



NATIONAL  
OSTEOPOROSIS  
FOUNDATION

HOME

# Hormones *and* Healthy Bones



Helping Midlife Women Make Better  
Choices for a Healthy Future



*Hormones and Healthy Bones* helps midlife women make better choices for a healthy future. Midlife women are the current baby boomers, including those who are nearing menopause, as well as those who have already reached menopause. This brochure discusses the role of estrogen and the changes that happen with menopause. It helps women understand osteoporosis, what increases their chance of getting it and how they can protect their bones.



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## How Bones Change Over Time

Although some people think of bones as hard and lifeless, they are actually living, growing tissue. Throughout your life, your body is constantly breaking down and removing old bone while making new bone at the same time. The new bone replaces the old bone that your body removes. Osteoporosis happens when you lose too much bone, make too little new bone or both.

Children and teens are building bones to last a lifetime. They make new bone faster than they lose old bone. As we grow older, we may begin to lose more bone than we form. For both women and men, bone loss usually speeds up in the 50s. But, bone loss happens more slowly in men than it does for women at this age. This is because many women lose bone rapidly when they reach menopause. This rapid bone loss affects both the density and structure of the bones, which makes bones weaker. By about age 65, the rate of bone loss is about the same for both women and men.

When people reach their 70s or 80s, bone loss often speeds up in the hip and can increase the chance of breaking a hip. One reason for this bone loss may be that many people are less active at this age. When people are older, they don't absorb nutrients such as calcium as easily and also don't make vitamin D as easily from the sun. (See p. 8 for more information on vitamin D.)

## WHAT IS OSTEOPOROSIS?

The word osteoporosis means “porous bone.” Bone under a microscope looks like a honeycomb. If you have osteoporosis, your bones have bigger holes and spaces in the honeycomb than healthy bone. This means your bones have lost density or mass. As a result, your bones become weak and may break more easily.

People with osteoporosis most often break a bone in the spine, wrist or hip. But, they can also break other bones, such as the pelvis or upper arm. If you have osteoporosis, you could break a bone from a minor fall that normally wouldn't cause a bone to break. Sometimes bones break simply from lifting a child, bumping into furniture or sneezing. Breaking a bone is serious, especially when you're older.

Although you can improve your bone health at any age, the best time to build strong, healthy bones is when you're young. The more bone you build when you're young, the less likely you are to get osteoporosis or break a bone later in life. But, it's never too late at any age to take steps to protect your bones.

## JUST THE FACTS

The following facts about osteoporosis may surprise you:

- About half of all women and up to one in four men older than 50 will break a bone due to osteoporosis.
- People with osteoporosis cannot feel their bones getting weaker, and many people don't know they have osteoporosis until they break a bone. For this reason, people call osteoporosis a silent disease.
- Certain diseases that are more common in African American women, such as sickle cell anemia and lupus, can lead to osteoporosis.
- Broken hips among Latinas in the U.S. appear to be on the rise.
- More than half of all Asian American women age 50 and older are estimated to have low bone density, putting them at risk for osteoporosis and broken bones.
- Between the ages of 20 and 80, Caucasian women lose about one-third of their hip bone density.
- A woman's risk of breaking a hip due to osteoporosis is equal to her combined risk of breast, uterine and ovarian cancer.
- African Americans, Asian Americans, Latinos/Hispanics and Native Americans are more likely to be lactose intolerant than Caucasians. People who are lactose intolerant have trouble drinking milk or eating certain dairy foods which contain calcium. (See p. 8 for more information about calcium.)

# Estrogen and Bone Health

Estrogen is a female hormone that plays an important role in the health of women. One of its benefits is that it protects your bones and helps keep them strong and healthy.

When estrogen levels drop, many women lose bone density. Teens and young women who often miss their periods usually have low estrogen levels. As a result, their bones may not be as strong. For midlife women, the drop in estrogen that happens with menopause can lead to rapid bone loss.

## ARRIVING AT MENOPAUSE

The word menopause comes from the Greek words for “month” and “end.” It means the end of monthly periods. Some people call it the “change of life.” For most women, it’s a natural change that takes place during their life.

As a woman nears menopause, her monthly periods become less regular and can be heavy or light, or both at different times. In some women, it takes less than a year to reach menopause. In others, it can take two years or longer. The time of change leading up to menopause is called perimenopause.

Menopause happens when your ovaries stop making estrogen. A woman reaches menopause when her periods stop completely for a year. The average age of menopause is 51 years, but some women have their last period in their 40s and others later in their 50s. If you have your ovaries removed by surgery, menopause happens instantly. Either way it happens, menopause leads to a decrease in estrogen.

Women in their 40s are more likely to break a wrist than men at this age. This may be a sign of bone loss starting even before a woman reaches menopause. Bone loss can speed up when estrogen levels begin to decline during perimenopause. During the early years after menopause, the risk of breaking bones in the spine increases in women.

For many women, a rapid loss of bone takes place during the five to seven years after menopause. Women can lose up to 20 percent of their bone density during this time. After that, bone loss tends to take place more slowly.

Some women have physical and emotional changes before and after menopause. Menopausal symptoms can last several years or even longer after reaching menopause. These can include:

- Hot flashes
- Problems sleeping
- Night sweats
- Mood changes
- Anxiety
- Memory problems
- Fatigue
- Change in sex drive
- Leaking urine during exercise, coughing or other times
- Vaginal dryness



### A TIME FOR ACTION

Women who begin menopause with low bone density are more likely to develop osteoporosis than those who begin menopause with normal bone density. The two major factors that affect your chance of getting osteoporosis are:

- The amount of bone you have when you reach menopause
- How fast you lose bone after menopause

Fortunately, osteoporosis is a disease you can do something about. Although there is no cure yet, it can be treated and broken bones can be prevented. You can slow or stop it from getting worse. In some cases, your bones may even improve. Menopause is a good time to make sure you are doing what you can to protect your bone health.



**“For me, menopause was a time to take care of myself. I began to eat right and exercise more. Now I feel so much better.”**



## Healthy Habits Make Healthy Bones

Making healthy lifestyle choices can help prevent osteoporosis and the painful broken bones it can cause. Here's what you can do to keep your bones strong and healthy:

**Get enough calcium.** Calcium helps build strong bones when you are younger and keeps them strong later in life. Dairy foods are high in calcium, while some green vegetables and other foods have smaller amounts of calcium. For people who have trouble digesting dairy products because of lactose intolerance, lactose-free dairy products and lactase enzyme pills are also available. When you don't get enough calcium from the foods you eat, then you need to take a calcium supplement to give you the additional amount you need. People can meet their calcium needs from a combination of the foods they eat and supplements. Women under age 50 need 1,000 mg of calcium every day, and women 50 and older need 1,200 mg of calcium every day.

**Get enough vitamin D.** Your body also needs vitamin D to absorb calcium. You can get small amounts of vitamin D from a few foods. You can also get vitamin D from the sun, but you need to protect your skin from too much sun. Many people need to take a supplement of vitamin D. Women under age 50 need 400-800 IU of vitamin D every day, and women 50 and older need 800-1,000 IU of vitamin D every day.



## NOF's Calcium and Vitamin D Recommendations

**Adults under age 50** need 1,000 mg of calcium and 400–800 IU of vitamin D every day

**Adults age 50 and older** need 1,200 mg of calcium and 800–1,000 IU of vitamin D every day

**Eat a healthy and well-balanced diet.** A well-balanced diet that includes fruits and vegetables is also good for your bones. But, very high amounts of protein, salt (sodium) or caffeine can cause bone loss. You can help prevent some of this loss by getting the amount of calcium your body needs. While extremely high protein diets can cause bone loss, it is still important to eat a well-balanced diet that contains protein. This is important for your bones as well as your overall health.

**Exercise at least 2½ hours every week.** Weight-bearing and muscle-strengthening exercises help keep your bones strong and healthy. Some examples of weight-bearing exercises are dancing, jogging, elliptical training machines, aerobics and brisk walking. Some examples of muscle-strengthening exercises are lifting weights, using elastic exercise bands, lifting your own body weight or using weight machines. If you have osteoporosis, check with your healthcare provider before beginning a new exercise program.

**Don't smoke or drink too much alcohol.** Smoking and drinking three or more alcoholic drinks a day are bad for your bones.

**See your healthcare provider every year.** Schedule an appointment with your doctor or other healthcare provider at least once a year. Make your healthcare provider your partner in keeping your bones healthy.



**“My mother broke many bones due to osteoporosis. *As a baby boomer just turning 50, I’m not going to let this happen to me.*”**

## Are You at Risk?

Osteoporosis is a complex disease. Although we don't know all of its causes, we know that some people are more likely to get osteoporosis than others. Things that increase your chance of having osteoporosis and breaking bones are called "risk factors." While you have no control over some risk factors, you can change others. Here are some common risk factors for osteoporosis:

- Not getting enough calcium and vitamin D
- Not getting enough physical activity and exercise
- Having a parent who had osteoporosis or broke a bone as an adult
- Being small and thin
- Smoking
- Drinking too much alcohol
- Having another disease or medical condition that causes bone loss, such as celiac disease, diabetes and rheumatoid arthritis
- Taking certain medicines, such as steroid medicines, certain treatments for cancer and some antiseizure medicines. Even taking commonly used medicines, such as some antidepressants and some acid blocking medicines, may increase the risk for osteoporosis.



## How Strong Are Your Bones?

Ask your healthcare provider when you should have a bone mineral density (BMD) test. Depending on your age, medical history and physical exam, your healthcare provider will decide if you need a BMD test. It's how you find out if you have osteoporosis. A BMD test also lets you know if you have low bone density, which is also called osteopenia. Having low bone density means you're more likely to get osteoporosis. BMD tests are safe and painless, have a very small amount of radiation and only take about 15 minutes.

The National Osteoporosis Foundation (NOF) recommends a BMD test of the hip and spine using a central DXA machine to diagnose osteoporosis. DXA stands for dual energy x-ray absorptiometry.

NOF recommends a BMD test for:

- Women age 65 or older
- Postmenopausal women under age 65 with risk factors for osteoporosis
- Women going through menopause with certain risk factors
- Women who break a bone after age 50
- Women with certain medical conditions
- Women taking certain medicines
- Postmenopausal women who have stopped taking estrogen therapy (ET) or hormone therapy (HT)

*Note: Because this information is specific to women, men are not included in this list. Visit [www.nof.org](http://www.nof.org) for NOF's recommendations for BMD testing in men.*

## Taking an Osteoporosis Medicine

Your healthcare provider will look at certain information to decide what you can do to prevent or treat osteoporosis. This includes the results of your BMD test, your risk factors for osteoporosis, your likelihood of breaking a bone, your medical history and your current health.

If your healthcare provider recommends that you take an osteoporosis medicine, the two of you should work together to choose the one that is the best for you. Some osteoporosis medicines may be more appropriate for women who have recently gone through menopause while others are more appropriate for older women.



**“I’m 58 and recently learned that I have osteoporosis after breaking two bones in my spine. *I never thought to talk to my doctor about my bone health. Now I’m working with a physical therapist on how to protect my spine. I’ve also begun taking an osteoporosis medicine, and I’ve found recipes with calcium-rich foods.*”**

## THE HORMONE QUESTION

Some women struggle with the decision about whether to take estrogen at menopause. It's not always an easy decision. There are also women who can't take estrogen because of their medical history.

Some women choose to take estrogen to help relieve their menopausal symptoms. This also gives them the benefit of protecting their bones at the same time. Taking estrogen can increase bone density and lower the risk of breaking bones.

Estrogen alone is also called ET (estrogen therapy) and estrogen given with progesterone is also called HT (hormone therapy). The Food and Drug Administration (FDA) has approved ET and HT to prevent osteoporosis in postmenopausal women. Many brands and generic forms of ET and HT are available. They come in different doses and are available as a tablet or skin (transdermal) patch and in other forms.

Taking estrogen by itself increases a woman's risk for cancer of the uterus. To reduce this risk, women with a uterus are given estrogen with progesterone (HT). Estrogen alone (ET) is given to women who have had their uterus removed. Side effects may include vaginal bleeding, breast tenderness and gallbladder disease.





## Women's Health Initiative (WHI) Study

The Women's Health Initiative (WHI) study found that one type of HT called Prempro® reduced the risk of breaking a hip and other bones and reduced the risk of getting colon cancer. In the study, it was given to women who on average were more than 10 years past menopause. It was associated with a slight increase in the risk of breast cancer, strokes, heart attacks, blood clots and cognitive (mental) decline. Although ET was associated with a similar increase in the risk of strokes, blood clots and mental decline, it did not increase the risk of breast cancer or heart attacks. Recent studies suggest that the risks of taking HT may be lower in women who start taking it soon after menopause begins.

Large studies have found that HT slightly increases a woman's risk of heart attack, stroke, blood clots in the veins, breast cancer and other problems. Some experts believe that ET does not increase the risk of heart attack and breast cancer, and does not increase the risk of blood clots as much as HT. As a result, the FDA recommends that if you need a medicine for osteoporosis you look at other medicines first before taking ET or HT.

Because ET and HT can have serious risks, you should talk to your healthcare provider to see if the benefits outweigh the risks. If you decide to take ET or HT, you should take the lowest possible dose for the shortest period of time.



## Talking with Your Healthcare Provider

It's important to talk to your doctor or other healthcare provider about any health concerns you have, including questions related to your hormones and bone health. Here are some questions you may want to ask during your next appointment:

- Do I have risk factors for osteoporosis?
- Am I getting enough calcium and vitamin D? Do I need to take supplements?
- Should I have a blood test to check my vitamin D level?
- What types of exercises should I be doing? Are there any exercises I shouldn't do?
- Do I have any medical conditions that can cause bone loss?
- Can any of the medicines I take cause bone loss?
- When is the right time for me to have my first bone mineral density (BMD) test?
- How often should I have a BMD test?
- What can I do to safely control my menopausal symptoms?
- What do I need to know about estrogen therapy (ET) and hormone therapy (HT)?
- Do I need to take a medicine to prevent or treat osteoporosis? If so, which medicines are most appropriate for me?
- What can I do to prevent falls and broken bones?

## For More Information

Keeping up to date about information concerning menopause will help you through this important passage in your life—and help you make informed decisions concerning your healthcare. The following organizations are good resources for this kind of information.

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

1150 17th Street, NW, Suite 850  
Washington, DC 20036-4644  
Phone: (800) 223-9994  
[www.nof.org](http://www.nof.org)

### **American College of Obstetricians and Gynecologists (ACOG)**

PO Box 96920  
Washington, DC 20090-6920  
Phone: (202) 638-5577  
[www.acog.org](http://www.acog.org)

### **American Dietetic Association**

120 South Riverside Plaza, Suite 2000  
Chicago, IL 60606-6995  
Phone: (800) 877-1600  
[www.eatright.org](http://www.eatright.org)

### **American Heart Association**

7272 Greenville Avenue  
Dallas, TX 75231  
Phone: (800) 242-8721 [(800) AHA-USA-1]  
[www.americanheart.org](http://www.americanheart.org)

### **Association of Reproductive Health Professionals**

1901 L Street, NW, Suite 300  
Washington, DC 20036  
Phone: (202) 466-3825  
[www.arhp.org](http://www.arhp.org)

### **National Institute on Aging Information Center (NIAIC)**

P.O. Box 8057  
Gaithersburg, MD 20898-8057  
Phone: (800) 222-2225  
Phone: (800) 222-4225 (TTY)  
[www.nia.nih.gov/HealthInformation/publications](http://www.nia.nih.gov/HealthInformation/publications)

**National Women's Health Information Center**

US Department of Health and Human Services

Office on Women's Health

Phone: (800) 994-9662

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

**National Women's Health Resource Center**

157 Broad Street, Suite 106

Red Bank, NJ 07701

Phone: (877) 986-9472

[www.healthywomen.org](http://www.healthywomen.org)

**NIH Osteoporosis and Related Bone Diseases  
National Resource Center**

2 AMS Circle

Bethesda, MD 20892-3676

Phone: (800) 624-2663 [(800) 624-BONE]

[www.niams.nih.gov/Health\\_Info/bone/default.asp](http://www.niams.nih.gov/Health_Info/bone/default.asp)

**North American Menopause Society (NAMS)**

PO Box 94527

Cleveland, OH 44101

Phone: (440) 442-7550

[www.menopause.org](http://www.menopause.org)





**Established in 1984**, the National Osteoporosis Foundation (NOF) is the nation's leading voluntary health organization solely dedicated to osteoporosis and bone health.

### National Osteoporosis Foundation's Vision

To make bone health a reality and a lifelong priority for all individuals.

### National Osteoporosis Foundation's Mission

To prevent osteoporosis and related fractures, to promote lifelong bone health, to help improve the lives of those affected by osteoporosis and to find a cure through programs of awareness, advocacy, public and health professional education and research.

### NOF Wants to Hear From You!

Tell us what you think about Hormones and Healthy Bones. Take our online survey at <http://nof.org/survey/hormones> It will only take a few minutes to complete. Your feedback will help us to better meet your needs as we revise our existing publications and develop new ones.

To request information or learn more about programs and services, contact NOF at:

(800) 231-4222 (Toll-free)

(202) 223-2226 (Main)

(202) 223-2237 (Fax)

E-mail: [request@nof.org](mailto:request@nof.org)

Web site: [www.nof.org](http://www.nof.org)