

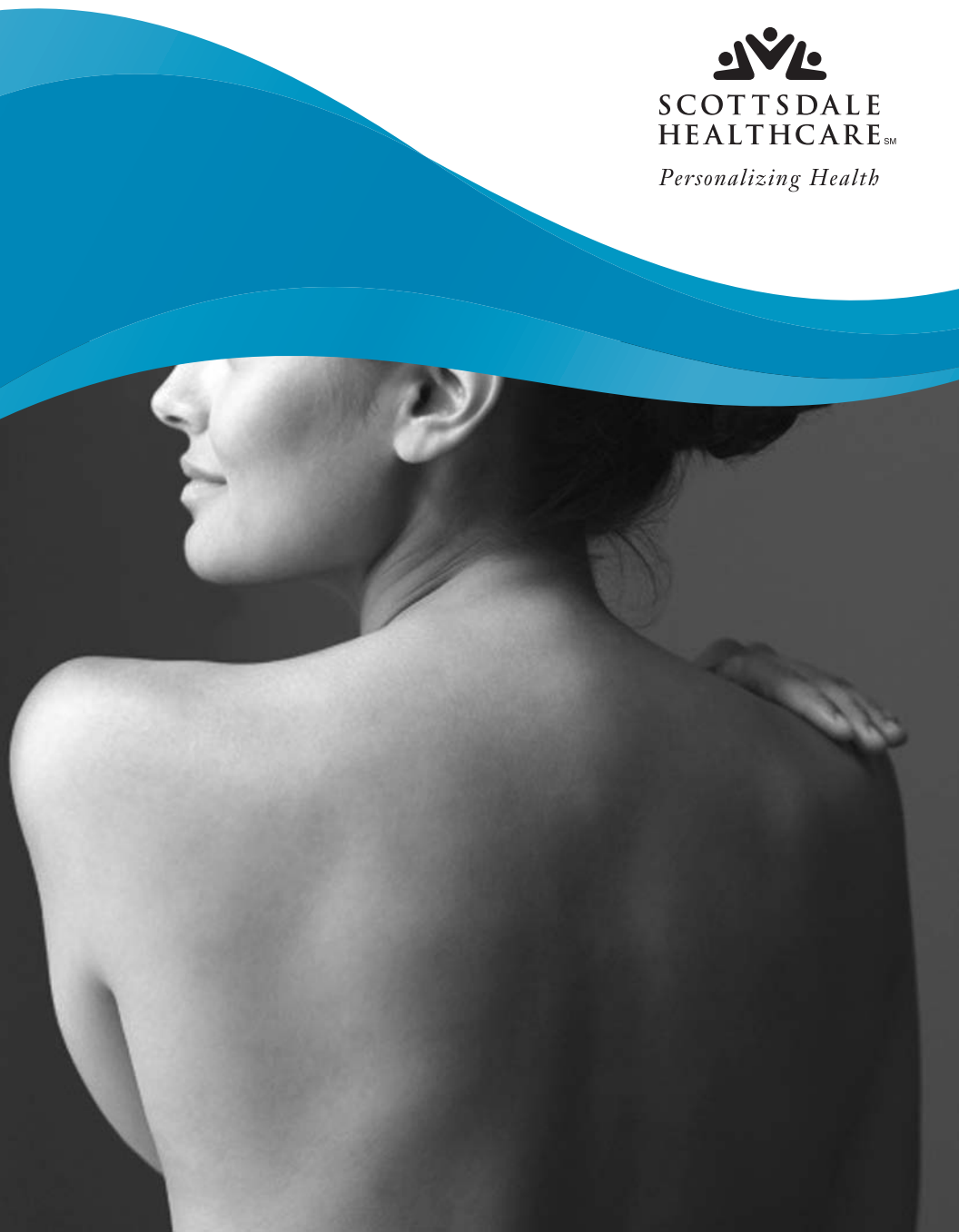
# Bone Health Program

Patient Information



SCOTTSDALE  
HEALTHCARE<sup>SM</sup>

*Personalizing Health*



# Scottsdale Healthcare's Bone Health Program

*Scottsdale Healthcare's bone health program is the most comprehensive offered in the valley and was developed with the cooperation of physicians, nurses, radiology staff, dietitians, physical therapists, community health staff, and quality management staff.*

*The Bone Health Coordinator is an RN who facilitates, coordinates, and implements all aspects of the program. Our activities include bone density screenings by use of a heel ultrasound machine, extensive counseling on bone health, nutrition and exercise, a monthly support group, a lecture series focusing on various aspects of health issues, and exercise classes specifically developed for people with bone loss. We work within the community, partnering with local businesses, to make these services easily accessible to everyone. Private counseling sessions are also available through the Coordinator.*

*The monthly Osteoporosis Support Group is affiliated with the National Osteoporosis Foundation. The format is focused on sharing and education. Presentations are facilitated by numerous members of the healthcare team including nurses, nurse practitioners, physicians, exercise physiologists, and nutritionists. The goal is to improve the quality of life for those dealing with osteopenia or osteoporosis.*

To speak with the Bone Health Coordinator,  
please call 480-323-3627.

# What Is Osteoporosis?

Osteoporosis is a bone disease in which bones become weak, and even a simple fall or bump can cause a bone to break. The most common bones to break or fracture are those of the spine, hip, and wrist. It is called the “silent disease” because you cannot feel or see your bones becoming weaker. Loss of bone strength occurs slowly, over time, until a usual activity like picking up a grandchild or a bag of groceries, or trying to open a stubborn window, can cause a bone to break. In fact, most people don't know they have osteoporosis until a bone breaks. By that time, the disease is advanced.

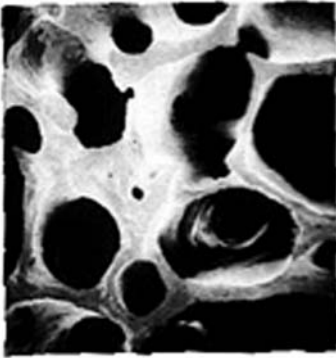
Signs of advanced osteoporosis include broken bones, typically of the hip, spine, wrist or ankle. Vertebral (spinal) fractures cause back pain or tiredness, loss of more than one inch of height, a stooped, round-shouldered appearance, or a hump forming in the upper back (dowager's hump).

Fortunately, there are steps you can take to prevent osteoporosis and painful fractures. If your physician tells you that you already have osteoporosis, there are medications that can slow bone loss and, in some cases, even help you build up bone mass, which can reduce your risk of broken bones.

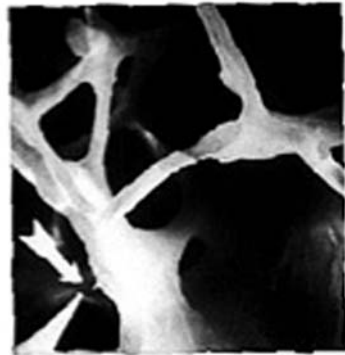
# Bone Basics

To understand osteoporosis, it is important to first understand bone basics. Bones are not unchanging structures. Although they are sturdy structures, they are living, growing tissues. Bone sloughs cells much as our skin does, so as old cells are discarded, they are replaced with new cells. Our skeleton's bones are made of a hard shell on the outside, with a honeycomb-like structure inside. The amount of bone tissue you have is called bone mass, while bone density refers to how tightly the tissue is packed.

Think of bone as a bank account where you “deposit” and “withdraw” bone tissue. Typically, bones grow fastest in childhood, adolescence and early adulthood. In these stages, new bone is added faster than old bone is removed, making the skeleton and bones become larger, stronger and denser.



*75 year old woman with normal bone*



*47 year old woman with osteoporosis*

Bone density is crucial to its health. Peak bone mass, defined as the maximum bone density and strength a person can attain, is reached between 20 and 30 years of age.

Women lose bone tissue rapidly when they begin menopause, usually between the ages of 45 and 55. At this stage, bone loss in women greatly exceeds that of men. The bone loss after menopause is because of a sharp decline in estrogen, a hormone that has a protective effect on bone.

After age 65, however, the loss of bone mass in men and women occurs at about the same rate. Men do not experience menopause, but they do have decreases in testosterone production, which can lead to bone mass reduction and fractures.

Normal bone growth, development and maintenance is influenced by many factors. With age, it is a natural part of life to lose some bone. Osteoporosis, painful fractures and losing significant amounts of height, however, are not normal. It's important to promote bone health at every stage of life—from early childhood to old age. A healthy skeleton will stand up for you all your life.

## RISK FACTORS

### Risk Factors You Can Change

**DIET** - inadequate intake of calcium and vitamin D or excessive consumption of other nutrients, such as protein and sodium.

**EXERCISE** - maintaining a physically active lifestyle

**LIFESTYLE CHOICES** - smoking and excessive alcohol consumption or poor nutrition

**HORMONE LEVELS** - early menopause whether occurring naturally or surgically (removal of the ovaries). It is important to discuss bone health and hormone replacement therapy with your physician.

### Risk Factors You Cannot Change

**GENDER** - women are more likely to develop osteoporosis

**AGE** - although all of us lose some bone tissue as we age, the amount and rate of loss varies widely

**HEREDITY** - young women whose mothers and fathers have had fractures, tend to have lower bone mass

**BODY SIZE** - small-boned, thin women and men

**ETHNICITY** - Caucasians and Asians are at greater risk

# Bone Density Testing



Bone mineral density (BMD) testing is a simple and painless procedure. A BMD test takes from one to 15 minutes, depending on the bones being measured. The most commonly used testing techniques are:

**DEXA (Dual Energy X-ray Absorptiometry)** - measures the spine, hip, or total body. This is considered to be the “gold standard.” Different bones in your body have different densities. Generally, the hip, spine and wrist are considered the most relevant sites to test because the potential for fractures is greater in these sites. The amount of radiation exposure in a DEXA scan is less than that received from a typical dental X-ray.

**Ultrasound** - uses sound waves to measure density at the heel.

**When should you be tested? A few guidelines include:**

- Post-menopausal and women over 65 years
- Younger women with multiple risk factors
- Men and women with fragility fractures
- Men and women with diseases or using medications that can increase the risk of osteoporotic fractures

**Additional Laboratory Tests** - the levels of calcium, vitamin D, and several hormones in the blood and urine can help point to a cause of the osteoporosis. Also there are tests that can help determine how quickly bones are “breaking down” or “rebuilding”. These are done in a blood or urine sample and provide information on whether bone loss is occurring faster than normal, or whether treatment is helping to slow bone loss. These tests are done in conjunction with a bone density test and are not considered a substitute for BMD testing.

*Scottsdale Healthcare Shea offers the most advanced bone density testing technology. Our technicians are specifically trained to perform DEXA scans. For your convenience, these tests can be performed at the same time as your yearly mammogram.*

Call the Women's Diagnostic Center to schedule an appointment at 480-323-4703 and press option 1.  
A prescription is required for your DEXA.

# Exercise For Healthy Bones

Bone is a living tissue. It responds to exercise by becoming stronger. Just as a muscle gets stronger and bigger the more you use it, a bone becomes stronger and denser when you place demands on it. If your bones are not called upon to work, such as during physical activity, they do not become strong. Thus, a lack of exercise, particularly as you get older, may contribute to lower bone mass.

**Two types of exercise are important for building and maintaining bone mass and density:**

- **Weight bearing exercise** - exercise in which your bones and muscles work against gravity.

*Walking, jogging, stair climbing, dancing, aerobics, Yoga, Tai Chi*

- **Resistance exercise** - exercises that use muscular strength to improve muscle mass and strengthen bone.

*Weight lifting (free weights and weight machines or Exercise bands (large rubber bands)*

Exercise regularly (20-30 minutes at least 3 times a week)

Remember, exercise not only improves bone density, but increases strength, flexibility and balance.

*“Building Bone through Exercise” is a program specifically designed to improve your bone density. The classes are conducted by exercise physiologists who specialize in designing an exercise regime that meets your particular needs and/or limitations yet maximize your potential. The classes are offered at convenient times on weekdays and are held in the Scottsdale Healthcare Shea Essential Touch Wellness Center. Please call 480-323-3662 for further information.*

# Nutritional Needs For Good Bone Health

## CALCIUM

Calcium is essential to prevent osteoporosis, a disease of thin, fragile bones.

Without enough calcium in your diet, more calcium is taken from your bones than is replaced. The result is a decrease in bone density.

### Adequate Intake Of Calcium

Children (ages)	Intake	Servings*	Adults (ages)	Intake	Servings*
1 - 3	500 mg	2	19-50	1000 mg	3
4 - 8	800 mg	3	50 +	1200 mg	4
9 -18	1300 mg	4			

\*1 serving = 300mg calcium (8oz milk, 8oz yogurt, 1 1/2 oz cheese)

*\*The National Osteoporosis Foundation supports higher calcium intake of 1500 milligrams for postmenopausal women not taking estrogen and adults 65 years or older.*

### Food Sources of Calcium:

Food Item	Serving size	Amount	Food Item	Serving size	Amount
Plain yogurt, lowfat plain	1 cup	415 mg	Macaroni and Cheese	1 cup	113
Fruited yogurt, lowfat	1 cup	345	Kale, cooked	1 cup	179
Milk, skim	1 cup	306	Canned salmon with bones	3 oz.	181
Milk, 2% milkfat	1 cup	285	Broccoli, cooked	1 cup	62
Milk, whole	1 cup	276	Pudding, chocolate, ready-to-eat	1/2 cup	102
Calcium-fortified juice	1 cup	390	Tofu, firm	1/2 cup	204
Canned sardines with bones	3 oz.	325	Ice cream	1/2 cup	75
Parmesan cheese	1 Tbsp	55	Soft serve frozen yogurt, vanilla	1/2 cup	103
Cheese, swiss, lowfat	1 oz.	269	Beans, navy, dried, cooked	1 cup	127
Cheese, cheddar, lowfat	1 oz.	117	Soybeans, green, boiled	1 cup	261
Cheese, cottage lowfat	1/2 cup	69	Turnip greens, cooked	1 cup	197
Cheese, ricotta, part-skim	1/2 cup	335	Collard greens, cooked	1 cup	266

- Include calcium rich snacks like yogurt, pudding or cheese.
- Add milk instead of water when making hot cereal and cream soup, or in baking.
- Sprinkle shredded cheese on salads and pasta; in casseroles, soups and sauces.
- Try plain yogurt instead of sour cream as a topping on baked potato, in dips or salad dressings, or as a substitute in recipes.
- Add nonfat dry milk powder in cooking and baking (1TBSP = 85mg of calcium).
- Use calcium fortified products like soy milk, fortified orange juice, pasta or cereals.

## CALCIUM SUPPLEMENTS

Calcium supplements are an option when you are unable to get enough calcium from your diet, but all supplements are not the same. The two main types are calcium carbonate (40% elemental calcium) and calcium citrate (21% elemental calcium).

Calcium carbonate should be taken with meals to improve its absorption. Calcium citrate can be taken without food. Calcium supplements are best absorbed if taken throughout the day rather than all at once. The body can only absorb about 500mg of calcium at one time.

### These are a few of the available supplements

Type	Name	Elemental Calcium (mg)
<b>Calcium Carbonate</b> <i>Take with food or juice</i>	Caltrate	600
	Oscal	250, 500
	Tums, Tums E-X	200, 300
	Tums Ultra, Tums 500	400, 500
	Viactiv Chews	500
<b>Calcium Citrate</b>	Citracal liquidabs	500
	Citracal 950	200
	Citracal 1500	315
	Citracal 1500-D	315

### Notes on Taking Calcium Supplements:

- Choose supplements with labels that say “purified” or have the USP symbol indicating purity.
- Avoid calcium from unrefined oyster shell, bone meal, or dolomite as these historically have contained higher lead levels than other calcium supplement and may contain other toxic metals.
- Consult your physician or pharmacist about possible interactions between calcium supplements and other prescription or over-the-counter medications.
- Drink the recommended 6-8 glasses of fluid every day to reduce side effects.
- An iron supplement should not be taken at the same time as a calcium supplement.

# Nutritional Needs For Good Bone Health

## 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, allowing calcium to leave the intestine and enter the bloodstream. Vitamin D also works in the kidneys to help reabsorb calcium that otherwise would be excreted.

Vitamin D is formed naturally in the body after exposure to sunlight. Fifteen minutes a day in the sun is plenty of time for the body to manufacture and store all the vitamin D needed. Without sun exposure, you may need a supplement. The major food sources are vitamin D-fortified dairy products, egg yolks, saltwater fish and liver. Many calcium supplements and most multivitamins contain vitamin D, so check the labels to determine how much each contains. *The recommended daily intake of Vitamin D is 400-800 IU per day.*

## MAGNESIUM

Magnesium is essential to good health and is needed for more than 300 biochemical reactions in the body. It helps maintain normal muscle and nerve functions, keeps heart rhythm steady, supports a healthy immune system and keeps bones strong. Food sources include green vegetables such as spinach, some beans and peas, nuts, seeds, and whole unrefined grains. *The recommended dietary allowance for adults is generally between 300-600mg.*

Personalized nutrition counseling is available at Scottsdale Health  
who will help to address your specific nutrit

## Label Language

Use the Percent Daily Value listed on the Nutrition Facts panel of a food label to find the calcium content of food.

To calculate the milligrams of calcium in a standard serving, begin by locating the percent Daily Value for calcium. Using the Lowfat Vanilla Yogurt Label as an example, notice an 8 ounce serving provides 40% Daily Value for calcium. To convert to milligrams, drop the % and add a zero: 40% Daily Value = 400 mg. 400 mg is the amount of calcium in an 8 oz serving of Vanilla Lowfat Yogurt = 400 mg.

### Vanilla Lowfat Yogurt

Nutrition Facts			
Serving Size: 8 oz (227 g)			
Servings Per Container: 1			
Amount Per Serving			
Calories	210	Calories from Fat	30
		% Daily Value*	
<b>Total Fat</b>	3 g		5%
Saturated Fat	2 g		10%
<b>Cholesterol</b>	15 mg		5%
<b>Sodium</b>	160 mg		7%
<b>Total Carbohydrate</b>	36 g		12%
Dietary Fiber	0 g		0%
Sugars	34 g		
<b>Protein</b>	10 g		
Vitamin A	2%	•	Vitamin C 4%
Calcium	40%	•	Iron 0%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400 g
Total CHO		300g	375g
Fiber		25g	30g
Calories per Gram:			
Fat	9	•	Carbohydrate 4 • Protein 4

*More nutrients may be listed on some labels.*

# Osteoporosis In Men

The majority of American men view osteoporosis as a "woman's disease," according to a 1996 Gallup Poll. Moreover, among men whose lifestyle habits put them at increased risk, few recognize the disease as a significant threat to their mobility, independence and health. While it is true that osteoporosis develops less often in men than in women, in the last few years the problem has been recognized as an important public health issue.

Men do not experience the rapid loss of bone mass that women have in the years following menopause, but by age 65 or 70, men lose bone mass at about the same rate as women do. The absorption of calcium, an essential nutrient for bone health throughout life, decreases in both men and women.

Fractures resulting from osteoporosis most commonly occur in the hip, spine and wrist and can be permanently disabling. Hip fractures are especially likely to be disabling. Perhaps because such fractures tend to occur at older ages in men than in women, men who sustain hip fractures are more likely to die from complications than are women. More than half of all men who suffer a hip fracture are discharged to a nursing home, and 79 percent of those who survive for one year after a hip fracture still live in nursing homes or intermediate care facilities.

## Primary and Secondary Osteoporosis

Primary and secondary are the two main types of osteoporosis. In cases of primary osteoporosis, the condition is either caused by age-related bone loss (sometimes called senile osteoporosis) or the cause is unknown (idiopathic osteoporosis). The term idiopathic osteoporosis is used only for men less than 70 years old; in older men, age-related bone loss is assumed to be the cause.

At least half of men with osteoporosis have at least one (sometimes more than one) secondary cause. In cases of secondary osteoporosis, the loss of bone mass is caused by certain lifestyle behaviors, diseases or medications. The most common causes of secondary osteoporosis in men include exposure to glucocorticoid medication (cortisone/prednisone), hypogonadism (low levels of testosterone), alcohol abuse, smoking, gastrointestinal disease, hypercalciuria and immobilization.

# Bone Health in Children and Teens

As with all health related matters, good bone health begins early in life. Children and young adults rarely get bone diseases, however, osteoporosis is now considered a “pediatric disease.” Poor habits developed in early years can endanger health and bones.

Encouraging kids to eat healthful food and get at least an hour of physical activity every day can help stem the onset of the disease. Jumping rope, running and sports are fun activities that are great for building strong bones. If your child doesn't drink enough milk, try low-fat cheese, yogurt or other high-calcium foods.

The group at the highest risk for having weak bones is teens because their bones grow so rapidly. Boys and girls from ages 9-18 need 1,300 milligrams of calcium each day, more than any other group. At least an hour a day of physical activities -like running, skateboarding, sports and dance-is also critical. Studies show that only half of all teens exercise vigorously on a regular basis, but a quarter of all teens do not exercise at all. At the same time, extreme physical exercise, when combined with under-eating, can weaken teens' bones. In young women this situation can lead to a damaging lack of menstrual periods. Teens that miss adding bone to their skeletons during these critical years never make it up. Balancing exercise with calcium intake is a crucial part of bone health in children and adolescents.

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*“By working together we can change the picture of aging in America. Osteoporosis, fractures, and other chronic diseases no longer should be thought of as an inevitable part of growing old. By focusing on prevention and lifestyle changes, including physical activity and nutrition, as well as early diagnosis and appropriate treatment, Americans can avoid much of the damaging impact of bone disease and other chronic diseases.”*

- TOMMY G. THOMPSON

Former Secretary of the US Department of Health and Human Services

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# Medications For Treating Osteoporosis

**Bisphosphonates** - This class of drugs works by slowing down the turnover of bone cells therefore, increasing bone mass and making bones stronger. These medications have been proven to substantially reduce fractures of the spine and hip.

- *Alendronate (brand name Fosamax) can be taken daily but is most often taken once a week.*
- *Ibandronate (brand name Boniva) can be taken daily but was recently approved to be taken once a month.*
- *Risedronate (brand name Actonel) can be taken daily but is most often taken once a week.*

*Side effects of bisphosphonates may include upper gastrointestinal disorders, abdominal pain, constipation, diarrhea, dyspepsia, flatulence, headache and musculoskeletal pain.*

*These medications must be taken on an empty stomach, first thing in the morning, with eight ounces of water (no other liquid), at least 30 minutes before eating or drinking. You must remain upright during this interval as well.*

**SERMs (selective estrogen receptor modulators)** - This class of compounds has been developed to provide the beneficial effects of estrogens without their potential disadvantages. These medications are not, however, a treatment for menopausal symptoms.

- *Raloxifene (brand name Evista) - is taken once daily any time of day without regard to meals.*  
*Side effects include leg cramps and hot flashes.*

**Estrogen Therapy/Hormone Therapy (ET/HT)** - Several ET/HTs are approved for prevention of osteoporosis and management of menopause symptoms. ET/HT reduces the risk of spine and hip fracture. The FDA recommends that healthcare providers consider alternative medications for the prevention of osteoporosis. If estrogen therapy is prescribed, it should be at the lowest dose possible for the shortest time needed to meet treatment goals.

**Calcitonin** - is a medication approved for the treatment of osteoporosis in women who are at least five years postmenopausal. It is generally considered to be a safe but somewhat less effective intervention for osteoporosis.

- *Calcitonin (brand names Miacalcin and Calcimar) - is delivered as a single intranasal spray daily.*  
*Side effects can include back ache or irritation of the nasal passages.*

**Teriparatide** - acts as a “bone-building” agent that actually stimulates bone formation rather than reducing the rate of bone turnover.

- *Teriparatide (brand name Forteo) - is administered by a subcutaneous injection daily for up to two years.*

*Side effects include angina pectoris (chest pain), leg cramps, constipation, diarrhea, dizziness, increased cough, nausea, vomiting, rash and irritation at the injection site.*

***The appropriate amount of calcium and Vitamin D should be taken in conjunction with the above medications. An exercise program designed for your abilities should also be part of your daily routine to prevent bone loss.***

# Other Resources

## **National Osteoporosis Foundation (NOF)**

1232 22nd Street, NW  
Washington, DC 20037-1292  
202-223-2226  
[www.nof.org](http://www.nof.org)

## **National Institutes of Health**

1232 22nd Street, NW  
Washington, DC 20037-1292  
800-624-BONE  
[www.osteo.org](http://www.osteo.org)

## **American Academy of Orthopedic Surgeons**

6300 North River Road  
Rosemont, IL 60018-4262  
800-346-AAOS  
[www.aaos.org](http://www.aaos.org)

## **American College of Rheumatology**

1800 Century Place, Suite 250  
Atlanta, GA 30345  
404-633-3777  
[www.rheumatology.org](http://www.rheumatology.org)

## **National Women's Health Resource Center**

120 Albany St. Suite 820  
New Brunswick, NJ 08901  
[www.healthywomen.org](http://www.healthywomen.org)

## **NutritionData's Nutrition Facts and Calorie Counter**

[www.nutritiondata.com](http://www.nutritiondata.com)

## **Medline Plus (a service of the National Library of Medicine and the National Institutes of Health)**

[www.medlineplus.gov](http://www.medlineplus.gov)

## **American Dietetic Association**

[eatright.org](http://eatright.org)

## **United States Department of Agriculture**

[Mypyramid.gov](http://Mypyramid.gov)

*Scottsdale Healthcare cannot assume responsibility for the quality or trustworthiness of the information found on these websites. After using these websites, readers are encouraged to discuss their findings with their physicians and other healthcare professionals.*

## HEALTH SERVICES DIRECTORY

Bone Health Program	480-323-3627
“Building Bone Through Exercise” program	480-323-3662
Nutrition Counseling	480-882-4703
Osteoporosis Support Group	480-323-3627
Heart Health Program	480-323-3663
Bladder Health Program	480-323-3624
BreastHealth	480-323-3718
Weight Management Program	480-323-4300
Essential Touch Wellness Center and Boutique	
Shea	480-323-3655
Osborn	480-882-4345
Family Support Center (Lactation services)	
Shea	480-323-3638
Osborn	480-882-4827
Kidz Klubhouse (Childcare)	480-323-3737
Women's Diagnostic Center	480-323-3400
Physician Referral Services	480-882-4636

To schedule a mammogram or bone density test (DEXA scan),  
call 480-882-4703, press option #1

*(a prescription is required for the DEXA scan)*



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9003 E. Shea Blvd., Scottsdale, AZ 85260, 480-323-3400

shc.org