This pamphlet examines menopause and the changes associated with it. Menopause is briefly described, surgical menopause is explained, and the relationship between menopause and the reproductive cycle is discussed. Signs of menopause are described, including hot flashes and vaginal and urinary tract changes. Postmenopausal osteoporosis is explained and women most at risk of developing osteoporosis are identified. Suggestions, in the form of lifelong eating and exercise habits, are given for preventing or delaying the onset of osteoporosis. Situations are discussed in which treatment is needed for menopause and available treatments, such as estrogen replacement therapy (ERT), are explored. Cases in which ERT should not be used are considered. Mental health during menopause is discussed, mood changes and depression during menopause are described, and the role of sexuality during and after menopause is explained. The role of good nutrition in helping women stay healthy as they grow older is examined. The dangers of smoking and the need for physical exercise are also discussed. The book concludes with a list of other National Institute on Aging publications of interest to older women. (NB)
THE MENOPAUSE TIME OF LIFE

U.S. DEPARTMENT OF EDUCATION
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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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What is Menopause?

Menopause or "change of life" is the time in a woman's life when menstruation stops and the body no longer produces the monthly ovum or egg from which a baby could be formed. It usually occurs at about age 50, although it can occur as early as 45 or as late as 55. Menopause is usually considered finished when a woman has not menstruated for a year. Completion of menopause marks the end of the childbearing years.

Menopause is natural and takes place smoothly for most women. It is part of a gradual process sometimes called the climacteric, which begins about 5 years before menopause and may last about 10 years. During the climacteric a woman's body produces decreasing amounts of the hormones estrogen and progesterone. This reduction in hormone production causes menstrual periods to stop.

Many women welcome menopause—no more periods, and after at least a year without a period to be sure it's safe, no more worry about pregnancy.

Surgical Menopause

Surgical procedures involving the ovaries (see diagram) and the uterus
can affect how menopause takes place. When the uterus is removed (called a hysterectomy) and the ovaries remain, menstrual periods stop; meanwhile, other aspects of menopause occur in the same way and at the same age that they would occur naturally. When only one ovary is removed, menopause occurs normally. With the removal of both ovaries, complete menopause takes place abruptly, sometimes with intense effects.

The Reproductive Cycle and Menopause

During puberty increasing amounts of the female hormones estrogen and progesterone stimulate the reproductive system to mature and menstruation to begin. For more than 30 years of a woman's life (except during pregnancy) a monthly cycle takes place. The pituitary gland, located at the base of the brain, produces hormones that stimulate the ovary to release a new ovum or egg cell each month. The ovum produces the hormones estrogen and progesterone which cause the lining of the uterus to become thicker in order to receive and nourish a fertilized egg which could develop into a baby. If fertilization does not occur, estrogen and progesterone levels drop, the lining of the uterus
breaks down, and menstruation occurs. Then the whole process begins again.

After age 35 estrogen and progesterone levels begin a very gradual decline. In the late forties this process accelerates and hormone levels eventually decrease so that the menstrual cycle becomes irregular or stops.

Following menopause the ovaries still produce some estrogen; other tissues and organs also produce hormones which are converted to estrogen.

What are Signs of Menopause?

The only sign of menopause for many women is the end of menstrual periods. They may stop suddenly or become irregular, with a lighter or heavier flow and with longer intervals between periods, until they eventually stop. About 80 percent of women experience mild or no signs of menopause; the other 20 percent report symptoms severe enough to seek medical attention.

Two other signs associated with menopause are hot flashes (which are often accompanied by sweating) and vaginal dryness. The fatigue, heart palpitations, or depression reported by some women during this time may be symptoms of menopause in some cases, but there is wide disagreement about this.
Hot Flashes

Hot flashes, or hot flushes, are one of the more common and earliest sign of menopause, sometimes beginning several years before other signs. They give a sudden feeling of warmth throughout the upper body or over all of the body. The face may become flushed, with red areas appearing on the chest, back, shoulders, and upper arms. This is often followed by perspiration and a cold clammy sensation as the body temperature readjusts. The process may last anywhere from a few seconds to a half-hour or more.

Hot flashes may occur several times a day or only once a week. The sensations vary from woman to woman and from one episode to another. In most cases hot flashes are not severe and usually disappear after a few months, although in some women they can continue for several years. Sometimes hot flashes disturb sleep at night and may cause heavy perspiration.

Vaginal and Urinary Tract Changes

With age the walls of the vagina become thinner, less elastic, and drier. The vagina is then more vulnerable to infection. Also, these changes sometimes result in uncomfortable or painful sexual intercourse, although continuing regular sexual activity will reduce
the possibility of problems developing. [Also see section on sexuality and menopause.]

As body tissues change with age some women experience urinary stress incontinence, which is the loss of a small quantity of urine when exercising, coughing, laughing, or performing other movements that put pressure on the bladder. As well as age changes, lack of physical exercise may also contribute to the condition. While incontinence can be embarrassing, it is common and treatable—for example, certain exercises can strengthen the affected muscles or sometimes surgery is performed to cure it.

Some women are prone to urinary tract infections. These tend to recur but are easily treated with antibiotics or other measures. Preventive techniques include urinating after intercourse, not keeping the bladder over-full for long periods, drinking adequate amounts of fluids, and keeping the genital area very clean. It is important to see a doctor as soon as any symptoms appear, such as painful or frequent urination.

**Osteoporosis**

"Postmenopausal" osteoporosis is closely associated with menopause since it is caused in part by the decrease in estrogen that occurs with menopause. It is a major cause
of bone fractures in older women. In women with this condition bone mass slowly decreases over the years to produce thinner, more porous bone. Osteoporotic bone is weaker than normal bone and fractures more easily. Common sites for fractures are the spine, wrists and forearms, and hips.

Osteoporosis is sometimes called the "silent disease" because there are no symptoms during the early stages. Too often the condition is not recognized until it reaches an advanced stage when fractures are most likely to occur.

Once bone is lost it cannot be replaced, so an early prediction of which individuals are at high risk or have already developed mild osteoporosis is important. Unfortunately, accurate and inexpensive medical tests are not yet widely accessible. The most accurate tests—single and dual photon absorptiometry and the computerized axial tomogram or CT scan—are expensive and usually available only at major medical and research centers.

Who is most likely to develop osteoporosis? In everyone the risk increases with age, but it is highest in white women after menopause—particularly in individuals who have an early or surgical menopause. Other people at high risk include those with fair skin (especially
blonds and redheads), those whose diets are low in calcium, and those who are physically inactive, underweight, or smoke cigarettes. Women with a close relative (mother or sister) with the disease are also at high risk.

Lifelong habits may be the best way to prevent osteoporosis. By practicing simple health measures young women can prevent bone loss and older women who have already developed osteoporosis can slow down further bone loss. These measures include eating foods high in calcium, going outdoors for a short time every day (exposure to sunlight helps the body manufacture the vitamin D necessary for calcium absorption), and exercising regularly in activities that place stress on the weight-bearing bones (such as walking, jogging, or aerobics). Also, for women most likely to develop osteoporosis, some doctors recommend the use of estrogen replacement therapy (see next section).

When Does Menopause Need Treatment? What Treatments are Available?

Menopause is a natural part of aging and does not necessarily require treatment. But if you experience great discomfort at this time,
consult your physician.

For severe symptoms of menopause (hot flashes, vaginal changes) and to prevent osteoporosis, many doctors prescribe estrogen replacement therapy (ERT), a synthetic estrogen which supplements the decreasing amounts of estrogen produced by the body. Estrogen in pill form is most often used for the prevention of osteoporosis; topically applied estrogen creams are used for severe vaginal symptoms.

Third, cancer of the endometrium (lining of the uterus) has been found to occur more frequently in women who use ERT containing estrogen as the only ingredient, compared with untreated women. However, today’s ERT usually combines estrogen and progestin (another female hormone), and this combination appears to reduce the risk of endometrial cancer. But even with this improved form of estrogen therapy, experts do not yet know if its long-term use is completely safe. This is why ERT is recommended primarily for women who are at greatest risk of developing osteoporosis [see section on osteoporosis].

Who should not use ERT? Some women are not good candidates since estrogen can worsen certain conditions or increase the risk of complications. Persons who should avoid ERT are those who have had
(or now have) heart disease, endometrial or breast cancer, stroke, migraine headaches, high blood pressure, blood clots, or other disorders related to the circulatory system.

Other conditions warrant that ERT be used with extra caution. These include exposure at birth to diethylstilbestrol (DES), obesity, a history of cancer in the family, vaginal bleeding, liver or gallbladder disease, and diabetes.

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Mental Health and Menopause

Most women have a healthy outlook throughout the menopause process and afterward feel "in their prime," glad to no longer be menstruating.

Mood changes may occur during menopause. Other symptoms commonly reported are fatigue, nervousness, excess sweating, breathlessness, headaches, sleeplessness, joint pain, depression, irritability, and impatience. These symptoms may be due in part to shifting hormonal balances or other factors such as heredity, general health, nutrition, medications, exercise, life events, and attitude. More research is needed on the role hormones play and how they interact with these other factors.
Estrogen can be highly effective but it must be used with care. One reason for this caution is that roughly 10 percent of women who use estrogen experience side effects such as headaches, nausea, vaginal discharge, fluid retention, swollen breasts, and weight gain.

Second, some early studies suggested that breast cancer and heart disease are associated with estrogen use. Current evidence* indicates that no relation exists between breast cancer and ERT. Studies on heart disease however show contradictory results; for example, researchers at the Harvard Medical School recently found that estrogen may possibly reduce heart disease, while reports from the Framingham Heart Study stated that heart attack and stroke tend to occur more frequently among persons using estrogen.

If you are at high risk of developing osteoporosis or have severe symptoms accompanying menopause, discuss the use of ERT with your doctor. To help ensure that ERT is safe for you, he or she should perform a thorough medical history

*From the NIH Consensus Development Conference on Osteoporosis held in April 1984. A conference report is available from the NIH Office of Medical Applications of Research, Bldg. 1, Rm. 216, Bethesda, MD 20892.
and examination before prescribing treatment. Then, as treatment proceeds, continue to see your physician for frequent follow-up examinations.

Stay informed. Research is being conducted at many universities and medical centers, and this research periodically results in new information that may bear on your treatment.

Other Treatments for Menopause

Several drugs are available to reduce hot flashes or to relieve other menopausal symptoms for women who cannot use ERT.

Some women report that certain vitamins are successful in reducing hot flashes or stress, although no scientific evidence supports these claims. (The safe use of vitamin and mineral supplements requires the advice of a health professional; see section on nutrition.)

Doctors sometimes prescribe tranquilizers for women who are particularly tense, irritable, or nervous, but they are not recommended for symptoms specifically related to menopause. Tranquilizers are like other drugs: they can have side effects and should be used with care. Before turning to medication to reduce stress, many people first try exercise, an improved diet, or relaxa-
There is no specific mental disorder associated with menopause, and research shows that women experience no more depression during these years than at other times during life. Tension or depression can occur at any stage, but when these states occur during menopause, there is a tendency to blame the menopause process. Thus women with emotional problems are on occasion tagged "menopausal," sometimes long after menopause has taken place.

Important life changes often coincide with the menopause years: perhaps grown children are leaving home, aged parents need more attention and assistance, or a woman's life is taking on new directions. This is a time when many women think about growing older and the changes it will bring.

Developing positive attitudes toward menopause and aging is an important part of adjusting to life changes. As long as menopause is regarded as simply a normal life change and a woman goes on to participate in satisfying activities, coping with the transitions and body changes becomes easier. But viewing menopause as the end of a useful life only makes the transition difficult—so that if a crisis develops, such as a
divorce or the need to care for parents who are ill, menopause is likely to seem an added burden.

Supportive friends and satisfying activities help ease any transition or crisis. Emotional support can come from a variety of sources: a friend, your husband, or relatives. Various types of support groups exist which can provide opportunities for you to talk with other people who are going through similar experiences. When coping is difficult, it may be useful to consult a gynecologist or seek the services of a social worker, psychologist, psychiatrist, or other mental health professional.

Sexuality and Menopause

An active and fulfilling sex life can continue throughout menopause. While some physical responses slow with age, the capacity and need for sexual expression continues into old age. Some women report that sex is even more enjoyable after menopause, possibly because pregnancy is no longer a concern and there is more time and privacy when children are gone from home.

Although many women report no change in their sexual feelings or performance during and after menopause, certain physical changes
occasionally cause sexual problems for some women. As the body produces less estrogen, for example, the walls of the vagina become smooth, drier, and less elastic. This may cause tiny sores on the vaginal wall, a burning or itching sensation, and intercourse may be uncomfortable. These physical changes can be treated successfully through a number of methods including vaginal lubricants and estrogen creams. Whether or not estrogen is used however depends on the nature of the problem and on whether the individual can tolerate estrogen.

Staying Healthy

Good health depends on many factors—heredity, diet, exercise, rest, and if one smokes or drinks alcohol. No one has the correct formula for a long and healthy life, but there are measures you can take to enhance your chances of staying healthy.

Nutrition

Just about everyone agrees that a well-balanced, nutritious diet is important for good health, but we still have a lot to learn about what constitutes a good diet. Nutritional requirements vary from person to person and often change with age as many people become less active and are able to handle fewer calories. We do know that eating a wide variety
of foods every day is essential since no single food supplies all the necessary nutrients.

Evidence shows that diet can increase the likelihood of developing certain types of cancer and heart disease, as well as other disorders. The following guidelines (issued by the National Research Council) offer suggestions to help reduce the risk of cancer and other diseases:

- Eat fewer foods containing saturated and unsaturated fat. Fat intake should be no more than 30 percent of daily calories.

- Eat fruits, vegetables, and whole-grain cereal products, especially those high in vitamin C and carotene (oranges, grapefruit, dark-green leafy vegetables, carrots, winter squash, tomatoes, cabbage, broccoli, cauliflower, and brussel sprouts).

- Eat very little salt-cured, salt-pickled, or smoked foods such as sausages, smoked fish and ham, bacon, bologna, and hot dogs.

A balanced diet with adequate calcium* can help avoid bone loss that occurs with age. Foods high in calcium include milk and other dairy products, sardines and salmon.

*Experts recommend 1,500 mg of calcium each day for women after menopause and 1,000 mg for younger women.
canned with bones, oysters, and dark-green leafy vegetables. Milk processed to be more digestible is available for those who have problems digesting milk; soy or acido-
philus milk can also be used. In addition, calcium supplements (especially calcium carbonate) are frequently prescribed.

Getting enough vitamin D is also important since it is needed by the body to absorb calcium. The recommended daily allowance (RDA) for vitamin D is 400 units (International Units), and it is provided in foods such as fortified milk, egg yolk, liver, tuna, salmon, and cod liver oil. Vitamin D is also produced in the body after exposure to sunlight (only a short period of exposure each day is sufficient).

To further minimize bone loss, some doctors suggest that women eat less red meat and avoid certain carbonated soft drinks. These contain high levels of phosphorus (a mineral normally present in almost equal amounts in bone and teeth) and might contribute to a phosphorus-calcium imbalance which has been associated with osteoporosis.

Other health-promoting guidelines include avoiding excess coffee and tea, as well as foods high in sugar. Sugar contains empty calories that take the place of nutritious foods and adds excess weight. Too much
Looking Ahead

No one has all the answers about menopause. Medical research is beginning to give us more information, but myths and negative attitudes remain deep-seated. Fortunately, more women are challenging stereotypes, gaining support from other women, learning about what takes place in their bodies, and taking more responsibility for their health.

More and more women are moving in positive new directions at mid-life and assuming new roles in society. It is common to find mid-life women in college classes, professional schools, and other types of educational programs. Women are training for and holding jobs in many areas once reserved for men.

There is wide disagreement concerning the use of vitamin supplements. Taking them without your doctor's instructions can be risky since large doses of some vitamins can have serious side effects. Vitamins A and D in large doses are particularly dangerous, and even large doses of vitamin C can cause problems. Vitamins depend on one
another to be utilized in the body, so taking one without its counterparts may be useless.

*The Hazards of Smoking*

There are many good reasons for not smoking. Probably most important is that smoking greatly increases the possibility you will develop lung cancer—now the leading cause of death from cancer in women. Heavy smokers also tend to have an earlier menopause, which in turn has been linked to higher rates of cardiovascular disease and bone loss.

*Physical Exercise*

Many experts recommend physical exercise to maintain a healthy body. Exercise is especially important for bones and can help prevent osteoporosis. In addition, many women report that they are more relaxed and in a better mental state when they exercise regularly.

Consult your doctor before starting a rigorous exercise program. He or she can help you decide which types of exercises are best for you. Also an exercise program should be graduated: it should start slowly and build up to more strenuous activities.

Aging is a normal part of the life process, but it is common to sometimes fear growing older and to worry about the changes it will
bring. The incidence of disease increases with age; still, most women remain relatively healthy and independent until late in life. Advertising and fashion stress youth and beauty, but in time most people discover that the finest aspects of human relationships are based on more enduring qualities which enable us to maintain loving relationships and satisfying work and leisure activities throughout all stages of life.
Other NIA Publications of Interest to Older Women

**Brochures**
Age Pages (a compilation of Age Page fact sheets, including the titles listed below)
Age Words: A Glossary on Health and Aging
NIA Publications List
Q & A: Alzheimer's Disease
Self-Care and Self-Help Groups for the Elderly: A Directory

**Age Page**
(a series of individual fact sheets)

**How We Age:**
— Aging and Your Eyes
— Hearing and the Elderly
— Sexuality in Later Life
— Skin: Getting the Wrinkles Out of Aging
— Taking Care of Your Teeth

**Disorders and Diseases:**
— Arthritis Advice
— Cancer Facts for People Over 50
— Constipation
— Dealing With Diabetes
— Digestive Do's and Don'ts
— High Blood Pressure: A Common but Controllable Disorder
— Osteoporosis: The Bone Thinner
— Urinary Incontinence
**Health Promotion:**
- Don't Take it Easy—Exercise!
- Safe Use of Medicines by Older People
- Smoking: It’s Never Too Late to Stop

**Safety and Crime Prevention:**
- Accidents and the Elderly
- Crime and the Elderly
- Health Quackery
- Heat, Cold, and Being Old

**Medical Care:**
- Considering Surgery?
- Finding Good Medical Care
- Who’s Who in Health Care

**Nutrition:**
- Be Sensible About Salt
- Dietary Supplements: More is Not Always Better
- Hints for Shopping, Cooking, and Enjoying Meals
- Nutrition: A Lifelong Concern

To obtain single copies of these publications, write to the NIA Information Center
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