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:

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Langsett Road
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11 Shelley Road
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Introduction
The National Osteoporosis Guideline Group (NOGG) was established to provide a clinical guideline for the management of women and men at high future fracture risk. This leaflet explains the guidance developed by NOGG addressing current management of osteoporosis based on fracture risk as a 10-year probability (the output from FRAX®).

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).

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 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.

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 full track suit 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 taken to look for any broken bones in the spine (vertebral fractures).

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. When taking medication to reduce the risk of breaking the spine. It’s important to ensure that adequate levels of calcium and vitamin D are maintained. Recent studies have reported an increase risk of heart attacks in people taking calcium and vitamin D supplements. Although the evidence is not conclusive. You can assess your dietary calcium intake and consider whether to increase your dietary calcium intake and use a vitamin D supplement. Supplements will be prescribed when necessary.

The bisphosphonates
Alendronate (Fosamax) is the most commonly prescribed. Others include risedronate (Actonel), ibandronate (Boniva) and zolendronate (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 zolendronate can be given directly into a vein (iv), every three months (ibandronate) or once yearly (zolendronate). Oral bisphosphonates are taken daily, weekly or monthly depending on the drug. Indigestion is the most common side-effect with oral bisphosphonates. They may 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 full stomach is not recommended after 5 years of treatment for alendronate, risedronate or ibandronate and after 3 years for zoledronic acid. The review is likely to involve a recalculation of your fracture risk and a DXA scan.

Osteonecrosis of the jaw (ONJ), a condition in which a bone in the jaw becomes exposed and may become infected, has been linked to a small number of patients taking bisphosphonates or denosumab for osteoporosis. Ensure good oral hygiene and if possible avoid invasive dental procedures during treatment. Stress fractures in the thigh bone have also been reported in a few patients taking bisphosphonates or denosumab for osteoporosis. If during treatment with bisphosphonates you develop unexplained thigh, groin or hip pain discuss this with your doctor.

Both of 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) and stress fractures in the thigh bone have 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, or 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 (Prolact). 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.

Duration of treatment
Because of concerns over possible adverse effects of long-term bisphosphonate therapy, the need for continuation of treatment should be reviewed at regular intervals. A treatment review is recommended after 5 years of treatment for alendronate, risedronate or ibandronate and after 3 years for zoledronic acid. The review is likely to involve a recalculation of your fracture risk and a DXA scan.

If you are at high risk of future fracture, or have had a fracture whilst on a treatment, it is likely that you will be advised to continue on treatment. If during treatment with bisphosphonates you develop unexplained thigh, groin or hip pain discuss this with your doctor.

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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, zoledronate and Strontium Ranelate are approved for use in men.

Glucocorticoid induced Osteoporosis
If you are taking glucocorticoids (eg prednisolone) for other medical conditions your fracture risk assessment will be modified depending on the dose you are taking. Alendronate, etidronate, risedronate, zoledronate, and teriparatide are approved treatment options for glucocorticoid induced osteoporosis.

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 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
  • Gastrintestinal disease
  • e.g: ulcerative colitis, Crohn’s disease
  • Prolonged immobility
  • e.g: stroke, Parkinson’s disease, amyotrophic lateral sclerosis
  • Organ transplantation
  • Diabetes type I
  • Cushing’s syndrome
  • Overactive thyroid
  • Chronic obstructive pulmonary disease (COPD)

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