



**National Institutes of Health
Osteoporosis and Related
Bone Diseases ~
National Resource Center**

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What People With Asthma Need to Know About Osteoporosis

What Is Asthma?

Asthma is a chronic lung disease that affects about 20 million Americans, more than 9 million of whom are under the age of 18. Asthma is becoming more common, and African Americans are especially at risk. For people with asthma, everyday things can trigger an attack. These triggers include air pollution, allergens, exercise, infections, emotional upset, or certain foods.

Typical asthma symptoms include coughing, wheezing, tightness in the chest, difficulty breathing, rapid heart rate, and sweating. Children with asthma often complain of an itchy upper chest or develop a dry cough. These may be the only signs of an asthma attack.

Asthma itself does not pose a threat to bone health. However, certain medications used to treat asthma and some behaviors triggered by concern over the disease can have a negative impact on the skeleton.

What Is Osteoporosis?

Osteoporosis is a condition in which the bones become less dense and more likely to fracture. Fractures from osteoporosis can result in pain and disability. Osteoporosis is a major health threat for an estimated 44 million Americans, 68 percent of whom are women.

Risk factors for developing osteoporosis include:

- thinness or small frame
- family history of the disease

- being postmenopausal and particularly having had early menopause
- abnormal absence of menstrual periods (amenorrhea)
- prolonged use of certain medications, such as those used to treat lupus, asthma, thyroid deficiencies, and seizures
- low calcium intake
- lack of physical activity
- smoking
- excessive alcohol intake.

Osteoporosis often can be prevented. It is known as a silent disease because, if undetected, it can progress for many years without symptoms until a fracture occurs. Osteoporosis has been called a childhood disease with consequences in old age because building healthy bones in youth helps prevent the disease and fractures later in life. However, it is never too late to adopt new habits for healthy bones.

The Connection Between Asthma and Osteoporosis

People with asthma tend to be at increased risk for osteoporosis, especially in the spine, for several reasons. First, anti-inflammatory medications, known as glucocorticoids, are commonly prescribed for asthma. When taken by mouth, these medications can decrease calcium absorbed from food, increase calcium lost from the kidneys, and decrease bone formation. Doses of more than 7.5 mg (milligrams) each day can cause significant bone loss, particularly during the first year of use. Corticosteroids also interfere with the production of sex hormones in both women and men, which can contribute to bone loss, and they can cause muscle weakness, which can increase the risk of falling and related fractures.

Many people with asthma think that milk and other dairy products trigger asthma attacks, although the evidence shows that this is only likely to be true if they also have a dairy allergy. This unnecessary avoidance of calcium-rich dairy products can be especially damaging for children with asthma who need calcium to build strong bones.

Because exercise often can trigger an asthma attack, many people with asthma avoid weight-bearing physical activities that are known to strengthen bone. Those people who remain physically active often choose swimming as their first exercise of choice because it is less likely than other activities to trigger an asthma attack. Unfortunately, swimming does not have the same beneficial impact on bone health as weight-bearing exercises, which work the body against gravity. Weight-bearing exercises include walking, jogging, racquet sports, basketball, volleyball, aerobics, dancing, and weight training.

Osteoporosis Management Strategies

Strategies to prevent and treat osteoporosis in people with asthma are not significantly different from those used to treat people who do not have asthma.

Nutrition: A well-balanced diet rich in calcium and vitamin D is important for healthy bones. Good sources of calcium include low-fat dairy products; dark green, leafy vegetables; and calcium-fortified foods and beverages. Supplements can help ensure that the calcium requirement is met each day, especially in those with a proven milk allergy. The Institute of Medicine recommends a daily calcium intake of 1,000 mg each day for men and women, increasing to 1,200 mg daily for those age 50 and older.

Vitamin D plays an important role in calcium absorption and bone health. It is synthesized in the skin through exposure to sunlight. Food sources of vitamin D include egg yolks, saltwater fish, and liver. Many people obtain enough vitamin D by getting about 15 minutes of sunlight exposure each day or from eating fortified foods. Other individuals – especially those who are older or housebound, live in northern climates, or use sunscreen – may require vitamin D supplements to achieve the recommended intake of 400 to 600 International Units (IU) each day.

Exercise: Like muscle, bone is living tissue that responds to exercise by becoming stronger. The best kind of activity for your bones is weight-bearing exercise that forces you to work against gravity. Some examples include walking, climbing stairs, weight training, and dancing. Regular exercise, such as walking, may help prevent bone loss and provide many other health benefits.

People who experience exercise-induced asthma should exercise in an environmentally controlled facility and participate in activities that fall within their limitations. They may also use medication when necessary to enable them to exercise.

Healthy lifestyle: Smoking is bad for bones as well as the heart and lungs. Women who smoke tend to go through menopause earlier, triggering earlier bone loss. In addition, people who smoke may absorb less calcium from their diets. Alcohol also can affect bone health negatively. Those who drink heavily are more prone to bone loss and fracture because of both poor nutrition and an increased risk of falling.

Reducing exposure to asthma triggers, such as irritants and allergens, can help lessen a person's reliance on glucocorticoid medication. Avoiding people with colds and other respiratory infections and minimizing emotional stress can also be important.

Bone density test: A bone mineral density (BMD) test measures bone density at various sites of the body. This safe and painless test can detect osteoporosis before a fracture occurs and can predict one's chances of future fracture. People with asthma, particularly those receiving glucocorticoid therapy for 2 months or more, should talk to their doctors about whether they might be candidates for a BMD test.

Medication: Like asthma, osteoporosis is a disease with no cure. However, there are medications available to prevent and treat osteoporosis. The Food and Drug Administration has approved several medications (alendronate, risedronate, ibandronate, zoledronic acid, raloxifene, calcitonin, teriparatide, and estrogen/hormone therapy) for the prevention and/or treatment of osteoporosis in postmenopausal women. Alendronate and risedronate are also approved for use in men. For people with asthma who develop or may develop glucocorticoid-induced osteoporosis, alendronate has been approved to treat this condition and risedronate has been approved to treat and prevent it.

Because of their effectiveness in controlling asthma with fewer side effects, inhaled glucocorticoids are preferred to oral forms of the medication. Bone loss tends to increase with increased glucocorticoid doses and prolonged use; therefore, the lowest possible dose for the shortest period of time that controls asthma symptoms is recommended.

Resources

For more information on osteoporosis, visit the National Institutes of Health Osteoporosis and Related Bone Diseases ~ National Resource Center Web site at www.niams.nih.gov/bone or call 800-624-2663.

For more information on asthma, visit the National Heart, Lung, and Blood Institute Web site at www.nhlbi.nih.gov.

For Your Information

This publication contains information about medications used to treat the health condition discussed here. When this fact sheet was printed, we included the most up-to-date (accurate) information available. Occasionally, new information on medication is released.

For updates and for any questions about any medications you are taking, please contact the Food and Drug Administration at 888-INFO-FDA (888-463-6332, a toll-free call) or visit its Web site at www.fda.gov.

For updates and questions about statistics, please contact the Centers for Disease Control and Prevention's National Center for Health Statistics toll free at 800-232-4636 or visit its Web site at www.cdc.gov/nchs.

Recognizing the National Bone and Joint Decade: 2002–2011