

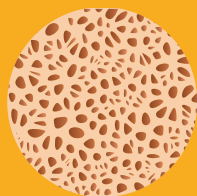
# PATIENT INFORMATION

## Glucocorticoid-induced osteoporosis

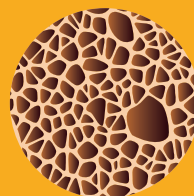


### What is osteoporosis?

Osteoporosis is a condition in which bones become thinner and more fragile, making them more likely to break (fracture).



Normal bone



Osteoporotic bone



Broken bone

### What are glucocorticoids?

Glucocorticoids (for example prednisone or cortisone) are drugs used for treating a variety of medical conditions including asthma and arthritis. They are very effective as a treatment for many diseases, but can have side-effects, one of which is osteoporosis. This is particularly likely to occur when glucocorticoids are taken by mouth for a period of 3 months or more. The glucocorticoid tablets most often prescribed are prednisolone and dexamethasone.



#### Can glucocorticoids cause osteoporosis?

Yes, glucocorticoids may lead to bone loss, which is most rapid in the first 3-6 months of treatment. This results in an increased risk of fracture. The greatest increase is seen for fractures of the spine. Increased fracture risk occurs even with low doses (2.5-7.5 mg prednisolone per day) and rises further with increasing daily dose.



#### Do all glucocorticoids have the same effect on bone?

Inhaled glucocorticoids taken for asthma and glucocorticoids applied to the skin are safer than glucocorticoids taken by mouth. However, high doses of inhaled glucocorticoids and intermittent courses of oral glucocorticoids may also be associated with an increased risk of fracture. Intravenous injections of glucocorticoids, if given frequently and in high doses, may also cause bone loss. Injections of glucocorticoids into joints are not thought to affect the skeleton.



#### Who is at greatest risk of glucocorticoid-induced osteoporosis and fractures?

Postmenopausal women and men aged 50 years or over with a previous history of fracture, women and men aged  $\geq 70$  years, and those taking high doses of glucocorticoids are at greatest risk. Premenopausal women and younger men have a lower risk of fracture than older individuals, although if they have had a fracture in the past their risk of having further fractures is increased.



#### How can I know if I am at risk?

Usually, measurement of bone mineral density (BMD) in the spine and hip is performed in glucocorticoid-treated patients to check how strong their bones are. The risk of fracture may also be assessed by a computer-based algorithm called FRAX<sup>®</sup> (<http://www.shef.ac.uk/FRAX>) that calculates the risk of fracture. This is in the form of a simple questionnaire that can be completed in a few minutes. You can do this yourself online, or ask your doctor to do it with you. Based on this information alone, some patients at high risk may be offered treatment without the need for further testing.



#### I do not have bone pain. Does it mean that I don't have osteoporosis?

Osteoporosis is a painless disease unless a fracture occurs. So if you do not have pain, it does not necessarily mean that you do not have osteoporosis. Individuals could definitely be osteoporotic even if they have not had a fracture at all.



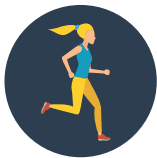
## How can I protect my bones while taking glucocorticoids?

To reduce the negative effect of glucocorticoids on bone, your doctor will keep your dose of prednisolone as low as possible and will stop your treatment if appropriate. However, if the dose is reduced too quickly or even stopped, this can be dangerous and you should not stop or reduce your dose of glucocorticoids without consulting with your doctor.



## What lifestyle measures can I take to help keep my bones healthy?

- Eat a healthy diet with plenty of dairy products (e.g. milk, yoghurt and cheese) to provide enough calcium. Aim for around 750-1000 mg/day of calcium in the diet (the amount in one pint of milk is approximately 700 mg). Other foods also contain calcium – for more information please see [www.iofbonehealth.org](http://www.iofbonehealth.org).
- Avoid cigarette smoking and do not drink more than the recommended amount of alcohol (14 units/week in women and 21 units/week in men).
- If you are able to, take regular physical exercise such as walking briskly for 30-45 minutes 3-4 times per week. If you have recently broken a bone or are unable to do this for other reasons, consult with your doctor about what sort of exercise is suitable for you. Taking the right amount of exercise helps to reduce bone loss and also reduces the risk of falling.
- If you have had one or more falls recently, tell your doctor and ask for advice on how to reduce the risk of having further falls.



## Will taking calcium and vitamin D protect my bones?

Calcium and vitamin D are important for bone health. An adequate intake of calcium can be achieved through dietary intake or, if this is not possible, by taking supplements. Most of our vitamin D is obtained by exposure of the skin to sunlight and supplements are sometimes necessary, particularly in people who do not go out of doors much or do not expose their skin to sunlight. Vitamin D is also available in some foods ([www.iofbonehealth.org](http://www.iofbonehealth.org)).

Although it is important to ensure that you have enough calcium and vitamin D, your doctor may consider that you also need additional treatment to prevent or treat osteoporosis. In some cases the treatment may be started at the same time as the glucocorticoids are started.



## Which drugs are prescribed to prevent or treat glucocorticoid-induced osteoporosis?

The most commonly used drugs are the bisphosphonates. They can be taken by mouth or as an intravenous infusion. When taken in the form of tablets, it is very important to take them exactly in the way indicated in the instructions. Because they are poorly absorbed they have to be taken on an empty stomach first thing in the morning with a glass of water and no food or drink other than water can be taken for the next 30-60 minutes. To stop the tablet causing indigestion, it is necessary to sit upright or stand while taking the tablet and for 30-60 minutes afterwards.

The other drug that may be used is teriparatide. This is self-administered as an injection under the skin every day.

These bone-protective drugs are effective only when taken regularly. If you have difficulty in taking them or believe that they are causing sideeffects, let your doctor know so that alternative options can be considered.

If your doctor considers that you need bone protective treatment, this will be started at the same time that you start taking glucocorticoids and will usually be continued for as long as you need to take glucocorticoids. If you stop taking glucocorticoids, your doctor may do some tests to see if you need to continue bone protective therapy.



Authored by the IOF/ECTS Guidelines Working Group

International Osteoporosis Foundation

9 rue Juste-Olivier • CH-1260 Nyon • Switzerland •

T +41 22 994 01 00 • F +41 22 994 01 01 [info@iofbonehealth.org](mailto:info@iofbonehealth.org) • [www.iofbonehealth.org](http://www.iofbonehealth.org)

**#LoveYourBones**