

Cystic Fibrosis and Bone Health

What is low bone mineral density?

Low bone mineral density means that the structure and mineral content of the bones is reduced which is called **osteopenia**. If the bones become very thin making the bones more susceptible to fracture (break), the condition is called **osteoporosis**

How is bone mineral density measured?

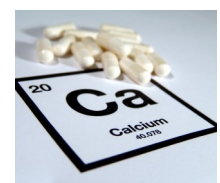
Bone mineral density is measured by a scan called a DEXA scan. All patients with CF should have a DEXA scan every 1 - 3yrs to monitor their bone health.

What causes low bone mineral density?

Usually our bones grow during childhood and continue to strengthen until early 30's when *peak bone mass* is achieved. After this time bones gradually become less dense as we get older. In CF sometimes the bones do not become strong enough in the first place (or achieve peak bone mass) and/or the thinning process is accelerated by certain factors.

The following factors can put people with CF at an increased risk of low bone mineral density;

- Low body weight
- Poor calcium intake
- Malabsorption (not digesting and absorbing food adequately)
- Low vitamin levels (especially vitamin D)
- Low physical activity level
- Steroids (prednisolone)
- Alcohol and smoking



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How can the risk of developing low bone mineral density be minimised?

To minimise your risk factors there are a number of things you can do:

Maintain a Healthy Weight – try to ensure your weight is within the healthy range of BMI 20 -25. You may need to increase your calorie intake, discuss the best way to do this with your dietician.



Have a High Calcium Intake – it is recommended that people with CF have almost twice the recommended daily amount of calcium (1000 - 1200mg/day). Try to have 1 pint of milk as well as other sources of high calcium foods everyday. If you dislike dairy produce and are unable to get enough calcium from your diet, your dietician or doctor may recommend a calcium supplement.



Ensure you are absorbing your diet adequately -take your pancreatic enzymes with all your meals, snacks and milk drinks in adequate amounts. If you think you are not absorbing your food properly (symptoms of fatty stools) discuss your enzyme dose with your dietician.



Vitamin D helps absorb calcium from food and vitamin supplements. Take vitamins with food + enzymes

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Manual techniques (percussion) and physiotherapy – if you are told that you have low bone mineral density and perform percussion or manual techniques as a form of physiotherapy please speak to your physiotherapist about advised changes to your treatment.



Steroids (Prednisolone) – continue to take any steroids you are prescribed, stopping them abruptly is inadvisable. Steroids taken over a long period of time can increase the risk of osteoporosis; however they are an important and useful treatment. They help to reduce inflammation in the lungs and can aid recovery from infection. Often the benefit of taking them outweighs the risk of osteoporosis.



Avoid smoking and keep alcohol consumption to healthy limits – smoking and/or a high alcohol intake is associated with an increased risk of osteoporosis. Avoid smoking and keep your alcohol intake to healthy limits. Men and women should not consume more than 14 units per week.

If you need any help with trying to stop smoking or reduce your alcohol intake, please talk to one of the CF team.



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Maintain healthy vitamin levels – most people with CF are prescribed fat soluble vitamins including vitamin D as without them they would become deficient. Vitamin D is needed to help the body to absorb calcium from the diet and maintain the structure of the bones. Vitamin K is also required for healthy bones – you may be prescribed this if you are thought to be deficient or if you have osteopenia or osteoporosis.

Ensure you take your vitamin supplements regularly as prescribed, with food and enzymes. You can also make vitamin D from the action of sunlight on your skin, so try to be outside for short periods on sunny days to boost your vitamin D level (*do not exposure yourself to the sun long enough to cause sun-burn*)



Increase the amount of exercise you take – regular weight bearing exercise such as walking, jogging, skipping, step aerobics and dancing can help to strengthen your bones. For an individual exercise programme, please discuss this with your physiotherapist.



How can low bone mineral density be treated?

If you develop low bone mineral density, you will be prescribed medication to reduce thinning of the bones and calcium supplements to help strengthen the bones.

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Aim for 1000mg calcium each day.

Calcium Containing Foods

Food	Calcium Content Per Serving
A mug of Horlicks Original* made with milk	710mg
1 pint whole milk*	653mg
Small tin sardines*	460mg
A mug of Ovaltine made with milk*	444mg
Average bowl of Ready Brek*	400mg
Calcium fortified bread e.g. Hovis Best of Both (1 thick slice)*	239mg
1 pot of yogurt (150g)*	225mg
Cheddar cheese (matchbox size)*	216mg
Scampi in breadcrumbs x6 pieces	190mg
Rice pudding (small pot)*	186mg
Slice of pizza*	180mg
Calcium enriched soya milk (200ml)	178mg
1 cheese spread triangle	163mg
2 scoops dairy ice cream	156mg
Custard (1 serving)	156mg
Spinach (boiled), average serving	144mg
1 original Cheesestring	143mg
Breakfast cereal with added calcium (e.g. Cheerios, Frosties) 30g, no milk	136mg
Milk chocolate (standard bar)	123mg

*HIGH CALCIUM FOODS

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Food	Calcium Content Per Serving
Belvita breakfast yogurt crunch, x2 biscuits	122mg
Fortified soya yogurt/dessert/custard	120mg
Small can baked beans	80mg
Almonds (30g)	72mg
Serving of hummus	62mg
Brazil nuts x9 (30g)	51mg
Broccoli (boiled), average portion	34mg



Don't forget supplement drinks also contribute to your calcium intake!

Supplement	Calcium Content Per Serving
High energy tube feed (1000ml) e.g. Nutrison Energy, Nutrition Concentrated	800-1000mg
Scandishake	387mg
Ready made supplement e.g. Fortisip	200mg

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TASTY TIPS FOR TIP TOP BONES

Have breakfast every morning – cereal with milk, cheese on toast, milkshake and biscuits. You do not have to have cereal for breakfast – use it as a snack anytime

Have a yoghurt or milk based dessert each day after a meal or as a snack – choose thick and creamy, Greek style or custard style yoghurts, milk puddings, dairy ice-cream, milk jelly, angel delight or custard

Use cheese as a topping – on soups, in mashed potatoes or on jacket potatoes, on burgers and pasta dishes

Make your drinks out of milk – milky coffee, hot chocolate, Ovaltine, Horlicks, milkshakes

Add milk to meals – in sauces, e.g.; creamy pasta sauces, cheese sauce, macaroni cheese, parsley sauce with fish, lasagne



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Information for Patients

Contact us:

If you have any questions or concerns regarding this information, please contact one of our CF Dietitians: on 0121 424 1796 (direct line with answer phone) , mobile 07794 375776

Or 0121 424 2000 Bleep 2425/2965/2734 Or email: Joanne.barrett@heartofengland.nhs.uk, Elizabeth.glennon@heartofengland.nhs.uk, Toni.osborne@heartofengland.nhs.uk, Claire.roden@heartofengland.nhs.uk

Our commitment to confidentiality

We keep personal and clinical information about you to ensure you receive appropriate care and treatment. Everyone working in the NHS has a legal duty to keep information about you confidential.

We will share information with other parts of the NHS to support your healthcare needs, and we will inform your GP of your progress unless you ask us not to. If we need to share information that identifies you with other organisations we will ask for your consent. You can help us by pointing out any information in your records which is wrong or needs updating.

Additional Sources of Information:

Go online and view NHS Choices website for more information about a wide range of health topics <http://www.nhs.uk/Pages/HomePage.aspx>, www.cysticfibrosis.org.uk, www.heartlandscf.org

You may want to visit one of our Health Information Centres located in:

- Main Entrance at Birmingham Heartlands Hospital Tel: 0121 424 2280
- Treatment Centre at Good Hope Hospital Tel: 0121 424 9946

Clinic Entrance Solihull Hospital Tel: 0121 424 5616

or contact us by email: healthinfo.centre@heartofengland.nhs.uk.

Dear Patient

We welcome your views on what you thought of this patient information leaflet, also any suggestions on how you feel we can improve through our feedback link below:

Patient Information Feedback email: patientinformationleafletfeedback@heartofengland.nhs.uk

If you wish to make any other comments this can be done through the links listed below:

Patient Opinion: www.patientopinion.org.uk

I want great care: www.iwantgreatcare.org (Here you can leave feedback about your doctor)

Be helpful and respectful: think about what people might want to know about our patient information and this hospital and how your experiences might benefit others. Remember your words must be polite and respectful, and you cannot name individuals on the sites.

