

Some Drugs Can Weaken Bones

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Osteoporosis affects an estimated 44 million Americans, and another 34 million have low bone mass (osteopenia), meaning that they are at an increased risk of osteoporosis. Also, there is a large gender gap in developing these conditions. Women are four times more likely to develop decreased bone mass or osteoporosis. Women are far more vulnerable because they lose bone at an accelerated rate during the first several years following menopause. Their bones are also less dense to begin with.

Osteoporosis is a real condition with serious effects on women's health, quality of life, and financial burden to society. The direct costs of osteoporosis to society in 2001 were estimated to be between \$12-17 billion. People who have osteoporosis have a greater chance of fracturing their bones, especially in the hip, vertebrae (spine) and wrist. Hip fractures lead to hospitalization, can take a long time to heal, and many women may never fully recover from them. The National Osteoporosis Foundation (NOF) unfortunately reports that almost one-quarter of all persons aged 50 and older who suffer from a hip fracture will die within one year of their injury. Individual vertebral fractures can be completely painless and cause no problems at all, but if multiple fractures develop in the spine it can be very painful and restrict women's ability to move without serious discomfort.

Other well-known risk factors for osteoporosis include not getting enough calcium and vitamin D, smoking, race, advanced age, and a family history of osteoporosis. However, individuals may not know that the medications that they take, either prescription or over-the-counter, can also put them at risk.

The medication classes listed in the table below can cause problems for bones. If you are taking any of these medications, it's important to discuss calcium and vitamin D supplementation if it is determined that the benefits of these drugs outweighs their risks. According to NOF, adults 50 and over need 1,200 milligrams of elemental calcium and 800-1,000 IUs of vitamin daily. (Because a dose of more than 500 mg at a time may not be well absorbed, calcium supplements should be taken in divided doses, with meals.) Also, you'll want to engage in regular weight-bearing exercises, avoid smoking and excessive alcohol consumption, and have a bone mineral density scan.

Medications should also not be stopped without consulting your prescriber. Also you and your prescriber may find consulting a pharmacist to be very useful. A pharmacist might be able to recommend a safer alternative therapy.

Medications Linked to Bone Loss		
Class of Drugs	Examples	Condition(s) they treat
Aluminum-containing antacids	Gaviscon, Maalox, Mylanta	Heartburn, indigestion
Anti-seizure medications	Phenytoin (Dilantin), Phenobarbital	Seizure disorder, epilepsy
Aromatase inhibitors	Anastrozole (Arimidex), Exemestane (Aromasin), Letrozole (Femara)	Breast cancer
Immunosuppressants	Cyclosporine (Sandimmune), Tacrolimus (Prograf)	Organ transplant
Glucocorticoids	Cortisone, Prednisone (Deltasone, Sterapred, Medrol Dose Pak)	Rheumatoid arthritis, asthma

Proton pump inhibitors	Omeprazole (Prilosec), Lansoprazole (Prevacid), Pantoprazole (Protonix), Nexium, Aciphex, Dexilant, Vimovo, Zegerid	Heartburn, gastroesophageal reflux disease (GERD), Barrett's esophagitis
Selective serotonin reuptake inhibitors (SSRIs)	Fluoxetine (Prozac), Sertaline (Zoloft), Paroxetine (Paxil), Citalopram (Celexa), Escitalopram (Lexapro), Fluvoxamine (Luvox), Priligy, Viibyrd	Depression, generalized anxiety disorder, obsessive compulsive disorder
Thiazolidinediones (TZDs)	Actos, Avandia	Type 2 Diabetes

If a medication is listed in parenthesis following another drug name, it means that that drug is generically available, and the first drug in that instance is the generic name. Medications not followed up by another drug name in parenthesis next to it are currently only available as branded products.

Glucocorticoids (“Steroids”). These medications treat a wide variety of conditions, ranging from poison ivy and pneumonia to rheumatoid arthritis, asthma and certain cancers. They can greatly reduce symptoms in some of these diseases, and in certain other conditions be life-saving. However, their negative effects on bone can be multi-fold. Steroids decrease the body’s ability to absorb calcium from the intestines, increase calcium loss from the kidneys, prevent healthy bone from being formed, and decrease estrogen levels. All of these effects increase the risk for osteoporosis and fractures. And the risk is greater when steroids are given in high doses (≥ 7.5 mg daily) for long periods of time (>3 months).

PPIs, SSRIs, and TZDs. In 2010, these three drug classes constituted 3 of the Top 10 classes prescribed in the U.S., accounting for >500 million prescriptions dispensed that year. PPIs might affect bone health by inhibiting gastric acid thus impairing calcium absorption. PPIs’ association with adverse bone health appears to be more of a problem if they are taken greater than a year and especially at high doses. If you are taking a PPI for heartburn or GERD treatment you can discuss with your prescriber whether a trial off of this medication might be beneficial. Your prescriber may take this opportunity to reinforce lifestyle habits known to decrease heartburn such as not eating 2-3 hours before bedtime, raising the foot of your bed 4-6 inches, decreasing alcohol intake, staying at a healthy weight, stopping smoking and avoiding spicy foods, chocolate, peppermint and coffee. Also, rather than stopping the PPI all at once, your prescriber may have you slowly decrease your PPI use over a week or more. During this time, an H2-blocker like ranitidine or famotidine or antacid can be used if you have symptoms.

In the case where you or your prescriber are contemplating starting of one of these medications listed in the table, it is also important to consider a bone density scan beforehand especially if there is a likelihood that you might be on this medication for several months or more. By having the bone density scan (also called DEXA) performed beforehand that will allow you and your prescriber to know how strong your bones are to begin with. Once you begin taking one or several of these medications, bone density scans should be performed every two years and more frequently in certain situations.

If you have any questions in follow-up to this article, you may call a KYRx Coalition Pharmacist toll-free at 855-218-5979 or email our pharmacists at KYRxCoalition@uky.edu.