



F a c t s A b o u t

Menopausal Hormone Therapy



Menopausal hormone therapy once seemed the answer for many of the conditions women face as they age. It was thought that hormone therapy could ward off heart disease, osteoporosis, and cancer, while improving women's quality of life.

But beginning in July 2002, findings emerged from clinical trials that showed this was not so. In fact, long-term use of hormone therapy poses serious risks and may increase the risk of heart attack and stroke. This fact sheet discusses those findings and gives an overview of such topics as menopause, hormone therapy, and alternative treatments for the symptoms of menopause and the various health risks that come in its wake. It also provides a list of sources you can contact for more information.



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Heart, Lung, and Blood Institute

Menopause and Hormone Therapy

As you age, significant internal changes take place that affect your production of the two female hormones, estrogen and progesterone. The hormones, which are important in regulating the menstrual cycle and having a successful pregnancy, are produced by the ovaries, two small oval-shaped organs found on either side of the uterus.

During the years just before menopause, known as perimenopause, your ovaries begin to shrink. Levels of estrogen and progesterone fluctuate as your ovaries try to keep up hormone production. You can have irregular menstrual cycles, along with unpredictable episodes of heavy bleeding during a period. Perimenopause usually lasts several years.

Eventually, your periods stop. Menopause marks the time of your last menstrual period. It is not considered the last until you have been period-free for 1 year without being ill, pregnant, breast-feeding, or using certain medicines, all of which also can cause menstrual cycles to cease. There should be no bleeding, even spotting, during that year. Natural menopause usually happens sometime between the ages of 45 and 54.

You also can undergo menopause as the result of surgery. A surgical procedure, called a hysterectomy, removes the uterus. This surgery puts an end to your menstrual cycle but does not affect menopause, which still occurs naturally.

You go through menopause immediately if both of your ovaries are also removed at surgery. Whether you go through menopause naturally



Box 1

Examples of Oral Estrogen and Estrogen/Progestin Products

Estrogen pills:		Progestin pills:		Estrogen-plus-progestin pills:	
Brand	Generic	Brand	Generic	Brand	Generic
Premarin	conjugated equine estrogens	Cycrin	medroxyprogesterone acetate	Premphase	conjugated equine estrogens and medroxyprogesterone acetate
Cenestin	synthetic conjugated estrogens	Provera	medroxyprogesterone acetate	Prempro	conjugated equine estrogens and medroxyprogesterone acetate
Estratab	esterified estrogens	Aygestin	norethindrone acetate	Femhrt	ethinylestradiol and norethindrone acetate
Menest	esterified estrogens	Norlutate	norethindrone acetate	Activella	17-beta-estradiol and norethindrone acetate
Ortho-Est	estropipate (piperazine estrone sulfate)	Prometrium	progesterone USP (in peanut oil)	Ortho-Prefest	17-beta-estradiol and norgestimate
Ogen	estropipate (piperazine estrone sulfate)				
Estrace	micronized 17-beta-estradiol				
Estinyl	ethinyl estradiol				

Box 2

Examples of Gels, Creams, Patches, and Other Hormone Products**Estrogen products:**

Type	Brand	Generic
Vaginal Cream	Estrace	micronized 17-beta-estradiol
	Ortho Dienestrol	dienestrol
	Ogen	estropipate (piperazine estrone sulfate)
	Premarin	conjugated equine estrogens
Vaginal Tablet	Vagifem	estradiol hemihydrate
Vaginal Ring	Estring	micronized 17-beta-estradiol
	Femring	estradiol acetate
Skin Patch	Alora	micronized 17-beta-estradiol
	Climara	micronized 17-beta-estradiol
	Esclim	micronized 17-beta-estradiol
	Estraderm	micronized 17-beta-estradiol
	Vivelle	micronized 17-beta-estradiol
	Vivelle-Dot	micronized 17-beta-estradiol
Skin Gel	Estrogel	estradiol gel
Skin Cream	Estrasorb	estradiol topical emulsion

Progestin products:

Vaginal Gel	Crinone	progesterone
IUD	Mirena	levonorgestrel

Estrogen plus progestin products:

Skin Patch	Combipatch	17-beta-estradiol and norethindrone acetate
	Ortho-Prefest	17-beta-estradiol and norgestimate

or surgically, symptoms can result as your body adjusts to the drop in estrogen levels. These symptoms vary greatly—one woman may go through menopause with few symptoms, while another has difficulty. Symptoms may last for several months or years, or persist.

The most common symptoms are hot flashes or flushes, night sweats, and sleep disturbances. (A hot flash is a feeling of heat in your face and over the surface of your body, which may cause the skin to appear flushed or red as blood vessels expand. It can be followed by sweating and shivering. Hot flashes that occur during sleep are

called night sweats.) But the drop in estrogen also can contribute to changes in the vaginal and urinary tracts, which can cause painful intercourse and urinary infections.

To relieve the symptoms of menopause, doctors may prescribe hormone therapy. This can involve the use of either estrogen alone or with another hormone called progesterone, or progestin in its synthetic form (See Box 1.). The two hormones normally help to regulate a woman's menstrual cycle. Progestin is added to estrogen to prevent the overgrowth (or hyperplasia) of cells in the lining of the uterus. This overgrowth can lead

Box 3

Hormone Therapy Schedules**Cyclic or sequential**

- Estrogen every day
- Progesterone or progestin added for 10–14 days out of every 4 weeks

Continuous-combined

- Estrogen and progestin daily without a break

to uterine cancer. If you haven't had a hysterectomy, you'll receive estrogen plus progesterone or a progestin; if you have had a hysterectomy, you'll receive only estrogen. Hormones may be taken daily (continuous use) or on only certain days of the month (cyclic use). (See Box 3.)

They also can be taken in several ways, including orally, through a patch on the skin, as a cream or gel, or with an IUD (intrauterine device) or vaginal ring (See Box 2.). How the therapy is taken can depend on its purpose. For instance, a vaginal estrogen ring or cream can ease vaginal dryness, urinary leakage, or vaginal or urinary infections, but does not relieve hot flashes.

Hormone therapy may cause side effects, such as bleeding, bloating, breast tenderness or enlargement, headaches, mood changes, and nausea. Further, side effects vary by how the hormone is taken. For instance, a patch may cause irritation at the site where it's applied.

There also are nonhormonal approaches to easing the symptoms of menopause. Box 4 offers a list of some of these alternatives.

Alternatives to Hormone Therapy To Help Prevent Postmenopausal Conditions and Relieve Menopausal Symptoms

You may want to consider alternatives to hormone therapy to ease menopausal symptoms. The list below includes some locally applied hormone products, which might not carry the same risks as those that deliver medication throughout the body.

Be aware that some of these remedies are regulated by the Federal Government as dietary supplements, and as such do not undergo premarket approval and may not have data showing them to be safe and effective (See Box 5.). Talk with your doctor or other health care provider about the best treatment for you for each symptom.

Positive moves you can make to feel better are related to adopting a healthy lifestyle—don't smoke, eat a variety of foods low in saturated fat, *trans* fat, and cholesterol and moderate in total fat. Include grains, especially whole grains and a variety of dark green leafy vegetables, deeply colored fruit, and dry beans and peas in your eating plan. Also, maintain a healthy weight, and be physically active for at least 30 minutes most days of the week, preferably daily. Alternatives include:

For Postmenopausal Conditions:

Osteoporosis

- See Box 13 for lifestyle behaviors to protect bone density.
- Designer estrogen raloxifene (Evista), which preserves bone density and prevents fractures (although not hip fractures).
- Bisphosphonates Actonel or Fosamax, which preserve bone density, prevent fractures, and can reverse bone loss
- Teraparotide (parathyroid hormone), which may reverse bone loss
- Calcitonin (a nasal spray or injectable), used to treat women who have osteoporosis, which may prevent some fractures (This drug is not approved for preventing osteoporosis.).
- Note: Phytoestrogens (see hot flashes) have not been shown to prevent osteoporosis or reduce the risk of fractures.

Heart disease

- Lifestyle behaviors, including:
 - Following a healthy eating plan that includes a variety of foods low in saturated fat, *trans* fat, cholesterol and moderate in total fat, and rich in fruits and vegetables
 - Choosing and preparing foods with less salt
 - Not smoking
 - Maintaining a healthy weight
 - Being physically active
- Preventing and controlling high blood pressure
- Preventing and controlling high blood cholesterol
- Managing diabetes
- Taking prescribed medication to control heart disease

For Menopausal Symptoms:

Hot flashes

- Lifestyle changes. These include dressing and eating to avoid being too warm, sleeping in a cool room, and reducing stress. Avoid spicy foods and caffeine. Try deep breathing and stress reduction techniques, including meditation and other relaxation methods.
- Phytoestrogens. Soybeans and some soy-based foods contain phytoestrogens, which are estrogen-like compounds. Soy phytoestrogens can be consumed through foods or supplements. Soy food products include tofu, tempeh, soy milk, and soy nuts. Other plant sources of phytoestrogens include such botanicals such as black cohosh, wild yam, dong quai, red clover, and valerian root. However, there is no solid evidence that the phytoestrogens in soybeans, soy-based foods, other plant sources, or dietary supplements really do relieve hot flashes. Further, the risks of taking the more concentrated forms of soy phytoestrogens, such as pills and powders, are not known. Dietary supplements with phytoestrogens do not have to meet the same quality standards as do drugs. Little is known about the safety or efficacy of these products.
- Antidepressants, such as Effexor, Paxil, and Prozac. These medications have been proved moderately effective in clinical trials.

Vaginal dryness

- Vaginal lubricants and moisturizers (available over the counter).
- Products that release estrogen locally (such as vaginal creams, a vaginal suppository, called Vagifem, and a plastic ring, called an Estring)—these are used for more severe dryness. The ring, which must be changed every 3 months, contains a low dose of estrogen and may not protect against osteoporosis.

Mood swings

- Lifestyle behaviors, including getting enough sleep and being physically active
- Relaxation exercises
- Antidepressant or anti-anxiety drugs

Insomnia

- Over-the-counter sleep aids
- Milk products, such as a glass of milk or cup of yogurt—choose low-fat or fat-free varieties—consumed at bedtime
- Do physical activity in the morning or early afternoon—exercising later in the day may increase wakefulness
- Hot shower or bath immediately before going to bed

Memory problems

- Mental exercises
- Lifestyle behaviors, especially getting enough sleep and being physically active

Postmenopausal Use

Menopause may cause other changes that produce no symptoms yet affect your health. For instance, after menopause, women's rate of bone loss increases. The increased rate can lead to osteoporosis, which may in turn increase the risk of bone fractures. The risk of heart disease increases with age, but is not clearly tied to the menopause.

Through the years, studies were finding evidence that estrogen might help with some of these postmenopausal health risks—especially heart disease and osteoporosis. With more than 40 million American women over age 50, the promise seemed great. Although many women think it is a “man’s disease,” heart disease is the leading killer of American women. Women typically develop it about 10 years later than men.

Furthermore, women are more prone to osteoporosis than men. Menopause is a time of increased bone loss. Bone is living tissue. Old bone is continuously being broken down and new bone formed in its place. With menopause, bone loss is greater and, if not enough new bone is made, the result can be weakened bones and osteoporosis, which increases the risk of breaks. One of every two women over age 50 will have an osteoporosis-related fracture during her life.

Many scientists believed these increased health risks were linked to the postmenopausal drop in estrogen produced by the ovaries and that replacing estrogen would help protect against the diseases.

Box 5

About Dietary Supplements

If you use dietary supplements to try to ease hot flashes and other menopausal symptoms, be aware that these products do not require U.S. Food and Drug Administration (FDA) review or approval prior to their marketing. Because they are considered “dietary supplements,” they are covered by less stringent regulations than those involving prescription drugs. Manufacturers are responsible for establishing that they are safe and efficacious. They can be sold without the review or approval of the FDA. Thus, the quality of these products is not often known. It is important to tell your health care provider that you are taking such remedies.



The products sold over the counter as dietary supplements may be in pill or capsule form or as fortified items, such as candy bars. The possible effects of the products are not known. Some of the substances they contain are being studied. For example, soy contains phytoestrogens, which are being studied to see if they have the same risks and benefits as estrogen.

Some of this research is being supported by the Office of Dietary Supplements, the National Center for Complementary and Alternative Medicine, the National Institute on Aging, and other units of the NIH.

Until more is known about these substances, you should use them with caution. Also, as noted, tell your health care provider if you take a dietary supplement or if you increase your intake of dietary phytoestrogens. There may be dangerous side effects. An increase in the level of estrogens in your body could interfere with other prescription medications you are taking or even cause an overdose.



What We Learn From Different Types of Studies

Medical researchers conduct many types of studies. The reason is that the studies yield different kinds of information. Together, the studies help scientists understand health and disease, and how to educate people so they can lead healthier lives.

Three main types are: observational studies, clinical trials, and community prevention studies. Each type is discussed briefly below:

- **Observational studies** follow women's medical and lifestyle practices but do not intervene. Such studies can turn up possible relationships between various factors and health or illness. Those factors include population traits, ethnicity, genetic attributes, and behaviors. For instance, researchers can track women who do and do not take menopausal hormone therapy. The results may show that the hormone users have fewer heart attacks. But the results cannot conclude that hormone therapy reduces heart disease risk. Other factors may have played a part. For instance, compared with women who do not use hormone therapy, those who do are often healthier, have a higher education level, better access to medical care, and are more willing to follow a prescribed therapy.
- **Clinical trials** control and compare specific medical interventions, such as the use of menopausal hormone therapy. Women on an intervention are compared with those who do not receive the treatment. Researchers try to control all of the experimental conditions so that any difference between the two groups can be tied to the intervention.

The most rigorous of these investigations is the randomized, controlled, double-blinded clinical trial. Women are randomly assigned to the study groups and, in a drug trial for instance, neither the women nor the researchers typically know who is receiving an active drug or a placebo. Further, on average women in the two groups are similar in age, education, health, and other factors that may affect the results upon entering the trial. These trials are considered to be the “gold standard” studies because they yield the most reliable information.

Clinical trials are often done to test a possible relationship uncovered in an observational study. The trials help establish a causal link between a treatment and a specific medical outcome, such as fewer heart attacks.

- **Community prevention studies** explore ways to encourage people to adopt healthier behaviors.



Early Findings

Early studies seemed to support hormone therapy's ability to protect women against the diseases that tend to occur after menopause. For instance, research showed that the treatment does prevent osteoporosis. However, other findings lacked evidence or were unclear. No large clinical trials had proved that hormone therapy prevents heart disease or fractures. Answers also were needed about other possible effects of long-term use of hormones, especially on such conditions as breast and colorectal cancers.

Further, prior research on menopausal hormone therapy's effect on heart disease had involved mainly observational studies, which can indicate possible relationships between behaviors or treatments and disease, but cannot establish a cause-and-effect tie. (See Box 6 for more about types of studies.)

There were some clinical trials, considered the “gold standard” in establishing a cause-and-effect connection between a behavior or treatment and a disease, but most looked at the therapy's effects on the risk factors or predictors of various diseases.

Two important clinical trials were the “Postmenopausal Estrogen/Progestin Interventions Trial” (PEPI) and the “Heart and Estrogen-Progestin Replacement Study” (HERS).

PEPI looked at the effect of estrogen-alone and combination therapies on key heart disease risk factors and bone mass. It found generally positive results, including a reduction by both types of therapy of “bad” LDL cholesterol and an increase of “good” HDL cholesterol. (LDL, or low density lipoprotein, carries cholesterol to tissues, while HDL, or high density lipoprotein, carries it away, aiding in its removal from the body.)

HERS tested whether estrogen plus progestin would prevent a second heart attack or other coronary event. It found no reduction in risk from such hormone therapy over 4 years. In fact, the therapy increased women’s risk for a heart attack during the first year of hormone use. The risk declined thereafter. HERS also found that the therapy caused an increase in blood clots in the legs and lungs. The “HERS Follow-Up Study,” which tracked the participants for about 3 more years, found no lasting decrease in heart disease from estrogen-plus-progestin therapy.

The Women’s Health Initiative

In 1991, the National Heart, Lung, and Blood Institute (NHLBI) and other units of the National Institutes of Health (NIH) launched the Women’s Health Initiative (WHI), one of the largest studies of its kind ever undertaken in the United States.

Box 7

WHI In Profile*

Altogether, the WHI involved about 161,000 healthy postmenopausal women. Here’s the breakdown of participants in each study:

	Estrogen Alone	Estrogen Plus Progestin
Participants	10,739	16,608
Race		
White	75%	84%
Black	15%	7%
Hispanic	6%	5%
Average age		
50–59	31%	33%
60–69	45%	45%
70–79	24%	23%
Hormone use		
Ever	35%	20%
At enrollment	13%	6%
BMI		
Normal	21%	31%
Overweight	35%	35%
Obese	45%	34%
Smoking		
Ever	38%	40%
At enrollment	10%	11%
Treated for high blood pressure		
	48%	36%

*Percentages are rounded



WHI Hormone Therapy Findings

The two WHI studies' findings should not be compared directly. Women in the estrogen-alone study began the trial with a higher risk for cardiovascular disease than those in the estrogen-plus-progestin study. They were more likely to have such heart disease risk factors as high blood pressure, high blood cholesterol, diabetes, and obesity.

Also, as you read the percentages below, bear in mind that the WHI involved healthy women, and only a small number of them had either a negative or positive effect from either hormone therapy. The percentages given below describe what would happen to a whole population—not to an individual woman. For example, breast cancer risk for the women in the WHI study taking estrogen plus progestin increased less than a tenth of 1 percent each year. But if you apply that increased risk to a large group of women over several years, the number of women affected becomes an important public health concern. About 6 million American women take estrogen-plus-progestin therapy. That would translate into nearly 6,000 more breast cancer cases every year, and, if all of the women who took the therapy for 5 years, that could result in 30,000 more breast cancer cases.

Further, know that percentages aren't fate. Whether expressing risks or benefits, they do not mean you will develop a disease. Many factors affect that likelihood, including your lifestyle and other environmental factors, heredity, and your personal medical history.

Estrogen Plus Progestin

With 5.2 years of followup. For every 10,000 women each year, estrogen plus progestin (combination therapy) use compared with a placebo on average resulted in:

Increased risk for

Breast cancer

- 26 percent increased risk—8 more cases (38 cases on combination therapy and 30 on placebo)

Stroke

- 41 percent increased risk—8 more cases (29 cases on combination therapy and 21 on placebo)

Heart attack

- 29 percent increased risk—7 more cases (37 cases on combination therapy and 30 on placebo)

Blood clots (legs, lungs)

- Doubled rates—18 more cases (34 cases on combination therapy and 16 on placebo)

Increased benefits

Colorectal Cancer

- 37 percent less risk—6 fewer cases (10 cases on combination therapy and 16 on placebo)

Fractures

- 37 percent fewer hip fractures—5 fewer cases (10 on combination therapy and 15 on placebo)

No difference

Deaths

Total cancer cases

Estrogen Alone

With 6.8 years of followup. For every 10,000 women each year, estrogen-alone use compared with a placebo on average resulted in:

Increased risk for

Stroke

- 39 percent increase in strokes—12 more strokes (44 cases in those on estrogen alone and 32 in those on placebo)

Venous thrombosis (blood clot, usually in a deep vein of legs)

- About a 47 percent higher risk—6 more cases (21 cases in those on estrogen alone and 15 in those on placebo.) An increased risk of pulmonary embolism (blood clots in the lungs) was not statistically significant. There were 13 cases in those on estrogen alone and 10 in those on placebo.

No difference in risk (neither increased nor decreased) or of uncertain effect

Coronary heart disease

- No significant difference—5 fewer cases (49 cases in those on estrogen alone and 54 in those on placebo). During the first 2 years of use, the risk was slightly increased for estrogen alone, but it appeared to diminish over time.

Colorectal/total cancer

- No significant difference—1 more case for colorectal cancer and 7 fewer cases for total cancer (for colorectal cancer, 17 cases with estrogen alone and 16 with placebo; for total cancer, 103 cases in those on estrogen alone and 110 in those on placebo.)

Deaths (all or specific cause)

- No significant difference—3 more deaths (for all deaths, 81 in those on estrogen alone and 78 in those on placebo)

Breast cancer

- Uncertain effect—7 fewer cases (26 cases in those on estrogen alone and 33 in those on placebo). This finding was not statistically significant.

Increased benefit

Bone fractures

- 39 percent fewer hip fractures—6 fewer cases (11 cases in those on estrogen alone and 17 cases in those on placebo)



It consists of a set of clinical trials, an observational study, and a community prevention study, which altogether involve more than 161,000 healthy postmenopausal women.

The observational study is looking for predictors and biological markers for disease and is being conducted at more than 40 centers across the United States. The community prevention study, which has ended, sought to find ways to get women to adopt healthful behaviors and was done with the Federal Government's Centers for Disease Control and Prevention.

WHI's three clinical trials, conducted at the same U.S. centers, are designed to test the effects of menopausal hormone therapy, diet modification, and calcium and vitamin D supplements on heart disease, osteoporotic fractures, and breast and colorectal cancer risk.

The hormone trials also were checking whether the therapies' possible benefits outweighed possible risks from breast cancer, endometrial (or uterine) cancer, and blood clots. The hormone therapy trials have ended.

The menopausal hormone therapy clinical trial had two parts. The first involved 16,608 postmenopausal women with a uterus who took either estrogen-plus-progestin therapy or a placebo. (The added progestin protects women against uterine cancer.) The second involved 10,739 women who had had a hysterectomy and took estrogen alone or a placebo. (A placebo is a substance that looks like the real drug but has no biologic effect.)

The estrogen-plus-progestin trial used 0.625 milligrams of conjugated

equine estrogens taken daily plus 2.5 milligrams of medroxyprogesterone acetate (Prempro™) taken daily. The estrogen-alone trial used 0.625 milligrams of conjugated equine estrogens (Premarin™) taken daily.

Prempro and Premarin were chosen for two key reasons: They contain the most commonly prescribed forms of estrogen-alone and combined therapies in the United States, and, in several observational studies, these drugs appeared to benefit women's health.

Women in the trials were aged 50 to 79—their average age at enrollment was about 64 for both trials (See Box 7 for a profile of the participants.). They enrolled in the studies between 1993 and 1998. Their health was carefully monitored by an independent panel, called the Data and Safety Monitoring Board (DSMB).

Both hormone studies were to have continued until 2005, but were stopped early. The estrogen-plus-protestin study was halted in



What Do the Data Really Mean?

The data sound scary—and confusing. Estrogen plus progestin increases stroke risk by 41 percent—and decreases the risk for hip fractures by 34 percent? Which is more important? The bad news, or the good?

Either way, the percentages sound big. So it's good to take a moment and check out what they're really saying.

There are two main ways to express risk—"relative risk" and "absolute risk." Relative risk estimates percent increase or decrease in a health event occurring in one group compared to another group. Absolute risk estimates the number of health events among individuals in a group, and gives a better sense of personal or individual risk.

The risk to an individual can be low, but in a large population the number of health events can be great.

For example, the WHI study found that, among 10,000 women taking estrogen plus progestin for one year, there will be 8 more cases of breast cancer among the hormone users than if they had not taken the therapy. So, the absolute risk to the individual is relatively low.

But, the risk of taking hormones to the overall population was substantial. If you count up all the added cases of breast

cancer, heart attacks, strokes, and blood clots in the lungs and subtract the fewer cases of colorectal cancer and hip fractures, you'd still get about 100 extra harmful events among the 10,000 hormone users after 5.2 years—the period the study ran. Multiply that by 10 years and millions of women taking hormones and the number of cases of adverse effects grows.

Remember too that reports of increased risks do not mean you will develop breast cancer or another condition if you have been using the hormone therapy. Your personal and family medical history, along with your lifestyle and other influences, play a big role in your chance of developing a disease.



July 2002, and the estrogen-alone study at the end of February 2004. Women in both trials are now in a followup phase, due to last until 2007. During the followup, their health will be closely monitored. See Boxes 8 and 9.

Effects on Disease and Death

Briefly, the *combination therapy* study was stopped because of an increased risk of breast cancer and because, overall, risks from use of the hormones outnumbered the benefits. "Outnumbered" means that more women had adverse effects from the therapy than benefited from it. For breast cancer, the risk was greatest among women who had used estrogen

plus progestin before entering the study, indicating that the therapy may have a cumulative effect. The combination therapy also increased the risk for heart attack, stroke, and blood clots. For heart attack, the risk was particularly high in the first year of hormone use and continued for several years thereafter. Unlike HERS, which involved women with heart disease, there was an overall increased risk from the hormone therapy over the 5.6 years of the trial. The risk for blood clots was greatest during the first 2 years of hormone use—four times higher than that of placebo users. By the end of the study, the risk for blood clots had decreased to two times

greater—or 18 more women with blood clots each year for every 10,000 women.

Estrogen plus progestin also reduced the risk for hip and other fractures, and colorectal cancer. The reduction in colorectal cancer risk appeared after 3 years of hormone use and became more marked thereafter. However, the number of cases of colorectal cancer was relatively small, and more research is needed to confirm the finding.

The *estrogen-alone* study was stopped after almost 7 years because the hormone therapy increased the risk of stroke and

did not reduce the risk of coronary heart disease. It also increased the risk for venous thrombosis (blood clots deep in a vein, usually in the leg). There also was a trend towards increased risk for pulmonary embolism (blood clots in the lungs), but it was not statistically significant (See Box 10 for explanation of statistical significance.). The therapy had no significant effect on the risk of heart disease or colorectal cancer. Its effect on breast cancer was uncertain. Although the risk for breast cancer for those on estrogen alone appeared to be lower, this finding was not statistically significant (see Box 10). Estrogen alone reduced the risk for hip and other fractures. The reduction began early in the study and persisted throughout the followup period.

Neither estrogen plus progestin nor estrogen alone affected the risk of death.

Effects On Mental Functions

An ancillary study of the hormone trials, the WHI Memory Study (WHIMS), included women age 65 and older. It found that women taking estrogen plus progestin had twice the rate of dementia, including Alzheimer's disease, as those on the placebo. The combination therapy also did not protect women against mild cognitive impairment, which is a less severe loss of mental abilities such as having trouble paying attention and remembering.

Estrogen alone also increased the risk of mild cognitive impairment plus dementia, though the number of cases of dementia alone was too small to be statistically significant.

Box 10

Significant Statistics

Sometimes, studies report results that are not “statistically significant.” For instance, in the WHI, estrogen alone caused fewer cases of breast cancer, but the finding was not statistically significant. How can that be?

Significance with statistics refers to the likelihood that a finding is probably true—and probably not due to chance. With breast cancer, the result could be due to factors other than hormone therapy, such as genetics or environmental exposures. The difference in breast cancer cases between the estrogen-alone and placebo groups was not large enough to rule out other factors.

Some of the WHI findings are of uncertain effect or not statistically significant. They are intriguing findings that need more research.



Risk Factors for Stroke

Main risk factors are:

- High blood pressure
- Cigarette smoking
- Heart disease
- Diabetes
- Transient ischemic attacks (small strokes lasting for only a few minutes or hours)
- Age

Other risk factors include:

- Family history—stroke appears to run in some families, whether due to genetics and/or shared lifestyle
- Heavy consumption of alcoholic beverages
- High blood cholesterol

Effects On Urinary Incontinence

The WHI has shown that estrogen and estrogen combined with progesterin increase the risk of developing urinary incontinence and worsen the symptoms of incontinent women.

Effects On Quality Of Life

WHI also studied the effects of menopausal hormone therapy on women’s quality of life, which includes perceptions of general health, energy, social functioning, mental health, depression, and sexual satisfaction. There was no improvement with estrogen plus progesterin. Slight improvements in women’s physical functioning, body pain, and sleep disturbances did occur after 1 year of hormone use, but those effects were very small. Among younger WHI participants (ages 50–54), there was a slight improvement in sleep. Relief of hot flashes and night sweats occurred in the majority of women who had these symptoms when they started the study.

Results for the estrogen-alone therapy are not yet available.

Putting It All Together

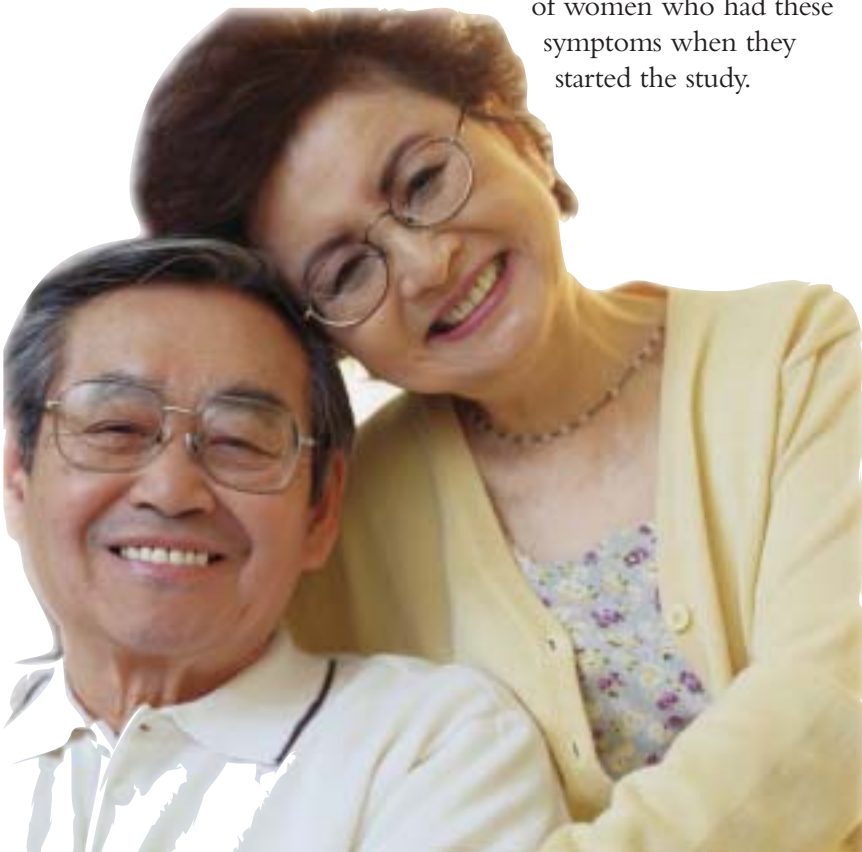
The WHI findings finally offer women guidance about the use of menopausal hormone therapy. They establish a causal link between use of the therapies tested and their effects on diseases. Further, the results apply broadly—the studies found no important differences in risk by prior health status, age, or ethnicity.

As you read the information given below, realize that most treatments carry risks and benefits. Talk with your doctor or other health care provider and decide what’s best for your health and quality of life. Begin by finding out your personal risk profile for heart disease, stroke, breast cancer, osteoporosis, colorectal cancer, and other conditions (See Boxes 11, 12, 13, 15, 16, 17, 18, and 19.). Discuss quality of life issues and alternatives to menopausal hormone therapy. Box 20 will help you talk with your health care provider.

Then weigh every factor carefully and choose the best option for your health and quality of life. And keep the dialogue going—your health status can change and so can your choice.

U.S. Food and Drug Administration (FDA) Approved Use of Menopausal Hormone Therapy

- Menopausal hormone therapy products are effective for treating moderate-to-severe hot flashes and night sweats, moderate-to-severe vaginal dryness, and prevention of osteoporosis associated



Box 12

Breast Cancer Risk Factors

One of every eight American women will develop breast cancer in her lifetime. The risk increases with age—and is greatest after age 60. Some factors increase the risk for breast cancer. However, most women who develop breast cancer do not have any risk factors.

Key factors that increase the risk of developing breast cancer are:

- Personal history—if you've had it once, you're more likely to develop breast cancer again.
- Family history—if your mother, sister, or daughter had breast cancer, especially at an early age, you're more likely to develop it.
- Other breast changes (not including ordinary "lumpiness")—such as atypical hyperplasia (an irregular pattern of cell growth).
- Genetic alterations—mutated forms of BRCA1 and BRCA2 genes, which are believed to be responsible for about half the cases of inherited breast cancer.

Other factors also may increase the risk of developing breast cancer.**These include:**

- Race—white women are more likely to develop it than African American or Asian women.
- Estrogen exposure—risk is somewhat increased for those who began menstruation early (before age 12), had menopause late (after age 55), never had children, never breastfed, or took hormone therapy for long periods.
- Late childbearing—having a first child after age 30.
- Radiation therapy—if given to the chest more than 10 years ago, especially in women younger than age 30.
- Breast density—breasts with a high proportion of lobular and ductal tissue, which is dense and prone to breast cancer.
- Obesity after menopause—the body makes some of its estrogen in fatty tissue and being obese means a woman has abnormally high body fat; gaining weight after menopause increases the risk.
- Physical inactivity—women who are physically inactive throughout life have an increased risk, possibly because physical activity helps prevent obesity.
- Alcoholic beverage consumption.

with menopause, but carry serious risks. Therefore, postmenopausal women who use or are considering using estrogen or estrogen with progestin treatments should discuss with their health care providers whether the benefits outweigh the risks.

- If these products are prescribed solely for vaginal symptoms, health care providers are advised to consider the use of topical vaginal products (gel or cream applied locally).
- If menopausal hormone therapy is used for osteoporosis, the risks for osteoporosis must outweigh the risk of estrogen or estrogen with progestin. Health care providers are encouraged to consider other treatments before providing menopausal hormone therapy for osteoporosis.
- Menopausal hormone therapy has never been approved for the prevention of cognitive disorders such as Alzheimer's disease or memory loss. In fact, the WHI found that women treated with menopausal hormone therapy have a greater risk of developing dementia.
- Menopausal hormone therapy should be used at the lowest doses for the shortest duration to reach treatment goals, although it is not known at what doses there may be less risk of serious side effects.

Boning Up On Osteoporosis

More than eight million American women have osteoporosis—and millions more have such low bone density that they're likely to develop it.

Osteoporosis can happen at any age, but the risk increases as you get older. The first noticeable sign of osteoporosis is often losing height or breaking a bone easily. Other signs can be changes in spine shape, prolonged severe pain in the middle of the back, and tooth loss.

Risk factors for osteoporosis include:

- Age—risk increases as you grow older.
- Being female—Women have less bone tissue than do men and tend to experience a rapid loss of bone in the first few years after menopause.
- Body size—small, thin-boned women are at greatest risk.
- Ethnicity—White and Asian women are at highest risk.
- Having parents with a history of osteoporosis as well as fractures in adulthood can place someone at increased risk for osteoporosis.
- Sex hormones—abnormal absence of menstrual periods (amenorrhea) or menopause.
- Anorexia.
- Lifetime diet low in calcium and vitamin D.
- Certain medications, such as glucocorticoids (prescribed for various diseases, including arthritis, asthma, and lupus) and some anticonvulsants.
- Physical inactivity or extended bed rest.
- Cigarette smoking.
- Excessive use of alcoholic beverages.

If you think you're at risk for osteoporosis or if you're menopausal or postmenopausal, you may want to ask your doctor or other health care provider about having a DXA-scan (dual-energy x-ray absorptiometry). It measures spine, hip, or total body bone mineral density, or how solid bones are. The results can show the presence and severity of osteoporosis, or if you're at risk of developing it or having fractures.

You can prevent osteoporosis. The key steps are to follow an eating plan rich in calcium and vitamin D, and be sure to get regular weight-bearing exercise. Although food sources are usually better absorbed, calcium and vitamin D intake can be taken

as supplements but check with your health care provider first. Too much of either can cause problems. Recommended daily intakes of calcium and vitamin D are given in Box 14. Good food sources of calcium include canned fish with bones (such as salmon and sardines), broccoli, dark green leafy vegetables, (such as kale, turnip greens, and collards), dairy foods such as nonfat or low-fat milk, calcium-fortified orange juice, soy-based beverages with added calcium, and cereal with added calcium. Vitamin D is made by the body—being in the sun 20 minutes a day helps most women make enough. But it's also found in foods such as fatty fish (sardines, mackerel, and salmon), and cereal and milk fortified with Vitamin D. Thirty minutes of weight-bearing exercises such as walking, jogging, stair climbing, weight training, tennis, and dancing, done three to four times a week can help prevent osteoporosis.



It's also important not to smoke and to limit how many alcoholic beverages you drink. Too much alcohol (for women, more than one alcoholic drink a day) can put you at risk for developing osteoporosis. Smoking increases bone loss by decreasing estrogen production.

Osteoporosis is treated by stopping bone loss with lifestyle changes and medication. Hormone therapy has been used to prevent and treat osteoporosis. But other drugs are available:

- Raloxifene is a selective estrogen receptor modulator (SERM), which preserves bone density and prevents fractures (although not hip fractures). Possible side effects include hot flashes and blood clots.
- Alendronate (brand name Fosamax) and risedronate (brand name Actonel) are bisphosphonates, drugs that slow the breakdown of bone, prevent fractures, and may increase reverse bone loss. Side effects may include nausea, heartburn, and pain in the stomach.
- Calcitonin is a naturally occurring nonsex hormone that increases bone mass in the spine, and it may prevent some fractures. It is used to treat women who have osteoporosis and who are at least 5 years beyond menopause. The drug is taken by injection or nasal spray. The injection may cause an allergic reaction and has some unpleasant side effects, including flushing of the face and hands, urinating often, nausea, and skin rash. The nasal spray may cause a runny nose.
- Teriparatid (parathyroid hormone), which may reverse bone loss.

Box 14

Recommended Daily Intakes of Calcium and Vitamin D

Age	Vitamin D	Calcium
19–50	200 IU*	1,000 mg**
51–70	400 IU*	1,200 mg**
70+	600 IU*	1,200 mg**

Note: International Units (IU)

* not to exceed 2,000 IU

**not to exceed 2,500 mg

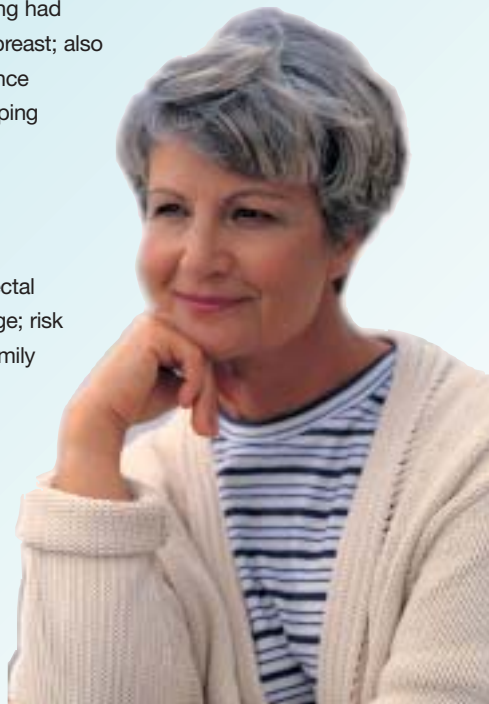
Box 15

Risk Factors for Colorectal Cancer

About 30,000 women a year die of colorectal cancer—it is the third-leading cause of cancer deaths for women after lung and breast cancers.

Factors that increase the risk of colorectal cancer include:

- Age—risk increases after age 50.
- Body Mass Index of 25 or greater (overweight and obesity).
- Polyps—these are benign growths on the inner wall of the colon and rectum.
- Personal medical history—having had cancer of the ovary, uterus, or breast; also having had colorectal cancer once increases the chance of developing it again.
- Family medical history—having first-degree relatives (parents, siblings, or children) with colorectal cancer, especially at a young age; risk increases even more if many family members have had colorectal cancer.
- Ulcerative colitis—a condition in which the lining of the colon becomes inflamed.



Box 16

Risk Factors for Uterine Cancer

There are various types of uterine cancer. The most common is endometrial cancer, which begins in the uterine lining (endometrium). It is often referred to as uterine cancer.

Key risk factors for uterine cancer are:

- Age—usually occurs after age 50.
- Endometrial hyperplasia—an increase in cells in the lining of the uterus.
- Hormone therapy—using estrogen without progesterone.
- Obesity and related conditions.
- Tamoxifen—taken to prevent or treat breast cancer.
- Race—White women are more likely than African American women to develop uterine cancer.
- Colorectal cancer—those who have an inherited form are at a higher risk of developing uterine cancer.
- Factors that increased exposure to estrogen—starting menstruation at an early age, not having children, never breastfeeding, or entering menopause late.



When Menopausal Hormone Therapy Should Not Be Used

Findings from the WHI and HERS have led to conclusions about when menopausal hormone therapy should not be used:

- Menopausal hormone therapy should not be used to prevent heart disease. In fact, estrogen plus progestin actually increases the chance of a first heart attack, as well as breast cancer. Both forms of hormone therapy increase the risk for blood clots.
- Women with heart disease should not use menopausal hormone therapy to prevent the risk of further heart disease. Such use increases the risk of blood clots. It also increases the risk of heart attack in the first year of therapy.

What Can You Do Instead?

Talk to your health care provider about lifestyle changes and other action steps that have proven to be safe and effective in helping to prevent heart disease and osteoporosis. Ways to prevent heart disease and stroke include lifestyle changes and such drugs as cholesterol-lowering statins and blood pressure medications. Lifestyle changes include: not smoking, maintaining a healthy weight, being physically active, and managing diabetes. (See Box 21 to learn more about heart disease risk factors.)

Another key lifestyle change is to follow a healthy eating plan that has a variety of foods, including grains, especially whole grains, and dark green leafy vegetables, deeply colored fruits, and dry beans and peas. It should also be low in saturated fat, *trans* fat, and chole-

sterol, and moderate in total fat. In addition, limiting how much salt and other forms of sodium you eat will help keep your blood pressure at a healthy level.

Take action to prevent osteoporosis and bone loss, including consuming enough calcium and vitamin D (See Box 14.), being physically active, especially with weight-bearing exercises (such as walking, jogging, playing tennis, and dancing), not smoking, and limiting how many alcoholic beverages you drink. Smoking and drinking excessive amounts of alcohol increase your risk of osteoporosis.

Talk with your health care provider about what your personal risks and benefits would be from either estrogen-alone or estrogen-plus-progestin therapy to prevent osteoporosis. Consider whether the risks of osteoporosis outweigh the risks of hormone therapy.

Ask about alternate medications that are considered safe and



effective in preventing osteoporosis and fractures. These include oral biphosphonates, such as alendronate (or Fosamax) and risedronate (or Actonel), and selective estrogen receptor modulators (SERMs), such as raloxifene (or Evista). SERMs are also known as designer estrogens. They are substances that have estrogen-like effects on some tissues and anti-estrogen effects on others. For more on osteoporosis, see Box 13.



Box 17

Risk Factors for Ovarian Cancer

About 1 in 57 American women will develop ovarian cancer. Most will be over age 50, but younger women also can develop the disease.

Here are some factors that increase or decrease the risk of ovarian cancer:

Increases risk

- Age—risk increases as a woman ages.
- Family history of ovarian cancer—higher risk if mother or sister has had ovarian cancer; somewhat higher risk if other relatives, such as grandmother, aunt, or cousin, have developed ovarian cancer.
- Menopausal hormone therapy—may increase risk.
- Fertility drugs.
- Personal history of breast and/or colon cancer.

Decreases risk

- Oral contraceptives—the longer the use, the lower the risk may be, and the decrease may last after use has ended.
- Childbearing and breast-feeding.
- Tubal ligation (sterilization) or hysterectomy.
- Surgery to remove one or ovaries to help prevent ovarian cancer, which is called a prophylactic oophorectomy.



General Advice for the Postmenopausal Years

The postmenopausal years are a time when the risk for various conditions rises. Be sure to protect your health by having certain tests (See Box 22 for details.):

- Keep a regular schedule of mammograms, and breast and clinical exams.
- Check your blood pressure at least every 2 years (more frequently if it is elevated).
- Know your cholesterol levels—they should be tested at least once every 5 years (more frequently if levels are elevated).
- Test your fasting blood glucose (sugar) level—this is a test to see if you have diabetes or are likely to develop it. Take it at least



every 3 years, beginning at age 45. If you have risk factors for diabetes, start the test at a younger age and take it more often.

- Find out your bone mineral density with a DXA-scan (dual-energy x-ray absorptiometry)—results can show the presence and severity of osteoporosis,

or if you're at risk for developing it or having fractures.

- Learn your body mass index (BMI) and waist circumference—this will tell if you need to lose weight. Check these every 2 years or more often if your doctor recommends. (See Box 23.)

Menopausal Hormone Therapy and Ovarian Cancer Risk

Early menopausal hormone therapy studies found inconsistent results about its effect on the risk of ovarian cancer: some reported increased risk with estrogen use, while others reported no effect or even a protective one. Most of those studies were relatively small and did not take into account the key ovarian cancer risk factors.

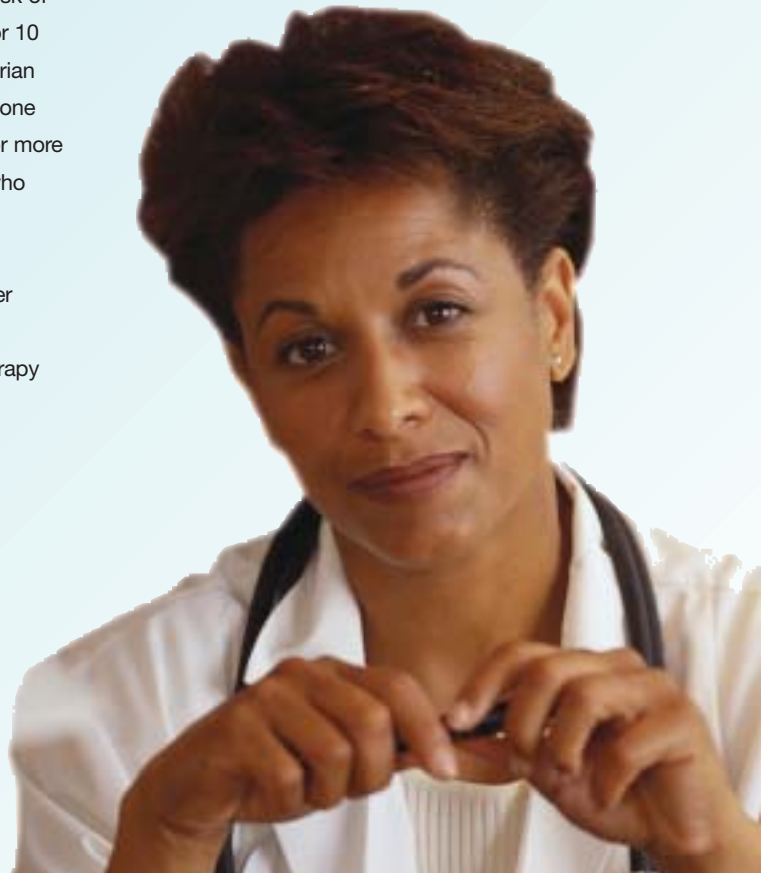
However, two large observational studies have indicated that long-term estrogen use may increase the risk of ovarian cancer. It's important to keep in mind that observational studies do not prove that a treatment causes a disease (See Box 6.). The evidence from these studies is cautionary, not definitive.

Here's more on the studies:

- One study followed 211,581 postmenopausal women from 1982–1996. Of those, 44,260 had used estrogen-only hormone therapy; the rest did not use hormone therapy. None of the women had had a hysterectomy, ovarian surgery, or cancer. Those with 10 or more years of estrogen use had an increased risk of dying from ovarian cancer—and, while the risk decreased somewhat long after use was stopped, it was still higher than that of women who had never used estrogen-only therapy.
- Another study followed 44,241 women from 1979–1998. It found that estrogen-only therapy increased the risk of ovarian cancer. Women who used estrogen-only for 10 or more years had an 80 percent higher risk of ovarian cancer than women who had never used the hormone therapy; women who used estrogen-alone for 20 or more years had a 220 percent higher risk than women who had never used hormone therapy.

The study found no increased risk of ovarian cancer for users of estrogen plus progestin. However, few women in the study had used the combination therapy for more than 4 years.

More research is needed to see if estrogen plus progestin affects ovarian cancer risk—and on other aspects of menopausal hormone use. For instance, another recent study found that estrogen alone or estrogen plus progestin used on a sequential basis increased the risk of ovarian cancer, while estrogen plus progestin used continuously did not increase ovarian cancer risk. The WHI trial of estrogen plus progestin found a small increase in ovarian cancer, which is not statistically significant.



Box 19

What About Birth Control Pills?

Recent findings about risks of long-term menopausal hormone therapy do not apply to use of birth control pills, which have not been found to increase breast cancer risk.

There had been concern about birth control pills' effect on the risk of breast cancer because, until recently, studies had found conflicting results. For example, a 1996 analysis of 54 small studies found a slight increase in breast cancer rates among women who were or had recently used oral contraceptives. But the 54 studies differed in quality and some included oral contraceptive preparations no longer in use. Other studies, such as the 1986 Cancer and Steroid Hormone (CASH) study, found no increased breast cancer risk.

In June 2002, findings of the Women's Contraceptive and Reproductive Experiences Study (also called the Women's CARE Study) were released and showed no increased risk of breast cancer, regardless of length of oral contraceptive use, timing of use, age at use, or the users' risk factors for developing breast cancer. The study, supported by the NIH's National Institute of Child Health and Human Development, involved more than 9,257 women between the ages of 35 and 64. The women were interviewed about their contraceptive use.

Oral contraceptives do pose risks, however: combination oral contraceptives increase the risk of blood clots. Oral contraceptives should not be used if you are at an elevated risk for blood clots because of diabetes or another condition, or if you smoke. Taking oral contraceptives and smoking increases your risk for heart attack and stroke.

Oral contraceptive use has benefits too: it can reduce the risk of ovarian cancer, endometrial cancer, colorectal cancer, and pelvic inflammatory disease (an infection that can lead to infertility).



Box 20

Talking With Your Doctor

It's important to be involved in your health care. Ask questions and express your concerns. Here are some questions that may help you talk with your health care provider about hormone therapy:

- Why am I taking hormone therapy? or Why should I take hormone therapy?
- Which hormone therapy am I on?
- What are my risks for heart disease, breast cancer, colorectal cancer, or osteoporosis?
- Should I stop taking the hormone therapy?
- What's the best way for me to stop? What side effects will I have?
- Is there an alternative therapy that I can use long term?
- What alternatives can help me prevent heart disease?

- What alternatives can help me prevent osteoporosis?
- What can I do to keep menopausal symptoms from returning?

Your risk for heart disease, osteoporosis, breast cancer, and colorectal cancer may change over time. So remember to regularly review your health status with your doctor or other health care provider.

It's also important to bear in mind that your doctor or other health care provider may not be able to answer all of your questions—many questions about menopausal hormone use remain unanswered. For instance, it's not yet known if disease risk increases when long-term use of estrogen-plus-progestin drop use stops. As with any treatment, you need to carefully weigh your personal risks against the possible benefits and make the best choice possible for your health and lifestyle needs.

Finally, your doctor or other health care provider can speak with a WHI principal investigator about the study results. For a list of the principal investigators, check the NHLBI WHI Web site or contact the NHLBI Health Information Center (See page 24.).

Your Heart Disease Risk Profile

One in three American women dies of heart disease. Heart disease kills more American women than any other cause. It also can lead to disability and decrease one's quality of life. Yet, many women don't take the threat of heart disease seriously.

But menopause is a time when you need to get very serious about heart disease because that's when your risk starts to rise. Risk factors are behaviors or habits that make a person more likely to develop a disease. They can also increase your chances that an existing disease will get worse. Having more than one risk factor for heart disease is especially serious, because risk factors tend to "gang up" and worsen each other's effects. So it's vital to prevent the development of risk factor, if you already have any, keep them under control.

So, it's more important than ever to talk with your health care provider about how to lower your risk of heart disease—or, if you already have it, to keep it under control. Ask about your "heart disease profile," a check for heart disease risk factors you already have, or are at an increased risk of developing.

Fortunately, most heart disease risk factors can be prevented or controlled. Here's a breakdown of both types:

Risk factors beyond your control:

- Being age 55 or older
- Having a family history of early heart disease—this means having a mother or sister who has been diagnosed with heart disease before age 65, or a father or brother diagnosed before age 55

Risk factors you can control:

- Cigarette smoking
- High blood cholesterol
- High blood pressure
- Diabetes (high blood sugar)
- Overweight/obesity
- Physical inactivity

For more on how to start reducing your heart disease risk, see the resources list on page 24.



Box 22

Check It Out**Here's a prescription for better health:**

- Blood pressure—healthy women should have it checked every 2 years; others may need it checked more often.
- Lipoprotein profile—checks blood levels of LDL, HDL, and total cholesterol and triglycerides; healthy women should have it once every 5 years.
- Blood glucose—tests blood levels of glucose (a sugar) and indicates risk for diabetes; healthy women age 45 and older should have blood glucose tested, especially if they are overweight; if it's normal and women are healthy and not overweight, it should be taken again in 3 years, while others will need it more often.
- Overweight and obesity check—this is done by calculating your BMI (body mass index) and measuring your waist circumference. BMI is a measure of your weight relative to your height, while waist circumference measures abdominal fat. Box 23 tells you how to calculate your BMI. A BMI of 25 or higher is overweight or obese. For women, a waist circumference of more than 35 inches indicates an increased risk for heart disease and other conditions. Your health care provider also will check you for other risk factors and conditions associated with obesity to determine the best treatment.
- Mammogram—a special x ray of the breast; healthy women age 40 and older should be screened for breast cancer with mammography once every 1 to 2 years; studies show screening is especially important for those aged 50–69; women also should do breast self-exams and have their doctor or health care provider do a clinical breast exam during routine physical exams.
- Pap test—this test checks a sample of cervical cells for changes that may lead to cancer; begin by having it as part of an annual gynecological exam and if normal 3 years in a row, talk with your doctor about how often to have it after that.
- Colonoscopy—examines the inside of the colon and rectum using a thin, lighted tube called a colonoscope; healthy women should have it once every 10 years starting at age 50.
- Bone density—this x ray measures bone thickness and strength (See Box 13.); postmenopausal women with one or more risk factors for osteoporosis (besides menopause) or who suffer fractures, and women age 65 and older regardless of added risk factors should have this test.
- Electrocardiogram (EKG or ECG)—this tests the heart's electrical activity as it beats; women over age 40 should have a baseline EKG.



Check Your BMI

Body mass index—or BMI—relates weight to height and is used as an indicator of total body fat. It is used with waist circumference to see if you're overweight or obese.

To find your BMI, use the method below or go to the Aim For A Healthy Weight Web page at www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm, which offers tables and an automatic calculator.

Here are three steps to find your BMI:

- Step 1: Multiply your weight* in pounds by 703.
- Step 2: Divide the answer by your height in inches.
- Step 3: Divide the answer again by your height in inches.

The BMI score means:

18.5–24.9	Normal
25.0–29.9	Overweight
30.0 and above	Obese

**Weight wearing underwear but no shoes*



How Do I Stop Therapy?

If you are on menopausal hormone therapy, talk with your health care provider about whether or not to stop it. Also ask about the best way to discontinue the treatment. You can stop abruptly or by gradually reducing the dose over several months. With either method of stopping the medication, you may have menopause-like symptoms.

Bone loss will likely resume after discontinuing hormone therapy. So if you have been taking hormones to prevent osteoporosis, be sure to talk to your health care provider about other FDA-approved medications and lifestyle actions that can help to minimize further bone loss. (See Box 13.) If you stop treatment and menopausal symptoms occur, talk with your health care provider about alternative treatments (See Box 4.). But be aware that some of these remedies have not been proven effective or safe.





Questions Remain

As noted, the WHI will continue to follow women in the menopausal hormone therapy trials until 2010. Among the questions yet to be answered are if and when increased risks and benefits decline after use of the therapy ends.

The WHI observational study is also examining other forms of hormone therapy, including other estrogens, progestins, and SERMs.

Additionally, scientists funded by the NHLBI, the National Cancer Institute, the National Institute on Aging, the National Institute of Arthritis and Musculoskeletal and Skin Diseases, the National Center for Complementary and Alternative Medicine, the National Institute of Mental Health, and other units of the NIH are supporting research on the effects of menopausal hormones and alternative therapies on menopause symptoms and postmenopause conditions. The research includes

studies of: The effects of soy phytoestrogens on cardiovascular disease and osteoporosis, postmenopausal use of phytoestrogens on cardiovascular risk and health, black cohosh and antidepressants on hot flashes, botanical dietary supplements on women's health, plant estrogens on breast cancer, and estrogen on cognition.

For More Information

The following resources can help you learn more about hormone therapy-related topics:

**National Heart, Lung,
and Blood Institute**
National Institutes of Health
NHLBI Health Information Center
P.O. Box 30105
Bethesda, MD 20824-30105
Phone: (301) 592-8573
TTY: (240) 629-3255
Fax: (301) 592-8563
Web site: www.nhlbi.nih.gov
WHI Web site: www.whi.org

National Cancer Institute
National Institutes of Health
Phone: (800) 4-CANCER
(800-422-6237)
Web site: www.nci.nih.gov

**National Center for Alternative
and Complementary Medicine**
National Institutes of Health
NCCAM Clearinghouse
P.O. Box 7923
Gaithersburg, MD 20898-7923
Phone: (888) 644-6226
TTY: (866) 464-3615
International Phone: (301) 519-3153
Fax: (866) 464-3616
Web site: www.nccam.nih.gov

National Institute on Aging
National Institutes of Health
P.O. Box 8057
Gaithersburg, MD 20898-8057
Phone: (800) 222-2225
TTY: (800) 222-4225
Web site: www.nia.nih.gov
Publications Web site:
www.niapublications.org
Alzheimer's Disease Web site:
www.alzheimers.org

**National Institute of Arthritis and
Musculoskeletal and Skin Diseases**
Information Clearinghouse
National Institutes of Health
1 AMS Circle
Bethesda, MD 20892-3675
Phone: (301) 495-4484
or (toll free) (877) 22-NIAMS
TTY: (301) 565-2966
Fax: (301) 718-6366
Web site: www.niams.nih.gov

**NIH Osteoporosis and Related Bone
Diseases—National Resource Center**
1232 22nd Street, NW
Washington, DC 20037-1292
Phone: (202) 223-0344
or toll-free (800) 624-BONE
Fax: (202) 293-2356
TTY: (202) 466-4315
Web site: www.osteoporosis.nih.gov

**National Institute of Child Health
and Human Development**
National Institutes of Health
NICHD Clearinghouse
P.O. Box 3006
Rockville, MD 20847
Phone: (800) 370-2943
Fax: (301) 984-1473
Email:
NICHDclearinghouse@mail.nih.gov
Web site: www.nichd.nih.gov

Food and Drug Administration
**U.S. Department of Health and
Human Services**
5600 Fishers Lane
Rockville, MD 20857
Phone: (888) INFO-FDA
(888-463-6332)
Web site: www.fda.gov

Office on Women's Health
**U.S. Department of Health
and Human Services**
200 Independence Avenue, SW
Room 730B
Washington, DC 20201
Phone: (202) 690-7650
Fax: (202) 205-2631
Web site: www.4women.gov/owh

**National Women's Health
Information Center**
**Department of Health
and Human Services**
8550 Arlington Blvd
Suite 300
Fairfax, VA 22031
Phone: (800) 994-WOMAN
(800-994-9662)
or (888) 220-5446
Web site: www.4women.gov

North American Menopause Society
Post Office Box 94527
Cleveland, OH 44101
Phone: (440) 442-7550
Automated Consumer Request Line:
(800) 774-5342
Fax: (440) 442-2660
E-Mail: info@menopause.org
Web site: www.menopause.org

Alliance for Aging Research
2021 K Street, NW, Suite 305
Washington, DC 20006
Phone: (202) 293-2856
Fax: (202) 785-8574

American Heart Association
National Center
7272 Greenville Avenue
Dallas, TX 75231
Phone: (800) AHA-USA-1
(800-242-8721)
Web site: www.americanheart.org

American Stroke Association
National Center
7272 Greenville Avenue
Dallas TX 75231
Phone: (888) 4-STROKE
(888) 478-7653
Web site: www.strokeassociation.org

National Osteoporosis Foundation
1232 22nd Street, NW
Washington, DC 20037-1292
Phone: (202) 223-2226
Web site: www.nof.org



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Heart, Lung, and Blood Institute

NIH Publication No. 05-5200
Originally Printed October 2002
Revised June 2005