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Treating Osteoporosis

What Are The Benefits And Risks Of Estrogen Replacement Therapy?

For women at risk of osteoporosis, a doctor may recommend estrogen when the body's production of the hormone drops, that is, during and after menopause. Menopause occurs naturally around the age of 50, although it can occur when a woman is in her late 30s or into her early 60s. Menopause also will occur if the ovaries are removed by surgery.

Many experts feel that, in terms of its effects against osteoporosis, the benefits of estrogen replacement outweigh its risks. The decision to use estrogen, however, is one that should be made carefully by a woman and her doctor. Individuals would be wise to consider the benefits, risks and costs of all medications and procedures.

There is evidence that low-dose estrogen is highly effective for the prevention and possibly treatment of osteoporosis in women. Estrogen reduces the amount of calcium taken out of bones and thus slows or halts postmenopausal bone loss.

It cannot, however, restore bone mass to premenopausal levels. Studies have shown that women who have begun taking estrogen within a few years after the onset of menopause have fewer hip or wrist fractures and possibly fewer spinal fractures than women who do not take estrogen. Even when started as late as 6 years after

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menopause, estrogen therapy reduces further loss of bone.

There is also some scientific evidence that estrogen replacement therapy confers some protection against cardiovascular disease. It is thought to raise blood levels of a fraction of cholesterol known as "HDL" or high density lipoprotein and to lower blood levels of "LDL" or low density lipoprotein. Raised HDL levels and lowered LDL levels are associated with lower rates of heart and blood vessel disease.

On the risk side of the ledger, estrogen replacement therapy is thought to increase the risk of a type of cancer of the uterus known as endometrial cancer from 1 per 1,000 women to about 4 per 1,000 women. It is not a problem for a woman who has had her uterus removed. Estrogen is not linked to breast cancer, according to most studies.

Estrogen replacement therapy may also increase the risk of blood clot formation (thrombosis). In women on estrogen replacement therapy, periodic bleeding may resume. (Because estrogen therapy may cause the lining of the uterus to build up, it is often prescribed on an on-and-off basis -- for example, 20 days on the drug, then 10 without it -- so that the uterus lining can be shed during the days off the hormone.)

Sometimes, estrogen is combined with another female hormone, progestin, also called progestogen. (Progesterone is one form of progestin.) Progestins may reduce the risk of endometrial cancer. There is preliminary evidence that they may reduce bone loss.

There is little information on the long-term risks or benefits of estrogen combined with progestin in postmenopausal women. Studies on younger women taking progestins in birth control pills have shown an increased risk of high blood pressure and of disorders of the heart and blood vessels. Moreover, some progestins may blunt or do away with estrogen's protective effects against heart disease.

Until more data on the risks and benefits of estrogen replacement are available, doctors and patients may prefer to reserve estrogen (whether or not it is combined with a progestin), for situations in which there is a moderate to high risk of osteoporosis and its complications occurring.

Premature menopause -- especially through surgical

removal of the ovaries several years before the time of natural menopause -- places a woman at high risk of osteoporosis. Postmenopausal women having risk factors other than an early menopause may also want to discuss estrogen therapy with their doctors.

The recommendations above, according to the National Institute of Arthritis and Musculoskeletal and Skin Disorders, apply mainly to Caucasian women who are considered to be at increased risk for osteoporosis. Women of other races and their doctors might consider estrogen on a case-by-case basis. There is no good evidence that elderly women should be started on estrogen therapy to prevent osteoporosis.

Should You Take Calcium?

An intake of calcium of 1,000 to 1,500 mg (milligrams) per day (through diet or diet plus supplements) is thought to help protect against development of osteoporosis.

People, particularly women, should get plenty of calcium in their diets throughout life. Certainly children and teenagers need an adequate calcium intake as they are growing.

Studies show that the usual intake of calcium for adult women (ages 25 to 74) in the United States is 450 mg to 550 mg per day. This is well below the current Recommended Dietary Allowance (**RDA**) of 1,000 mg per day for women and men who are over 18 years old.

Studies cited by the 1984 National Institutes of Health's Consensus Development Conference on Osteoporosis led the conference panel to offer the opinion that the RDA for calcium is too low, especially for postmenopausal women, and may well be too low for elderly men.

The panel recommended that women consume the following amounts of calcium each day:

- 1) Premenopausal and older women receiving estrogen need about 1,000 mg of calcium per day for calcium balance, that is, to keep the amount of calcium in the bones constant.
2. Postmenopausal women (that is, all women past the age of menopause) who are not on estrogen need about 1,500 mg of calcium per day,

In addition, men who increase their calcium intake may prevent age-related bone loss as well.

For women who are pregnant or nursing who are 19 years of age or older, the panel recommends 400 mg above the normal requirement or a total of 1,400 mg.

For women who are pregnant or nursing who are 19 years of age or younger, the panel recommends 800 above the normal requirement.

If the average American woman consumes an estimated 500 mg of calcium per day based on her current eating habits, then an additional 500 mg to 1,000 mg are needed; that is roughly the amount of calcium in two to four servings of milk or several servings of other calcium-rich foods.

It may be helpful to consult a doctor, registered dietitian or nutritionist who can estimate the amount of calcium in a person's usual diet. Then he or she can suggest ways to increase calcium in the diet and can recommend calcium supplements, if necessary, to bring the daily intake up to 1,000 to 1,500 mg. Some sources of calcium are discussed in the information that follows.

Sources Of Calcium

Milk, other dairy products, fish and dark green vegetables are the major dietary sources of calcium in this country. One 8-ounce glass of milk contains about 300 mg of calcium and a quart contains about 1,200 mg. Skim milk or lowfat milk, which actually contain a little more calcium than whole milk, are preferred to minimize fat intake. (The American diet is generally high in fat and efforts should be made to reduce fat intake. Consumption of lowfat dairy products reduces both fat and calories in the diet.)

In addition to milk itself, other milk products such as **lowfat** yogurt and nonfat dry milk are also high in calcium. Other calcium-rich foods include:

1. fish and shellfish such as oysters, shrimp, and canned sardines and salmon (when the edible bones are also consumed)
2. dark green vegetables such as collard, turnip, and mustard greens, kale, and broccoli. Spinach is not a good source of calcium because, although it is high in calcium and other nutrients, it contains substances (oxalates) that

diminish absorption of calcium.

What About Calcium Supplements?

For some people, it may be difficult to reach the daily levels of calcium intake suggested previously without taking calcium supplements. As the list that follows indicates, different formulations of the supplements contain different amounts of elemental calcium.

It is important to read the product label. Calcium carbonate, for example, is 40 percent calcium. That is, 100 mg of calcium carbonate contains **40** mg of calcium or “elemental calcium.” In the case of calcium lactate (at 13 percent calcium), 250 mg of the compound would contain about 34 mg of calcium. Calcium gluconate is 9 percent calcium.

Calcium supplements are often in the form of tablets. Chewable tablets and powders may be available. One source of calcium carbonate is oyster shells, so this compound is some times called “oyster shell calcium.”

Certain antacids contain calcium carbonate; in fact, one popular brand is virtually 100 percent calcium carbonate with only added sweeteners and flavorings. Other antacids with calcium carbonate also contain aluminum, which can hamper the intestine’s ability to absorb calcium from food.

You may want to consult a doctor for assistance in determining how much calcium you currently consume, whether you should take calcium supplements, and if so, what type. The number of calcium preparations on the market is growing steadily, and there is no one supplement that can be uniformly recommended.

If you cannot get enough calcium in your diet and you must take supplements, here is some information to keep in mind:

1. There is some evidence that taking supplements between meals promotes better absorption. Some believe that it is useful to take calcium at bedtime because of increased calcium loss during sleep. (So, for example, someone who takes calcium twice a day might take it mid-morning and at night.)
2. One study found that absorption of calcium from calcium carbonate is impaired in people with little or no stomach acid, which is common in people over 60.

However, the scientists found that in these people absorption improved if the compound was taken with meals.

3. Bone meal and dolomite should not be taken regularly. Although they are both high in calcium, they also tend to contain high amounts of lead and other toxic metals.

4. Be alert to calcium supplements that have vitamin D added to them. Most people get enough of this vitamin in their diet and through sun exposure. Vitamin D becomes toxic at high doses.

5. Avoid taking aluminum-containing antacids as a regular source of calcium.

6. Drink a full glass of water when taking a calcium supplement. (In general, it is a good idea to drink several glasses of water each day.)

7. Levels of calcium intake greater than those recommended previously (that is, 1,000 to 1,500 mg per day) can cause kidney stones in susceptible people. Thus, people with a history of kidney stones should take calcium supplements only with a doctor's guidance. These people should be especially careful to drink plenty of water.

How Much Vitamin D Is Enough?

Vitamin D is required for optimal absorption of calcium in the intestine. People who get very little sunlight exposure are at risk of vitamin D deficiency. This particularly applies to older people who may be confined to a home or nursing facility.

Scientists recommend 400 I.U (international units) of vitamin D each day. Most people get enough of this vitamin by being outside during the day and eating a normal diet. (Vitamin D is produced by the body naturally when a person is exposed to the sun.) Fifteen minutes to an hour of midday sunshine may meet the daily need for this vitamin. Food sources include:

1. Vitamin D fortified milk
2. Vitamin-fortified cereals
3. Egg yolks
4. Saltwater fish

5. Liver

Taking in high doses of vitamin D can have dangerous effects. No one should take more than the RDA per day without a doctor's guidance.

The Benefits Of Weight-Bearing Exercise

Exercise may be an important part of both prevention and treatment programs for osteoporosis. It is clear that inactivity leads to bone loss. Research studies have shown that normal, healthy people who are bedridden for periods of time lose bone mineral rapidly. Studies have also revealed that astronauts living in the weightlessness of space lose bone mass.

Scientists believe that activity involving the muscles working against gravity such as walking or jogging will help to reduce bone loss. The best type and amount of physical activity to prevent osteoporosis have not yet been established.

However, a modest program of weight-bearing exercise is recommended for people of all ages, including middle-age and older women who want strong bones, as well as young women who are working toward reaching a high "peak bone mass" in their mid-thirties.

Possibilities for "weight-bearing" exercises include:

1. Walking
2. Hiking
3. Racewalking
4. Jogging
5. Running
6. Jumping rope
7. Aerobic dancing
8. Ballroom dancing
9. Gymnastics
10. Tennis

11. Racquetball
12. Squash
13. Handball
14. Rowing
15. Weight training
16. Basketball
17. Volleyball
18. Cross-country skiing
19. And to some extent, bicycling.

Swimming and yoga are healthy activities, but are not generally thought to be weight-bearing.

There are some cautions about exercise, of course. It is a good idea to consult a doctor before starting an exercise program, especially if there are heart, joint, or other problems or if a person has been sedentary for a long time.

Exercise programs should also be started slowly and built up gradually. Exercising to the point of causing trauma to the bones should be avoided.

Some young women who do an exceptional amount of exercise (such as vigorous long distance running) may stop menstruating. If so, recent evidence indicates that they may be at higher risk of osteoporosis.

Doctors encourage patients with osteoporosis to remain as physically active as possible. It is important to avoid sudden strains from jumping or twisting and situations where a person might fall. Walking, however, is highly recommended. The worst thing to do is to give in to the disorder and take to one's bed or chair. Lack of activity will almost certainly do harm -- both physically and psychologically.

Treatment Alternatives

Most of the measures described above are for the prevention, not the treatment, of osteoporosis. Treatment refers to methods of making more bone, rather than

slowing down bone loss. The needs are great for drugs and techniques that can treat osteoporosis once it has occurred.

Several potential therapies for osteoporosis are being studied by researchers. In most cases, the effectiveness and safety of these therapies have not been fully established.

A new drug for osteoporosis was approved by the Federal Food and Drug Administration in December 1984. This drug is calcitonin. Calcitonin occurs naturally in the body, as it is a hormone produced by the thyroid gland. It slows bone breakdown.

Other agents under study include sodium fluoride; the hormone calcitriol (a form of vitamin D); anabolic steroids; thiazides (diuretics); biphosphonates; a biologically active fragment of parathyroid hormone; and "ADFR" (a complex series of drugs). (One biphosphonate, etidronate, is available in the U.S. and has been shown to increase bone density in vertebra and to decrease vertebral fractures.)

Sodium fluoride holds promise for treatment of severe osteoporosis but remains experimental. Sodium fluoride combined with calcium has been shown to increase bone mass. However, some individuals have experienced side effects such as stomach pain, nausea, inflamed joints, and anemia caused by gastrointestinal bleeding.

At high dosages of sodium fluoride, bone tends to become more crystalline, less elastic, and therefore more brittle than normal bone. Determining the role of sodium fluoride plus calcium awaits the results of ongoing clinical studies.

Calcitriol is also known as 1,25 dihydroxyvitamin D and 1,25 dihydroxycholecalciferol. Some researchers believe it can increase calcium absorption and decrease the rate of fracture in osteoporosis patients. However, ongoing clinical trials must be completed to determine its true effects on bone.

Prevention Of Fractures

There are ways that people can make fractures less likely to occur, especially if their bones are already fragile. Minimizing hazards in the home can help, such as avoiding slippery floors and loose throw rugs, removing objects that might cause a fall, providing adequate lighting, and adding handles or nonslip bottoms to bath tubs. Railings on stairways inside and outside of the home can help.

It is also a good idea to avoid actions that stress the bones unduly. In particular, do not lift while bending forward. Lifting this way creates an unusual and unnecessary strain on the vertebral column. A person should carry the weight close to the body, squatting and lifting straight up, using the legs and not the back. If the spine is weak, it is wise to completely avoid lifting heavy objects.

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