).

Fractures

Usually a person has to fall to break a bone. Younger people tend to fall forwards. A natural reaction is to put your hand out to protect yourself, but the result may be a broken wrist. Older people tend to fall sideways, breaking their hip. A fall is not usually needed to break a vertebra, the building blocks of the spine. It's just the weight of the body that causes the fractures.

These fractures can also cause curvature of the spine known as the 'dowagers' hump.

There are many risk factors associated with an increased risk of fracture (see list). The World Health Organization (WHO) has used these in the FRAX[®] tool to calculate the chance of somebody breaking a bone over the next 10 years. This can be for a hip fracture alone or any major osteoporotic fracture (wrist, upper arm, vertebra, hip). FRAX[®] can be used in men over the age of 50 years and in women after the menopause.

The risk of fracture determined by FRAX[®] can then be used to decide what to do next. If the risk of fracture is low, lifestyle advice about diet and exercise is given but medication is not required. If the risk is high then treatment should be considered. If the risk is in between high and low then a DXA scan is indicated. The FRAX[®] risk is then recalculated and the decision made on whether medication is needed. Women who have already had a fracture after the menopause may be offered treatment without the need to calculate their risk.

Treatments

Regular physical exercise, stopping smoking and drinking less than 3 units of alcohol per day, are all associated with healthier bones and less bone loss. A healthy, balanced diet is recommended, with adequate calcium and vitamin D. It is also important to visit an optician regularly and reduce the chance of falling at home (e.g. have good lighting and avoid loose carpets and rugs) There are many different medications that reduce the risk of breaking bones. They should be prescribed with calcium and vitamin D tablets.

The bisphosphonates

Alendronate (Fosamax) is the most commonly prescribed. Others include risedronate (Actonel), ibandronate (Bonviva) and zoledronate (Aclasta). Etidronate (Didronel PMO) is an older treatment. These drugs work by preventing age-related bone loss and reducing fracture risk. Most are taken by mouth but ibandronate and zoledronate can be given directly into a vein (iv), every three months (ibandronate) or once yearly (zoledronate). Oral bisphosphonates are taken daily, weekly or monthly depending on the drug.

Indigestion is the most common side-effect with oral bisphosphonates. They must be taken on an empty stomach with a full glass of water and nothing should be eaten for 30 to 60 minutes after taking the tablet (this includes other tablets and supplements). It is important to stand or sit

upright for at least half an hour after taking the tablet. A flu-like illness may occur with iv bisphosphonates, but this usually occurs only after the first dose. These symptoms can be reduced by paracetamol.

Osteonecrosis of the jaw (ONJ), a condition in which bone in the jaw becomes exposed and may become infected has been reported in a small number of patients taking bisphosphonates for osteoporosis. Stress fractures in the thigh bone have also been reported. However, both these conditions are extremely rare in osteoporosis, a direct link remains unproven, and in the vast majority of individuals the benefits of treatment outweigh the risks.

Denosumab (Prolia)

Denosumab is given as a subcutaneous injection once every 6 months and can be administered in primary or secondary care. It acts by inhibiting the formation and activity of the cells that break down bone. Possible side-effects include skin infection and low blood calcium levels. Osteonecrosis of the jaw (ONJ) has also rarely been reported (see above).

Strontium Ranelate (Protelos)

Strontium ranelate is a powder that needs to be mixed with water and taken at least 2 hours after food, usually at bedtime. Possible side effects include diarrhoea, headache, nausea and skin irritation. If a skin rash develops strontium ranelate should be stopped immediately and a doctor consulted.

Raloxifene (Evista)/Hormone Replacement Therapy (HRT)

Because of the increased risks of HRT in older women, HRT is now mostly restricted to younger women who are at high risk of fracture and also have menopausal symptoms. Raloxifene is related to HRT, but is licensed for treatment and prevention of osteoporosis and, unlike HRT, decreases the risk of breast cancer. Side effects may include cramps, swelling and hot flushes and a small increase in the risk of blood clots. Raloxifene is a tablet taken once daily, at any time of day.

Parathyroid Hormone

Parathyroid hormone increases bone formation and is available in two formulations, teriparatide (Forsteo) or the full length hormone (Preotact). These drugs are given by daily injection under the

skin, for a limited time of 18 months or 2 years. Side effects may include headaches, nausea and dizziness.

With the exception of parathyroid hormone, treatments are usually given for at least five years and sometimes longer. Your doctor may check your bone density or do a blood test to assess the response to treatment.

Treatment of Men

Treatments have been better studied in women than men. However there is no evidence that there are major differences between men and women in their response to osteoporosis treatment. Alendronate, risedronate, teriparatide and zoledronate are approved for use in men.

List of risk factors associated with increased risk of fracture

- Increasing age
- Female sex
- Being very slim. The combination of height and weight, the body mass index or BMI is a very good indicator of bone mineral density (BMD) especially in older people. BMI less than 19 kg/m² is a risk factor for fracture.
- A fracture in adult life that was caused by a minor accident (especially hip, spine, wrist)
- One or both parents broke their hip
- Use of steroid tablets for 3 months or more
- Diagnosis of rheumatoid arthritis
- Current smoking
- Drinking 3 or more units alcohol per day. A unit is half a pint of beer, a single measure of spirits or a medium glass of wine
- Other diseases causing osteoporosis:
 - Low hormone levels
 - e.g: menopause before the age of 45 years - natural or hysterectomy
 - anorexia nervosa
 - medication for breast and prostate cancer
 - Gastrointestinal disease
 - e.g: ulcerative colitis, Crohn's disease
 - Prolonged immobility
 - e.g: stroke, Parkinson's disease, ankylosing spondylitis
 - Organ transplantation
 - Diabetes type I
 - Overactive thyroid
 - Chronic obstructive pulmonary disease (COPD)