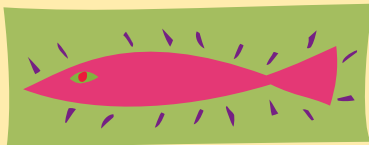


GOOD TO THE

Diana Peabody helps you bone up on nutrition

BONE



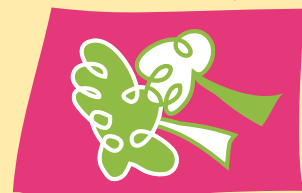
sardines



beans & nuts



dairy & soy



broccoli

BONE IS THE MAJOR STRUCTURAL SYSTEM that provides support for our bodies and acts as a reservoir for important minerals. This living dynamic tissue goes through a constant process of tearing down and rebuilding. In this cycle, minerals move in and out of bones, and when bones lose more minerals than are put into them, they become thin and prone to fracture or break. Many factors affect this process, including nutrition, hormones, medications and disease.

Unfortunately, the bones of people with HIV/AIDS (PHAs) seem to be getting thinner. Research has shown that PHAs, especially those with low CD4 counts, can have low levels of osteocalcin, the primary hormone responsible for building new bone. Usually when PHAs have low levels of this hormone, they also tend to have low levels of vitamin D₃, the activated form of vitamin D. Though the precise cause of bone loss in PHAs is not clear, it appears as though both HIV infection and HAART (highly active anti-retroviral therapy) play a contributing role.

Whatever the cause, it is becoming increasingly clear that PHAs are at high risk of developing osteopenia — loss of bone mineral density (BMD) — and osteoporosis, the more severe form of the disease. But don't go breaking your bones — there are ways to pamper and protect them.

TIPS FOR BETTER BONES

Stay well nourished. Get enough calories and protein to maintain lean body mass and weight in the ideal range. Staying strong and healthy supports the skeleton better. Thin people tend to have thinner bones.

Calcium. It's the major mineral that the body uses to build bones. The average adult needs 1,000 mg per day, but PHAs, particularly those taking HAART, may need up to 1,500 mg per day. Go for the higher amount if you have AIDS, are menopausal, aren't particularly physically active, or if you're recovering from a period of illness. There is a variety of calcium supplements on the market. Calcium carbonate is the most common type and the least expensive, but calcium citrate tends to be easier to tolerate. Bone meal or dolomite may contain heavy metals such as lead. Be sure to take supplements with food, spread the dose over 2–3 meals, and drink plenty of water. Do not exceed 1,500 mg per day without medical advice. Calcium supplements may have the added benefit of decreasing diarrhea.

Vitamin D. In order to function properly, this nutrient — needed to help the body absorb and use calcium — must be activated in the liver and kidney to a form called vitamin D₃. PHAs tend to have lower levels of vitamin D₃, but there is no evidence that this is due to a vitamin D deficiency; it is more likely due to problems

activating it in the liver. It is possible to get the activated form of vitamin D as a supplement but it may not be practical. The recommended dose of vitamin D for enhanced calcium absorption is 400–800 IU (international units) per day. Note: Vitamin D can be toxic at doses greater than 1,200 IU per day.

Magnesium. This nutrient helps build bones and tends to work together with calcium, but there is lack of agreement as to whether magnesium supplements are required to be taken with calcium supplements. However, evidence suggests that magnesium is a commonly deficient mineral in HIV disease, generally making it beneficial to include magnesium in a supplement regimen. Usually people take about three times as much calcium as they do magnesium. Note: Do not take high doses of magnesium if you have chronic diarrhea because it is a stool softener.

Zinc. According to animal studies, zinc may play a role in building bones by improving the positive effect that vitamin D and estrogen have on BMD. A safe and adequate dose of zinc is 50 mg daily.

Antioxidants. High levels of oxidized or rancid fatty substances in the blood may suppress the formation of new bone cells. Vitamins E and C are antioxidants that have been shown to decrease the oxidation of cholesterol and lipoproteins (fats in the blood). A safe and reasonable dose of vitamin C is 500 mg once or twice daily. Between 400 and 800 IU per day is a safe dose range of vitamin E.

Other minerals. Other nutrients involved in bone metabolism include phosphorus, manganese, copper, boron and silicon. Be sure to take a multivitamin that includes these minerals; it is not necessary to take these nutrients separately.

MAKE NO BONES ABOUT IT

Treat malabsorption. If you have chronic diarrhea, see a doctor to have it investigated and treated. Malabsorption of nutrients decreases the amount of building blocks available to build bone.

Just do it. Weight-bearing exercise is necessary for minerals to be taken into bone. This includes activities such as walking, running and weight training (not cycling or swimming). The importance of exercise to build muscle, protect the heart and maintain strong bones cannot be overstated. People who have limited mobility due to illness, pain or neuropathy are at very high

risk of developing thinner bones and need to ensure that all other risk factors are addressed. If you're not sure how to get started, ask your doctor for a referral to a physiotherapist.

A BONE TO PICK

Cut down on smoking and drinking. Smokers tend to have lower bone mass; heavy drinking increases the risk of osteoporosis.

Cut down on caffeine and salt. Foods high in salt cause calcium to be lost from the body. Caffeine causes bone loss, even as little as two cups a day.


MORE WAYS TO BUILD DEM BONES

Know your estrogen/testosterone levels. These hormones have a major anabolic effect on bone. Menopausal women may want to consider estrogen replacement therapy to protect bones. Hypogonadal men (having low testosterone) may benefit from testosterone replacement therapy. Talk about it with your physician.

Know your BMD. To find out about your bone mineral density, doctors can order a special X-ray scan called DEXA. There is usually a fairly long waiting list but the test is covered by medical insurance.

Feeling singled out with a big to-do list? Living with HIV is not the only risk factor for loss of BMD. Some factors that increase the risk of developing osteoporosis are beyond your control, such as getting older, family history, and being female, white or Asian. Other conditions such as diabetes, inflammatory bowel disease, menopause, ammenorrhea (no periods), low testosterone levels in men, malabsorption, and use of drugs like corticosteroids also increase the risk of losing minerals from the bone.

A registered dietitian can assess your nutritional risk factors for osteoporosis and help you make food and supplement choices that will enhance the health of your bones.

Remember, this isn't just one more thing to worry about. Think of it as a pro-active step toward better health. There just ain't no bones about it. 

Diana Peabody, RD, is a clinical dietitian at the Oak Tree Clinic, which is a part of the Children's & Women's Health Centre of British Columbia.



BONE APPÉTIT:

SOURCES OF CALCIUM IN FOOD

300 mg: 1 cup milk, fortified soy milk or fortified juice; ½ cup plain yogurt

250 mg: 1 ounce cheese; 2 cheese slices; ½ cup fruit yogurt; ½ can salmon or sardines with bones

150 mg: 1 cup baked beans, soy beans or white beans; ½ cup pudding or iced milk; 3 ounces tofu made with calcium

75 mg: ½ cup bok choy or kale; 1 cup chick peas; ½ cup ice cream; ½ cup almonds

50 mg: 1 cup lima beans, kidney beans or lentils; ½ cup broccoli; 2 tbsp tahini; 2 slices whole wheat bread