The Association of Minimally Invasive Gynecologic Surgeons
…dedicated to safe, state-of-the-art surgery and health life-styles for women of all ages

Bone Health

It is important to understand that bone is not a hard and lifeless structure; it is, in fact, complex, living tissue. Our bones provide structural support for muscles, protect vital organs, and store the calcium essential for bone density and strength.

Because bones are constantly changing, they can heal and may be affected by diet and exercise. Until the age of about 30, you build and store bone efficiently. Then, as part of the natural aging process, your bones begin to break down faster than new bone can be formed. In women, bone loss accelerates after menopause, when your ovaries stop producing estrogen - the hormone that protects against bone loss.

Think of your bones as a savings account. There is only as much bone mass in your account as you deposit. The critical years for building bone mass are from prior to adolescence to about age 30. Some experts believe that young women can increase their bone mass by as much as 20 percent - a critical factor in protecting against osteoporosis.

Assessing Your Bone Health

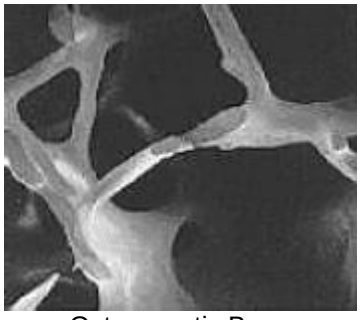
To determine if you have osteoporosis or may be at risk for the disease, your doctor will ask you a variety of questions about your lifestyle and medical history. Your doctor will want to know if anyone in your family has suffered from osteoporosis or if they have fractured bones. Based on a comprehensive medical assessment, your doctor may recommend that you have your bone mass measured.

A bone mass measurement is the only way to tell if you have osteoporosis. Specialized tests called bone density tests can measure bone density in various sites of the body. A bone density test can:

- Detect osteoporosis before a fracture occurs
- Predict your chances of fracturing in the future
- Determine your rate of bone loss and/or monitor the effects of treatment if the test is conducted at intervals of a year or more.

Vertebral Fractures

Normal Bone



Osteoporotic Bone

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A. Normal Spine
B. Moderately Osteoporotic Spine
C. Severely Osteoporotic Spine

The only sure way to determine bone density and fracture risk for osteoporosis is to have a bone mass measurement (also called bone mineral density or BMD test).

Your doctor can help you determine whether you should have a BMD test. NOF Guidelines indicate, BMD testing should be performed on:

- All women aged 65 and older regardless of risk factors*
- Younger postmenopausal women with one or more risk factors (other than being white, postmenopausal and female).
- Postmenopausal women who present with fractures (to confirm the diagnosis and determine disease severity).

*Note: Medicare covers BMD testing for the following individuals aged 65 and older:

- Estrogen deficient women at clinical risk for osteoporosis
- Individuals with vertebral abnormalities
- Individuals receiving, or planning to receive, long-term glucocorticoid (steroid) therapy
- Individuals with primary hyperparathyroidism
- Individuals being monitored to assess the response or efficacy of an approved osteoporosis drug therapy.

Medicare permits individuals to repeat BMD testing every two years.

There are several ways to measure bone mineral density; all are painless, noninvasive and safe and are becoming more readily available. In many testing centers you don't even have to change into an examination robe.

The tests measure bone density in your spine, hip and/or wrist, the most common sites of fractures due to osteoporosis. Recently, bone density tests have been approved by the FDA that measure bone density in the middle finger and the heel or shinbone. Your bone density is compared to two standards, or norms, known as "age matched" and "young normal." The age-matched reading compares your bone density to what is expected in someone of your age, sex and size. The young normal reading compares your density to the optimal peak bone density of a healthy young adult of the same sex.

The information from a bone density test enables your doctor to identify where you stand within ranges of normal and to determine whether you are at risk for fracture. In general, the lower your bone density, the higher your risk for fracture. Test results will help you and your doctor decide the best course of action for your bone health.

Types of BMD Tests

There are several different machines that measure bone density. Central machines measure density in the hip, spine and total body. Peripheral machines measure density in the finger, wrist, kneecap, shin bone and heel.

- DXA (Dual Energy X-ray Absorptiometry) measures the spine, hip or total body;
- pDXA (Peripheral Dual Energy X-ray Absorptiometry) measures the wrist, heel or finger;
- SXA (single Energy X-ray Absorptiometry) measures the wrist or heel;
- QUS (Quantitative Ultrasound) uses sound waves to measure density at the heel, shin bone and kneecap.
- QCT (Quantitative Computed Tomography) most commonly used to measure the spine, but can be used at other sites;
- pQCT (Peripheral Quantitative Computed Tomography) measures the wrist;
- RA (Radiographic Absorptiometry) uses an X-ray of the hand and a small metal wedge to calculate bone density;
- DPA (Dual Photon Absorptiometry) measures the spine, hip or total body (used infrequently);
- SPA (Single Photon Absorptiometry) measures the wrist (used infrequently);

With the information obtained from a BMD test, you and your doctor can decide what prevention or treatment steps are right for you. BMD tests cannot stand alone; they should always be a part of a complete medical workup supervised by a knowledgeable doctor.

Calcium plays an important role in maintaining bone. Calcium alone cannot prevent or cure osteoporosis, but it is an important part of an overall prevention or treatment program.

Yet, national surveys have shown that many Americans are not consuming enough calcium. Many women, in fact, consume less than half of the daily recommended amount of calcium.

Recommended Calcium Intakes*	
Ages	**Amount mg/day**
Birth - 6 months	210
6 months - 1 year	270
1-3	500
4-8	800
9-13	1300
14-18	1300
19-30	1000
31-50	1000
51-70	1200
70 or older	1200
Pregnant & Lactating	1000
14-18	1300
19-50	1000

*Source: National Academy of Sciences (NAS)

One way to increase the amount of calcium in your diet is to eat calcium-rich foods like low-fat milk, cheese, broccoli and others. Many foods are fortified with calcium and are readily available and affordable. Foods like orange juice, cereals and breakfast bars have calcium added to them, so it is easier than ever before to consume the recommended level of calcium for every age. Having extra calcium in a variety of foods also makes it easier for parents who are trying to ensure that their adolescent daughters, especially, are getting enough calcium.

Another easy and economical way to boost the calcium content of many meals is to add nonfat powdered dry milk to puddings, homemade cookies, breads or muffins, soups, gravy, casseroles and even a glass of milk. A single tablespoon of nonfat powdered dry milk adds 52 mg of calcium, and 2 to 4 tablespoons can be added to most recipes.

You may add:

- 3 tablespoons to each cup of milk in puddings, cocoa or custard
- 4 tablespoons to each cup of hot cereal before cooking
- 2 tablespoons sifted into each cup of flour in cakes, cookies or breads

If you are unable to get enough calcium through your diet, your doctor can recommend an appropriate calcium supplement. Since there are several different types of calcium and a variety of supplements available, you should discuss the choice of calcium with your doctor.

The calcium in supplements needs to be easily absorbed by the body. You can be sure of this if the tablet dissolves almost entirely in a small glass of warm water or vinegar within 30 minutes. Also read the label to determine the actual amount of calcium in the supplement, which is usually referred to as elemental calcium.

Some people are lactose intolerant and have difficulty digesting dairy products because they lack the enzyme lactase, which is needed to break down the milk sugar lactose. Milk fermented with certain bacteria (called acidophilus) is well tolerated, as are yogurt and hard cheeses. If you are lactose intolerant, you can treat lactose-containing foods with commercial preparations of lactase or buy milk products that have already been treated.

Getting enough calcium, whether through diet or supplements, is essential to maintaining bone strength and can play a vital role in preventing osteoporosis-related fractures. Speak to a doctor or dietician about how you can get the proper amount of calcium.

Vitamin D

Vitamin D plays a major role in calcium absorption and bone health. The relationship between calcium absorption and vitamin D is similar to that of a locked door and a key. Vitamin D is the key that unlocks the door and allows calcium to leave the intestine and enter the bloodstream. Vitamin D also works in the kidneys to help resorb calcium that otherwise would be excreted.

Vitamin D is manufactured in the skin following direct exposure to sunlight. The amount of vitamin D produced in the skin varies depending on time of day, season, latitude and skin pigmentation. Usually 10-15 minutes exposure of hands, arms and face two to three times a week (depending on one's skin sensitivity) is enough to satisfy the body's vitamin D requirement. Use of sunscreen markedly diminishes the manufacture of vitamin D in the skin, as do window glass, clothing and air pollution. Skin color also affects vitamin D production; the fairer you are, the more you make.

As adults age, the ability to make vitamin D through the skin decreases. People who are housebound and experience no sunlight exposure are unable to make vitamin D.

The major food sources of vitamin D are vitamin D-fortified dairy products, egg yolks, saltwater fish and liver. Some calcium supplements and most multivitamins contain vitamin D, so it is important to check the labels to determine how much each contains.

Experts recommend a daily intake of between 400 and 800 international units (IU). Do not take more than 800 IU per day unless your doctor prescribes it, since massive doses of vitamin D may be harmful.