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LPC 08/14/003

HSC Northern Health and Social Care Trust

Stand up for your Bones

Osteoporosis - A Guide to Bone Health

What is Osteoporosis?

Osteoporosis is a condition where the bones become thin and weak and break easily. These broken bones, commonly known as fragility fractures (broken bones after a minor incident), most frequently occur in the wrist, hip and spine.

Having osteoporosis does not necessarily mean that your bones will break; it means that you may have a greater risk of fracture even after a simple fall.

Osteoporosis in Women

Almost one in two women over the age of 50 will suffer a fracture mainly as a result of the condition. It is more common in women than men mainly because of the effects of the menopause. Oestrogen is known to maintain bone strength (density) and helps reduce the risk of fracture; therefore with decreasing oestrogen levels at the time of the menopause bone loss is accelerated. Osteoporosis is also more common in women because they tend to have smaller, less dense bones than men.

Osteoporosis in Men

Osteoporosis is still common in men affecting one in five. In men it is often secondary to another health problem.

Further Information

If you have been newly diagnosed or would like further information regarding osteoporosis contact your GP.

The National Osteoporosis Society is the only UK wide charity dedicated to improving the diagnosis, prevention and treatment of osteoporosis. For more information visit their website **www.nos.org.uk**

Further copies of this leaflet can be obtained from:
Health Improvement/Community Development Service,
Spruce House,
Cushendall Road,
Ballymena,
BT43 6HL.
Phone: 028 2563 5575

Pain Control

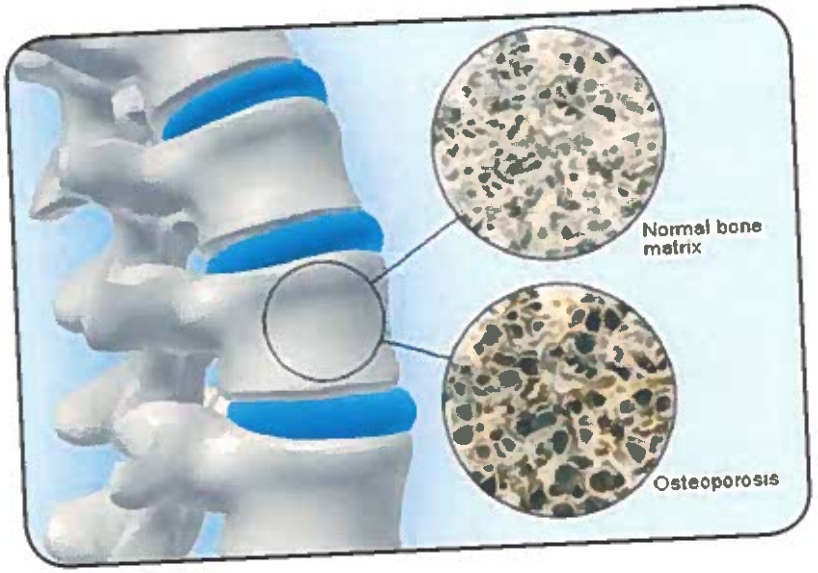
Osteoporosis itself is not always painful but pain can be experienced with broken bones. Pain can sometimes remain even after the bone and surrounding tissue has healed. It is thought that this pain is the result of a change in a person's posture resulting in additional strain being added to muscles and ligaments. If you have any concerns regarding management of your pain, please consult your GP.

Some suggestions to help with pain relief:

- **Heat/cold packs** - heat can be used to relax muscles and cold to reduce inflammation. To avoid burns from heat and ice packs, do not place on bare skin or leave on for too long.
- **Painkillers** - these can either be prescribed by your GP or bought over the counter.
- **Physiotherapy** - this can help to improve muscle strength, balance, co-ordination and mobility. It will also help with pain relief/management.
- **Relaxation** - tight muscles and stiffness can lead to more pain, learning to relax can help reduce and take your mind off the pain.

Bone Development

Bone is a living tissue which is constantly changing and renewing itself. There are two different types of cells in our bodies called **Osteoclasts** and **Osteoblasts** that carry out this process. Osteoclasts break down old bone, creating cavities, while Osteoblasts build new bone filling the cavities. During childhood and adolescence the cells responsible for building new bone will be favoured causing our bones to increase in density and strength. By our mid to late twenties we will have reached our maximum bone strength which is known as **peak bone mass**. However after the age of 40, due to the ageing process, our bodies will begin to favour the cells that are responsible for breaking down bone. This accelerates the loss of bone density and strength, making our bones more susceptible to fractures.



How is Osteoporosis Diagnosed?

In most cases Osteoporosis is first diagnosed when you break a bone after a minor bump or fall. However other signs may present such as height loss or stooping.

If you are thought to be at increased risk of developing osteoporosis you may be referred for a bone scan, known as a DEXA scan. DEXA stands for Dual Energy X-ray Absortiometry. It is a scan that uses special x-ray machines that can check bone density and confirm osteoporosis. This is a simple, painless procedure that lasts approximately 10 - 15 minutes. The scan results are measured in what is known as Z and T scores, but these will be explained by the professional providing you with your results. If low bone density is diagnosed your risk of breaking a bone is higher. The scan results are also used in conjunction with your other risk factors to determine what treatment will be most appropriate for you.

In addition to lifestyle advice (e.g. diet, alcohol, smoking and exercise) you may be prescribed some medication. These drugs will help strengthen, and reduce your risk of breaking a bone.

The most common drug treatments for osteoporosis are:-

- Calcium and vitamin D
- Bisphosphonates
- Strontium Ranelate
- Parathyroid hormone (PTH) treatment
- Denosumab

Your doctor will decide what drug therapy is most suitable for you. Treatment can last for several years, and to obtain the best results it is important that you continue taking the medication according to your GPs instructions.

If you do experience any difficulties with your treatment, please speak to your doctor as an alternative drug therapy may be prescribed.

Smoking

Smoking is known to have a damaging effect on bones and has been shown to slow down the work of the bone building cells (osteoblasts). In women especially, oestrogen, the hormone that increases bone density, is inhibited by the effects of nicotine.

Giving up smoking will not only be of benefit to your bones but also to your heart, lungs and overall fitness and well-being.

Who is Most at Risk of Osteoporosis

Your bone strength can be attributed to genetic factors that you inherit from your parents. A family history of diagnosed osteoporosis or a hip fracture will significantly increase your own risk of developing this disease. There are also additional individualised risk factors that will contribute to the development of osteoporosis.

Osteoporosis risk factors: -

- A previous fragility fracture (breaking a bone following a minor incident)
- History of maternal hip fracture
- Low levels of sex hormones
  - Oestrogen in women, caused by early menopause (before the age of 45), over dieting or over exercising
  - Testosterone in men
- Age - bone loss increases as you get older
- Low Body Mass Index (BMI)
- Conditions that affect the absorption of food e.g. Crohns or Coeliac Disease. Conditions such as Rheumatoid Arthritis, Hyperthyroidism and Parathyroid disease may increase your risk.
- Some drug therapies eg long term or high dose use of steroids, anti epileptic drugs or antacids
- Excessive alcohol consumption
- Smoking
- A diet low in calcium
- Low levels of vitamin D
- Lack of weight bearing exercise

Some of the above risk factors you cannot change, but following the advice in this leaflet can reduce your chances of developing osteoporosis.

What You Can Do To Reduce the Risk of Developing Osteoporosis?

Nutrition

Eating a variety of foods, and having a well balanced diet, can assist our body in maintaining healthy bones and teeth. Getting the balance right, as shown in the Eatwell Guide below, can provide us with the necessary nutrients to help us maintain an active and healthy lifestyle.

It is important to get enough calories from your diet to maintain a healthy weight for your height to ensure you have a normal Body Mass Index (BMI).

Adequate intakes of calcium and vitamin D are needed to maintain healthy bones.

Alcohol

Drinking too much alcohol also increases the risk of developing a range of illnesses such as cancer, stroke, heart disease, liver disease.

The effects of alcohol on your health will depend on how much you drink. The less you drink, the lower the health risks.

Men and women are advised not to drink more than 14 units a week on a regular basis. Spread your drinking over 3 or more days if you regularly drink as much as 14 units a week. If you want to cut down on alcohol, try to have several drink free days each week.

The following is a guide only for the number of units in common alcoholic drinks.

Type	Units
Pint of lager/cider/stout	2½ units
NI pub measure of spirits/shot	1½ units
Alcopop/ready mixed drink	1.4 units
Bottle of Wine (6 small glasses)	9 units
Small pub bottle of wine (187.5ml)	2.3 units
Bottle beer (500ml)	2-3.5 units

Focus on Alcohol - Public Health Agency December 2016

Physical Activity

Regular exercise can actually help to maintain and increase the strength of bone, and reduce the risk of fractures. Weight bearing exercises (any exercise where you are supporting the weight of your own body) and strengthening exercises will stimulate bone to grow and increase muscle strength.

Examples of weight bearing and strengthening exercises:-

- Dancing
- Walking
- Stair climbing
- Gardening
- Resistance bands
- And any other exercise where you are supporting the weight of your own body

You should choose an activity that suits, and that you would enjoy. Start slowly and build up gradually, working within your own limits. If you have any concerns about starting to exercise, please speak to your GR Remember, exercise is not just good for bones and muscles, but also benefits your general health.

Calcium

Calcium is essential for the formation and maintenance of strong healthy bones and reducing the risk of osteoporosis. As bone is living tissue continually being built up and broken down, it requires a regular supply of calcium from our diet. Adults (>19 years) require 700mg of calcium daily. You should be able to get all the calcium you need from your daily diet.

Those who are at increased risk of osteoporosis or have already been diagnosed require increased amounts. It is recommended that people with osteoporosis or those on osteoporosis treatment should consume 1000mg of calcium per day through diet and if necessary supplementation. Women who are post-menopausal and not on Hormone Replacement Therapy require 1200mg calcium daily through diet, due to loss of oestrogen.

If you find it difficult to make up this amount from diet alone you should discuss calcium supplementation with your GP or healthcare professional. Best sources of calcium are dairy products such as milk, cheese and yoghurts. Other sources include canned fish with edible bones, green leafy vegetables, pulses, nuts, dried fruit, fortified soya products, bread and other products made with fortified flour.

Calcium in food products	Calcium (mg)
Milk, all types - (200ml)	240
Cheese - matchbox size - (30g)	220
Cheese triangle - 1 triangle (15g)	60
Yoghurt (120g)	200
Fromage frais - 1 pot/pouch (45-100g)	60
Calcium-enriched fromage frais - 1pot/pouch (50-90g)	125
Malted milk drink - (25g in 200ml)	440-710
Hot chocolate (light) - (25g in 200ml water)	200
Rice pudding - ½ large tin (200g)	176
Custard - (120ml)	120
Milk chocolate - (30g)	66
Calcium enriched milk alternatives - (200ml)	240
Soya bean curd/tofu - (60g)	200
Calcium fortified soya yoghurt/dessert/ custard - (125g)	150
Calcium enriched orange juice - (150ml)	180
Calcium fortified cereals - (30g)	130-150
Calcium fortified instant hot oat cereal - 1 tbsp dry cereal (15g)	200
Calcium-fortified bread - 1 slice (40g)	191
Sardines (with bones) - ½ tin (60g)	258
Pilchards (with bones) - 1 serving (60g)	150
Tinned salmon (with bones) - ½ tin (52g)	47
Whitebait - 1 small portion(50g)	430
Scampi in breadcrumbs - 6 pieces (90g)	190
White bread - 2 large slices (100g)	100
Wholemeal bread - 2 large slices (100g)	54
Pitta bread/chapatti - 1 portion (65g)	60
Orange - 1 medium (120g)	75
Broccoli, boiled - 2 spears (85g)	34
Spring greens - 1 serving (75g)	56

The British Dietetic Association July 2017

Vitamin D

Vitamin D is also essential for building bones as it allows the body to absorb the calcium from our diet. Our main source of Vitamin D comes from the action of sunlight on to skin, although small amounts can be found in certain foods. Ensuring you spend some time outdoors each day especially during the summer months, can help meet Vitamin D requirements. Remember overexposure to sunlight can be harmful to your skin and increase your risk of developing skin cancer.

There are a few foods naturally rich in Vitamin D. Rich foods include egg yolk, oily fish (e.g. salmon, mackerel, herring and sardines), meat, liver and kidney. Milk contains some Vitamin D (content depends on the season). Some foods are fortified with Vitamin D, which would be highlighted on food labels. These foods include some margarines, breakfast cereals, orange juice, evaporated milks, dried milk powder and yoghurts.

Everyone aged 5 years and over should consider taking a daily supplement of 10 micrograms of vitamin D, especially during the winter months from beginning of October to end of March. People who have a higher risk of Vitamin D deficiency are advised that a 10 microgram Vitamin D supplement should be taken all year round. Those particularly at risk are those who have little or no sunlight exposure including those who are frail or housebound, in a care home or usually wear clothes that cover up most of their skin when outside. People from minority ethnic groups with dark skin, such as African, African-Caribbean and South Asian origin may also find it difficult to obtain enough Vitamin D from sunlight in the summer so should consider taking a Vitamin D supplement all year round. A vitamin D supplement can be purchased from your local pharmacy or supermarket.

Check for vitamin D already present in other supplements you are taking. Check if taking other supplements as they may already contain vitamin D e.g. multivitamin preparations, fish oil supplements etc. A supplement only needs to contain 10 micrograms of vitamin D to meet the recommendation - those with a higher content of vitamin D are unnecessary and could be harmful.

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