

Glucocorticoid -induced Osteoporosis

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Taking a glucocorticoid medication (sometimes called corticosteroids) for treatment of inflammatory arthritis or other health problem may weaken your bones. This, in turn, can lead to osteoporosis. The good news is there are ways you can protect your bones while taking glucocorticoid medicine.

Fast Facts

- Anyone taking a glucocorticoid medicine is at risk of osteoporosis.
- Daily calcium and vitamin D supplements can help prevent loss of bone mass. Calcium alone is not effective.
- A rheumatologist can advise about other treatment options.

What is glucocorticoid-induced osteoporosis?

Glucocorticoid-induced osteoporosis is a form of [osteoporosis](#)—sometimes called OP—that is caused by taking glucocorticoid medicines. These drugs include prednisone (Deltasone, Orasone, etc.), prednisolone (Prelone), dexamethasone (Decadron, Hexadrol), and cortisone (Cortone). They are common treatments of many rheumatic (joint and muscle) diseases, including [rheumatoid arthritis](#), [lupus](#), myositis (muscle inflammation) and [polymyalgia rheumatica](#).

What causes glucocorticoid-induced osteoporosis?

Glucocorticoid medicines have both direct and indirect effects on bone tissue that lead to bone loss. These drugs have a direct negative effect on bone cells, resulting in a reduced rate of forming new bone. Also, they can interfere with the body's handling of calcium and affect levels of sex hormones. Either of these problems can lead to increased bone loss.

Anyone who is taking glucocorticoid medications and has other risk factors for OP is at increased risk of getting glucocorticoid-induced OP and breaking a bone (fracture). You can change some of these risk factors, but not others.

Major risk factors that you cannot change include:

- Older age (children are at risk too)
- Non-Hispanic white or Asian ethnic background
- Small bone structure
- Family history of OP or an OP-related fracture in a parent or sibling
- Prior fracture due to a low-level injury, particularly after age 50

Risk factors that you may be able to change include:

- Low levels of sex hormone, mainly estrogen in women (e.g., menopause) and men
- The eating disorder anorexia nervosa
- Cigarette smoking
- Alcohol abuse
- Low calcium and vitamin D, by low dietary intake or poor absorption in your gut
- Sedentary (inactive) lifestyle or immobility
- Certain medications besides glucocorticoids, including the following:
 - excess thyroid hormone replacement
 - the blood thinner heparin
 - some treatments of breast cancer (Arimidex, Femara, etc.) or prostate cancer (e.g., Lupron) that deplete sex hormones
- A disease that can affect bones
 - endocrine (hormone) diseases (hyperthyroidism, hyperparathyroidism, Cushing's disease, etc.)
 - inflammatory arthritis ([rheumatoid arthritis](#), [ankylosing spondylitis](#), etc.)

Who gets glucocorticoid-induced osteoporosis?

Anyone who needs to take glucocorticoid medicine is at risk of developing OP and fractures.

How is glucocorticoid-induced osteoporosis diagnosed?

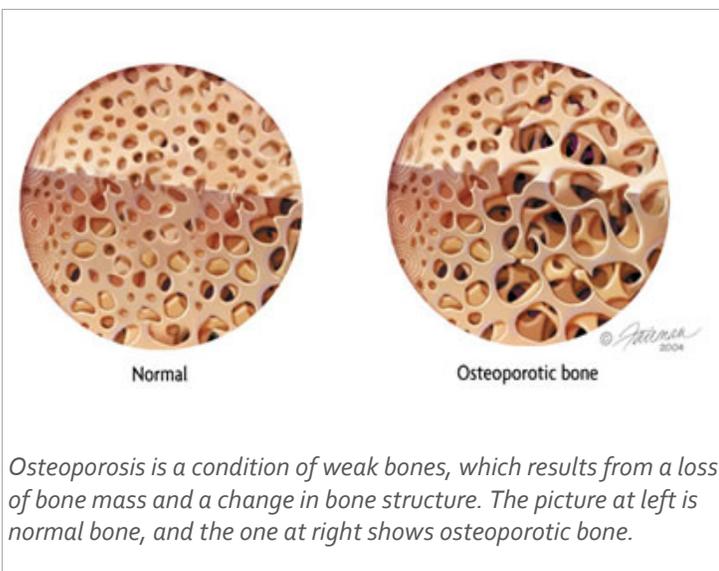
You can learn if you have OP by having a simple test that measures bone mineral density—sometimes called BMD. BMD—the amount of bone you have in a given area—is measured at different parts of your body. Often the measurements are at your spine and your hip, including a part of the hip called the femoral neck, at the top of the thighbone (femur). Dual energy X-ray absorptiometry (referred to as DXA and pronounced “dex-uh”) is the best current test to measure BMD.

The test is quick and painless. It is similar to an X-ray, but uses much less radiation. Even so, pregnant women should not have this test, to avoid any risk of harming the fetus.

DXA test results are scored compared with the BMD of young, healthy people. This results in a measure called a T-score. The scoring is as follows:

DXA T-score	Bone mineral density (BMD)
Not lower than -1.0	Normal
Between -1.0 and -2.5	Osteopenia (mild BMD loss)
-2.5 or lower	Osteoporosis

The risk of fracture most often is lower in people with osteopenia than those with OP. But, if bone loss continues, the risk of fracture increases. Yet, people taking glucocorticoids seem to be at an increased risk of fracture at higher bone densities than would be expected.



How is glucocorticoid-induced osteoporosis treated?

Anyone taking glucocorticoid medicine must get enough calcium and vitamin D. The American College of Rheumatology recommends you should take at least 1,200 to 1,500 milligrams (shortened as mg) of calcium and 800 to 1,000 International Units (called IU) of vitamin D supplements each day. Your doctor may measure the vitamin D level in your blood to find out if you need more vitamin D supplementation.

Some people also will need medication. The decision to start prescription medications will depend on your other risk factors, the dose of glucocorticoid medication you are taking and how long you may be on it, as well as your BMD results by DXA.

The US Food and Drug Administration (better known as the FDA) has approved certain drugs to prevent and treat glucocorticoid-induced OP. In a drug class called bisphosphonates, risedronate (Actonel) and zoledronic acid (Reclast) are FDA approved for both the prevention and treatment of glucocorticoid-induced OP. Another drug in this class, alendronate (Fosamax), is approved for the treatment of this type of OP.

Teriparatide (Forteo), a different type of drug, also is approved for treatment of glucocorticoid-induced OP. This manmade form of parathyroid hormone helps stimulate bone formation. You can find more information about these drugs in the "Osteoporosis" fact sheet, under the section "How is osteoporosis treated?"

Women planning a pregnancy should talk to their doctor about the pros and cons of using a bisphosphonate or teriparatide. None of the prescription drugs for managing OP has enough safety data available to recommend using them in women who are pregnant or breastfeeding. (For more information, see the section "Young women and pregnancy" in the patient fact sheet about [OP](#).)

Prevention

If you take glucocorticoid medicine for any length of time, you should start taking calcium and vitamin D supplements at the doses recommended in the prior section. Work with your doctor to help use the smallest dose of glucocorticoid for the shortest duration possible that will still keep your disease under control.

Patients taking glucocorticoid medicine should:

- Be physically active and do weight-bearing exercises, like walking, most days each week.
- Change lifestyle choices that raise your risk of OP, such as quitting smoking.
- Implement strategies to help decrease your risk of falling, which raises the risk of fractures. (See "Living with osteoporosis" in the ["Osteoporosis"](#) fact sheet.)
- Get DXA testing of your BMD.

If you have low bone density and a high risk of breaking a bone, your doctor may suggest medicine to prevent your bones from getting weaker. (See the section "How is osteoporosis treated?") Health care providers now have a tool for estimating the risk of a patient having an osteoporotic fracture in the next 10 years. This fracture risk assessment tool, from the World Health Organization, is called FRAX. It can help guide treatment decisions.



Weight-bearing exercise is a key part of prevention.

Broader health impact of glucocorticoid-induced osteoporosis

The most serious health consequence of any type of OP is a fracture. Spine and hip fractures especially may lead to chronic pain, long-term disability and even death. The main goal of treating glucocorticoid-induced OP is to prevent fractures.

Points to remember

- A bone density test can safely measure changes in bone density during glucocorticoid treatment.
- Both men and women can decrease bone loss from glucocorticoid treatment by using calcium and vitamin D supplements.

The rheumatologist's role in the treatment of glucocorticoid-induced osteoporosis

As doctors who are experts in diagnosing and treating diseases of the joints, muscles and bones, rheumatologists can help find the cause of OP. They can provide and monitor the best treatments for this condition.

To find a rheumatologist

For a listing of rheumatologists in your area, [click here](#).

Learn more about [rheumatologists](#) and [rheumatology health professionals](#).

For additional information

The American College of Rheumatology has compiled this list to give you a starting point for your own additional research. The ACR does not endorse or maintain these Web sites, and is not responsible for any information or claims provided on them. It is always best to talk with your rheumatologist for more information and before making any decisions about your care.

National Osteoporosis Foundation

www.nof.org

National Institute of Health Osteoporosis and Related Bone Diseases Resource Center

www.osteoporosis.nih.gov

FRAX: Fracture Risk Assessment Tool

www.shef.ac.uk/FRAX

Learn how the Rheumatology Research Foundation advances research and training to improve the health of people with rheumatic diseases.

www.rheumatology.org/Foundation

Updated June 2013. Written by Shreyasee Amin, MD CM, MPH, and reviewed by the American College of Rheumatology Communications and Marketing Committee.

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