Factsheet

Osteoporosis

Women's Health Concern

About three million people in the UK have the condition, which is more common in women than men. One in two women and one in five men over the age of 50 will suffer.

What is Osteoporosis?

Osteoporosis is defined as a systemic skeletal disease characterised by low bone mass and deterioration of bone tissue leading to an increase in bone fragility. As people age they lose bone density and the structural strength of their bones is reduced. As women get older they have reduced oestrogen levels, particularly at the time of menopause, when there is an increased risk of progressive bone thinning and fragility. The loss of bone density is known as osteoporosis.

Post-Menopausal osteoporosis is caused by oestrogen deficiency, irrespective of age. This usually affects women in their 50-60s who lose bone density following a normal menopause. However, if ovarian production of oestradiol, the female sex hormone responsible for maintaining a strong skeleton, is reduced or ceases in younger women, bone loss of the post-menopausal type will set in. This can happen if there is a persistent absence of periods from puberty onwards. Generally speaking, women of any age who are not menstruating regularly will not be secreting enough oestradiol to sustain strong bones.

Loss of bone tissue after the menopause, where there is oestrogen loss, is largely due to the breakdown of bone, which is not matched by new bone formation. This may affect the underlying structure of the bone, and the damage is almost irreversible. However, taking good preventive measures can reduce this. Thinner bones are more likely to fracture and this is the chief risk associated with osteoporosis. Typically fractures are of the wrist, hip and spine. The occurrence of fractures depends on many things. Primarily, the strength of your bones is important and that is why it is essential to maximise bone density. Falling and the frequency of falls, as well as the type of fall, is equally important. However, several fractures, including fractures of the spine, may not be caused by falls and may occur without you even knowing. While avoiding falls is important, the most important thing is to maintain bone density.

Factors affecting the development of osteoporosis
The extent to which osteoporosis develops depends chiefly on two factors:

- the maximum amount of bone developed in the skeleton,
- the rate of its subsequent loss.

Peak bone density in the adult is usually around the age of 30. How dense your skeleton becomes is largely a matter of luck related to the set of genes you were born with. If your mother suffered from low bone density, you probably will too.

You are more at risk of osteoporosis if you have:

- had an early menopause, that is before the age of 45
- had a hysterectomy and removal of the ovaries before 45 years of age
- missed a period for longer than 6 months excluding pregnancy, because of over exercising, over dieting or eating disorders
- a low body mass index
- had previous fractures
- a family history of osteoporosis.

Some environmental factors may influence bone density to a lesser degree and recent research tells us that malnutrition or sickness in childhood limits the development of bone mass as well as physical health during pregnancy. Hormones have a strong influence on bone health and whilst pregnancy and the use of a contraceptive pill can be regarded as good for bones, loss of oestrogen at the menopause will have a negative effect.

Smoking and excessive alcohol consumption also reduce peak bone density before menopause. Smoking has a toxic effect on bones and can cause an early menopause.

If you have been on steroids for asthma or other conditions you may be at greater risk of developing osteoporosis. Other medical conditions that may increase your risks of osteoporosis include thyroid disease or malabsorption syndrome such as coeliac disease.

Prevention

Identifying your own risk factors is a good start and an Osteoporosis Health Check is included at the end of this fact sheet. Prevention of osteoporosis should be the main focus and can be addressed in several ways.

Nutrition

An adequate intake of food containing calcium such as milk, cheese and yoghurt is important for young growing bones and to maintain bone health in adulthood. Other sources of calcium include green leafy vegetables, baked beans, fish and dried fruit (you can obtain more information on Diet and Bone Health on the National Osteoporosis Society website – www.nos.org.uk). You should have an adequate intake of vitamin D. If you absorb sunlight for 20 minutes each day from May to October this provides you with sufficient amounts of vitamin D for your needs. When there is less sunlight, for example in winter, a vitamin D supplement is advised. Calcium supplements may be beneficial and are recommended for older women and for the frail elderly. (See information on Calcium Rich Diets and Bone Health in the National Osteoporosis Society website.) A limited intake of caffeine from tea, coffee or soft drinks is also recommended.

Exercise

As well as having a well balanced diet, it is essential to take exercise. Weight bearing exercises benefit the skeleton. These exercises include walking or low impact aerobics which stimulate bones to strengthen because of the association with muscle contraction.

It is important to know that not having enough exercise can increase the risk of osteoporosis. However, women who exercise excessively could be at risk because of period problems and 'amenorrhoea' or absence of periods. (See the National Osteoporosis Society website on Exercise and Bone Health.)

Diagnosing Osteoporosis

Osteoporosis is difficult to diagnose since there are no symptoms that indicate changes until a fracture occurs.

A normal x-ray may be useful to identify changes in the spine, and a Dual Energy X-ray Absorptiometry (DEXA) scanner will measure bone density.

Treatments

There are drugs that can be used to prevent bone breakdown and which can stimulate new bone formation.

- Bisphosphonates slow both the rate of growth and breakdown of bone and therefore help to reduce the rate of bone turnover. These are non-hormonal drugs which bind to the bone.
- Calcitonin is a hormone from the thyroid gland which can prevent bone breakdown and is used extensively. At present it is given as an injection but a Calcitonin nasal spray is also available.
- Selective Oestrogen Receptor Modulators (SERMS) These are drugs which act in a similar way to oestrogen on the bone, helping to maintain bone density and reduce fractures. These do not have any affect on the lining of the uterus or the breast and can reduce the risk of breast cancer. Like HRT, they do have risk factors which include risk of venous blood clots. SERMS will not control menopausal symptoms so these need to be addressed separately.
- Human Parathyroid Hormone Teriperitude This stimulates the formation of new bone rather than preventing bone breakdown. By stimulating the bone forming cells, osteoblasts and fractures are significantly reduced.

Whilst hormone replacement therapy (HRT) can be useful to prevent osteoporosis, it is now primarily used as symptomatic relief of menopausal symptoms. The benefits of oestrogen replacement therapy need to be balanced against the risks of HRT, including the risk of deep vein thrombosis, stroke and breast cancer. HRT does not suit all women and may not be the most appropriate therapy. Once HRT is stopped, the benefits stop and bone loss continues to deteriorate.

What can I do to protect myself?

Self help is the key and you can assess your lifestyle in terms of:

- A good well-balanced bone friendly diet
- Undertaking regular weight-bearing exercise
- Stopping smoking
- Drinking alcohol in moderation

Make adjustments that will benefit you and your bone health.

This factsheet has been produced by Women's Health Concern and reviewed by members of our Medical Advisory Panel.
It is for your information and advice and should be used in consultation with your own medical practitioner. **Updated: November 2007.**

Osteoporosis Risk Test

Do this quick test every year to assess your osteoporosis risk. If you have one or more of the risk factors below, please discuss the results with your general practitioner.

- Have you had, or do you have, anorexia?
- Is your Body Mass Index (BMI) less than 20 now, or was it less than 20 when you were having periods? BMI can be calculated by dividing your weight in kg by your height in meters squared

i.e. $\frac{\text{Weight kg}}{\text{Height (m2)}} = \text{BMI}$

- Have your periods ever stopped for six months or longer, especially before you were 35?
- Have you done a great deal of exercise, lost weight and stopped having periods, especially before the age of 35?
- Have you used injectable contraception?
- Did you go through menopause before the age of 45?
- Have you had a hysterectomy before the age of 50?
- Have you had your ovaries removed?
- If you had a hysterectomy and your ovaries were not removed, have you had an annual blood check to see how your ovaries are working?
- Have you been through natural menopause and not discussed osteoporosis risks with your doctor?
- Have either of your parents broken a hip after a minor bump or fall?
- Have either of your parents been diagnosed with osteoporosis?
- Have you broken a bone after a minor bump or fall?
- Have you had a hip, wrist of spinal vertebral fracture?
- Do you have a poor diet, with little fresh fruit and vegetables and a lot of processed foods, soft drinks, coffee and animal fats?
- Have you lost more than 3cm (just over 1 inch) in height?
- Do you have a sedentary life style with little regular exercise, especially weight-bearing exercise (that's when your weight is on your feet e.g. walking, dancing, running – not cycling, riding, swimming)
- Do you regularly drink more than 14 units of alcohol per week ? (one unit = a small glass of wine)
- Do you smoke more than 20 cigarettes per day?
- Do you suffer frequently from diarrhoea or constipation?
- Have you taken corticosteroid tablets (principally cortisone or prednolisone) for more than three months?

Do you suffer from any of the following diseases?

- Rheumatoid arthritis
- Neuromuscular disease
- chronic liver disease
- Malabsorption syndrome, such as coeliac disease
- Hyperthyroidism
- Hyperparathyroidism

Check List reproduced from '*Your change, your choice*' by Michael Dooley and Sarah Stacey

Useful contacts

National Osteoporosis Society
Helpline: 0845 450 0230 (Monday-Friday 9am-5pm)
Email: nurses@nos.org.uk
Website: www.nos.org.uk

International Osteoporosis Foundation
Website: www.iofbonehealth.org

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