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Introduction to Menopause

“The Change” is how our grandmothers referred to the menopause and the term is as appropriate now as it was then. Menopause is a time of physical, emotional, psychological, intellectual, and spiritual changes; the study of menopause is the fastest growing area of women’s health. As baby-boomers age the topic is increasingly relevant to a larger percentage of the population and therefore it is frequently discussed in the media. Much of the information is confusing and ambiguous which often leaves the public feeling frustrated about how to apply the information to their lives.

This course is designed to help health professionals decipher the vast amount of information available, so they can better understand the material and, as a result, better educate others. The bottom line is that most of the decisions the individual woman will make concerning her health will be based on her particular genetic and lifestyle risk factors. As a result, the decisions are personal in nature and require each woman to have all the information available with which to make intelligent and informed choices. The nurse’s role is to assist with the information so to better understand the options and work constructively with the physician to develop a personal plan tailored to individual needs.

There are several common concerns women entering the menopausal years may have. Including, but are not limited to, the following:

- How will I feel mentally, physically, and sexually?
- Will I age more rapidly without the female hormones? What can I do to slow the aging process?
- Will I still be able to function effectively in the workplace?
- Will my husband lose interest in me sexually and possibly have an affair with a younger woman?
- Will I start to look masculine?
- Will I get osteoporosis, heart disease, or breast cancer?
- Should I take hormone replacement? If so, should I take the traditional kind or use a more natural form?
- If I decide against hormone replacement what else can I do to cope with the symptoms of menopause?

The average age of menopause in the U.S. is between 50 and 51 years (smokers often have an earlier onset). With an average lifespan of 78-81 years, most American women spend one-third of their lives after menopause. It is important these years be viewed as productive by the woman herself, as well as by society as a whole. In community service classes I teach on the subject I see numerous women question their value as human beings once their reproductive organs shut down. For many the word “menopause” carries an element of shame. As nurses we are taught to view health from a holistic perspective and are, therefore, well equipped to address the issues of low self-esteem surrounding menopause.

We understand menopause is not just a physical experience but an emotional, intellectual, sociocultural, and spiritual experience as well. By helping women view themselves from a holistic perspective we help them traverse the difficulties that come from the physical changes caused by menopause. This time of life can be one of learning, reappraisal of priorities, and self-renewal.

Part of the confusion surrounding the topic of the menopause has to do with how the terms are defined. For the purpose of this course “menopause” is defined as the final menstrual period and is determined after a full year without menstrual bleeding. “Postmenopause” is the rest of one’s life after menopause. Most of the troubling symptoms associated with menopause actually occur during “perimenopause” which is defined as the two years prior to and the two years after the cessation of menstrual bleeding. Sometimes perimenopause is also called the “climacteric.” Occasionally the term “premenopause” may be seen in the media. This is usually meant to cover all the reproductive years prior to the onset of menopause.

The Physiology of Menopause

As a five-month old fetus, the human ovary has an estimated two million follicles that house and develop her eggs. From then to puberty the number of follicles drops to about three hundred thousand. Starting at puberty each month about 20 eggs begin maturing but usually only one of those eggs is actually released and made available for conception. During her reproductive years the average woman will ovulate about 500 times. The rest of her follicles gradually shrink in size causing a decrease in ovarian mass from 14 grams before menopause to about 5 grams after. Fertility peaks at age 24 and starts declining at age 35, long before irregular periods begin.

The Normal Menstrual Cycle

In order to understand what happens to the body at menopause, it is necessary to review the basic physiology of the normal menstrual cycle. Please refer to Figure 1 for clarification.

Insert FIG 1

During the normal cycle the pituitary gland secretes two messenger hormones that com-
municate with the ovaries in order to stimulate ovulation. The first of these hormones is called “follicle stimulating hormone” (FSH) and it communicates estrogen needs to the ovaries. The second messenger hormone, “luteinizing hormone” (LH), regulates the release of progesterone.

The first phase of the menstrual cycle (day 0 to approximately day 14) is known as the “follicular phase.” During this time the release of FSH from the pituitary gland into the bloodstream signals the ovaries to develop several egg-containing follicles. At this time the ovaries are also signaled to secrete increasing amounts of estrogen until one of the follicles reaches the surface of the ovary. As the estrogen levels reach the required amount, the pituitary is signaled to stop production of FSH and to release LH, which travels to the ovaries and causes the follicle to burst, thus releasing its egg.

The second phase of the normal menstrual cycle is known as the “luteal phase” and covers approximately day 14 to day 28. During this phase estrogen levels drop off and progesterone levels increase. If fertilization does not occur, the levels of both estrogen and progesterone drop off toward the end of the cycle and menstruation occurs.

In the normal menstrual cycle a delicate balance between estrogen and progesterone occurs. This balance regulates many of the body’s systems: e.g., fluid balance, mood, sex drive, endometrial growth, appetite, skin, bone density and fat distribution.

The Perimenopausal Menstrual Cycle

During the perimenopausal phase the delicate balance between estrogen and progesterone is upset. This imbalance is what causes most of the symptoms associated with the perimenopause. During this time the ovaries do not respond to FSH stimulation by increasing estrogen production as they do in the normal cycle. As a result the pituitary continues to produce FSH in order to stimulate estrogen production. This causes a lengthening of the follicular phase of the cycle that results in longer cycles. Elevated serum FSH levels and longer cycles are two signs that a woman has entered the perimenopause. Eventually, when enough estrogen has been released to cause follicular rupture, the LH phase of the cycle occurs. During the perimenopause, ovarian estrogen production diminishes to a point at which there is not enough estrogen to cause the LH release. As a result menstruation ceases. Once a woman has gone for an entire year without menstruating she is declared menopausal.

Signs & Symptoms of the Perimenopause

Many of the alternatives for the management of perimenopausal symptoms are based on countering the effects of the body’s declining estrogen levels by stimulating estrogen receptors, the molecules that bring the hormone into its target cell. Most of the body’s cells have estrogen receptors on them. As a result, the decreasing amount of ovarian estrogen that characterizes the perimenopause, affects as many as 300 different body parts. About 75% of women experience some symptoms associated with these effects.

The more we learn about estrogen receptors the more apparent their complexity becomes. There are at least two chemically different estrogen receptors; they are known as alpha and beta receptors. In general the alpha receptors are involved in the reproductive system while the beta receptors are active in other body tissues. To complicate things even further, many receptors are able to pair up with molecules that are chemically similar to estrogen. Some of these pairings result in estrogen-like activity in the cell while others do not. In many cases, these pairings serve to block estrogen activity by filling up the receptors so that estrogen molecules cannot attach. This topic will be explored in more depth in a later section. For now it is only important to understand that the approach used to manage the signs and symptoms of menopause often boils down to which of the body’s estrogen receptors we want to affect.

This section will discuss the health issues related to the onset of symptoms as well as provide practical information for the nurse to use in teaching patients what triggers these symptoms and how to manage them. Conventional as well as alternative management solutions will be discussed so both nurse and patient are aware of all the options the modern perimenopausal woman has at her disposal. The informed patient is better able to discuss her particular concerns with her physician in a way that promotes a feeling of empowerment at a time in life when she may be feeling out of control over much of what is happening to her body. This sense of empowerment over the process keeps the woman from feeling overwhelmed and/or depressed about what is happening.

Uterine Changes

Uterine changes occurring during the perimenopausal years include irregular bleeding, prolonged bleeding and irregular ovulation (which can make a woman uncertain as to whether she has missed a period due to the perimenopause or because she is pregnant). When any of these symptoms occur it is recommended that the woman see her health care provider in order to rule out serious diseases associated with these symptoms such as uterine cancer, uterine fibroids and cervical cancer.

Hot Flashes

Hot flashes are the most widely recognized sign of perimenopause. Approximately 80% of perimenopausal women experience at least mild hot flashes. They are caused by vasomotor instability that occurs when the brain’s temperature regulating mechanism malfunctions as a direct result of decreased estrogen production. During menopause, a diminished level of estrogen effects the hypothalamus - the part of the brain responsible for regulating body temperature, as well as controlling sex hormones, sleep cycles and appetite. The decreased levels of estrogen can confuse the hypothalamus, also known as the body’s thermostat, causing it to overheat.
Blood vessels near the skin’s surface dilate as a result of overheating and in turn result in perspiration to cool the body. Hot flashes often feel like a rush of warmth to the face, to the upper body and even sometimes to the entire body. The woman having a hot flash may feel fine one minute and then intensely hot the next. Women, who experience hot flashes, may experience typical hot flashes or slower flashes, known as “ember flashes.” The standard hot flashes occur suddenly and can reach the maximum intensity in less than a minute. The slower ember flashes can begin quickly; however, they are usually less intense but can last about a half an hour. Ember flashes can sometimes linger for years.

Hot flashes may be associated with annoying sensations such as heart palpitations, dizziness and crawling skin. They typically last from one to three minutes (elevated skin temperature may last as long as 45 minutes) and may occur as rarely as once a month or as often as 20 times a day. About 50% of women experience at least one hot flash per day. They may be triggered by hot weather, hot liquids and/or meals, alcohol, a warm room and emotional upset. Smokers are more likely to experience hot flashes than are non-smokers. Hot flashes are rare in Japan, which suggests to some experts that they may be affected by diet, exercise and cultural influences.

A study published in the Journal of Obstetrics and Gynecology revealed that women who had post menstrual syndrome (PMS) and menstrual cramps during their fertile years were twice as likely to suffer from hot flashes and mood swings during menopause than those who had relatively few difficulties with their menstrual cycles. The theory behind this is that women, who suffer from PMS, are usually hypersensitive to fluctuating hormones that occur during perimenopause. One study explored if PMS in women was predictive of hot flashes during perimenopause. One study explored if women, who suffer from PMS, are usually hypomenstrual cycles. The theory behind this is that who had relatively few difficulties with their and mood swings during menopause than those were twice as likely to suffer from hot flashes and mood swings during menopause than those who had relatively few difficulties with their menstrual cycles. The theory behind this is that women, who suffer from PMS, are usually hypersensitive to fluctuating hormones that occur during perimenopause. One study explored if PMS in women was predictive of hot flashes during perimenopause.

Management of the uncomfortable symptoms associated with hot flashes is often possible by following these suggestions:
- Wear natural fabrics - they tend to breathe easier
- Move to a cool spot and/or use a fan
- Keep cold drinks on hand and splash cold water on the face.
- Avoid caffeine, alcohol and tobacco
- Exercise regularly
- Avoid triggers such as spicy foods
- Avoid being underweight (extra estrogen to combat symptoms is stored in fat cells)
- Practice relaxation and meditation
- Consider Acupuncture

**Drug Management of Hot Flashes**

If natural remedies have failed to reduce the severity of hot flashes, there are several pharmacological options that may help to increase a woman’s quality of life during menopause. Also off-label use of antiseizure medications, such as Gabapentin (Neurontin), has proven effective in reducing the symptoms of hot flashes in recent studies.

Selective Serotonin Reuptake Inhibitors (SSRIs) are a class of antidepressants that can also help to reduce hot flashes in some women. Examples include Zoloft and Paxil. Recent results from a randomized, placebo controlled multicenter, double blind clinical trial showed that SSRIs were significantly more effective than the placebo in reducing hot flashes in menopausal women. Another study reported by Harvard University revealed that SSRIs - Paxil, Prozac and the Serotonin Norepinephrine Reuptake Inhibitor (SNRI) Effexor reduced the presence of hot flashes by 50% or more. These results were obtained from a randomized trial that assigned 254 postmenopausal women to either a medication or a placebo. Participants recorded the severity of the hot flashes in a diary. After six weeks of treatment, it was clear that the women who were prescribed the SSRIs and SNRIs had experienced a 50% to 55% reduction in hot flashes.

**Night Sweats**

Night sweats occur in about 80% of perimenopausal women. They are similar to a hot flash except that they occur at night, in bed, often due to night clothing and blankets. It is also believed that the body’s temperature regulating mechanism malfunctions more at night because it is no longer being inhibited by cognitive brain functions as happens during the day. By the time a woman changes her drenched clothing she is often wide awake and may have difficulty going back to sleep. Over the course of the perimenopause, this can lead to long-term sleep deprivation, which may magnify other symptoms associated with this time of life.

To effectively manage night sweats consider advising the following:

- Avoid caffeine before bedtime
- Keep a stack of clean nightwear by the bed
- Keep cold packs and cold drinks near the bed
- Open windows in the bedroom to improve cross-ventilation

**Poor Sleep**

Experts understand very little about why we need sleep but they do agree that sleep deprivation can lead to a variety of problems such as irritability, anxiety, depression, increased risk for cardiovascular disease and gastrointestinal disorders and increased stress on the immune system.

Women, in general, are more prone to insomnia than are men. Estrogen deficiency and its complex interaction with the neurotransmitter serotonin can exacerbate this tendency by causing difficulty in falling asleep, early morning awakening and/or restless sleep. Thus the perimenopausal woman is even more prone to sleep problems than are women in general. Estrogen replacement often helps this problem, especially if the sleep deprivation is also associated with night sweats. Studies show that taking estrogen increases the dreaming stage of sleep. This often reduces the symptoms associated with sleep deprivation. For those women who cannot take estrogen, synthetic or natural progesterone and/or Vitamin E supplements may help. Regular exercise is advised (not within three hours of bedtime); and a regular bedtime routine, which allows the mind to quiet down, can help prepare a woman for sleep.

Prescription sleep medications should be used only to break the cycle of poor sleep. They provide symptomatic relief but are not a cure. OTC sleep medications only work for a few days because the body builds up a tolerance to them, requiring more and more in order to induce sleep. Melatonin is sometimes touted as a sleep remedy by health enthusiasts and it may be helpful for occasional use. However, long-term use of this hormone may cause the body to adjust to higher levels of the drug, thus requiring more and more in order to cause sleep. Alcohol is sometimes thought of as a sleep remedy because it does induce sleep. However, it has a rebound effect as well and those who use it to get to sleep may find that they are wide awake at 3 a.m. and unable to get back to sleep.

It is important to remember that insomnia may also be a sign of thyroid problems. In fact many of the symptoms of the perimenopause are also symptoms of thyroid problems: e.g., are weight gain, lethargy, painful joints, confusion, sleep disorders and depression. Since thyroid disorders are more common in women in general, some researchers are sug-
gesting that thyroid screening should be a part of the regular physical exam that women of perimenopausal age undergo. Serum thyroid stimulating hormone (TSH) levels can be easily assessed. Because the serum test is very expensive, other experts do not recommend it as a routine procedure. However, if a woman’s sleep problems persist it may be worth mentioning to her that she contact her health care provider to discuss the situation.

Vaginal Changes

Genitourinary changes are often overlooked as a sign of estrogen depletion but they can significantly affect a woman’s quality of life. As the amount of estrogen in the body decreases, the walls of the vagina thin out which may result in incontinence, painful intercourse, vaginal dryness, itching and/or prolapsed bladder or uterus. Some women become more prone to yeast and bacterial infections in the vagina. Five years after menopause most women will have some thinning, dryness and atrophy of the vaginal wall unless they take estrogen replacement therapy. Hormonal changes may also cause shortening and narrowing of the vagina. All of these changes may lead to increased susceptibility to vaginitis caused by bacterial and yeast infections. Additionally, vaginal irritation caused by soaps, powders, tampons and internal birth control devices such as condoms and diaphragms may appear. As a result, a woman’s sex life may suffer during this period of her life. However, with ERT it is possible for some women to continue active sex lives even into their seventies and eighties.

Management of the vaginal changes associated with menopause includes the following:

- Use of water-soluble vaginal lubricants
- Suggest the woman-on-top position during intercourse - this allows her to control the degree of penetration
- Suggest masturbation or other forms of external stimulation
- Use of vaginal estrogen cream

Urinary Difficulties

Alterations in vaginal flora and changes in vaginal pH levels from acidic to alkaline may lead to an increase in urinary tract infections. As estrogen levels decrease the urethra becomes dryer and less elastic. The muscles that control the urge to urinate get weaker. These changes may lead to frequent urination, painful urination, or stress incontinence (when coughing or sneezing). Some researchers believe that atrophy of the bladder trigone, decreased sensitivity of the receptors of the bladder neck and urethral sphincter and the thinning of the urethral mucosa may also contribute to stress incontinence, urgency and an increased risk of urinary tract infections.

Daily Kegel exercises to strengthen the perineal muscles often help support the uterus, bladder and rectum. These muscles may become weakened by the process of childbirth and then further weakened as estrogen levels decrease during the perimenopausal years and as extra stress is put on these muscles during running and coughing. Signs that the perineal muscles are weakened include a sensation of heaviness in the pelvic region; stress incontinence when laughing, coughing, or exercising; cystocele (a bulging of the bladder into the vagina); rectocele (a bulging of the rectum into the vagina); and the dropping of the uterus into the vagina. Patients should be taught that strengthening the perineal muscles is as easy as stopping and starting the flow of urination because the same muscles are used. Teach them to hold the muscle tight for 2-3 seconds and then to relax. Then they should tighten and release the muscle five times as quickly as they can. Each of these two simple exercises should be done 100 times each day. They can be done anywhere at any time because nobody can tell they are being done e.g. while driving, watching TV, doing housework, lying in bed, or even at work. Developing a routine ensures consistency. While doing these exercises may seem tiring at first, once the muscles become better developed the fatigue will go away. Patients should be encouraged to tighten a little tighter each day. Other suggestions for managing urinary symptoms include:

- Drinking 8 glasses of water/day
- Medication for UTIs
- Planning for the need to urinate frequently

Depression/Anxiety/Stress

Most women transition to menopause without mood disturbance, but the perimenopause may represent a period of higher vulnerability for depression with risk increasing from early to late perimenopause and decreasing during postmenopause. There has been no direct link established between menopause and the risk of depression (the percentage is about the same as the population for women in general). Fluctuating hormone levels, however, may leave a woman in the perimenopausal phase vulnerable to depressed feelings, especially if she lacks support from friends and family members. Career women in high-powered positions may feel stronger than usual anxiety levels, and have less ability to cope with these changes than do women who lead less stressful lives. There is increasing evidence that although estrogen may alleviate mood swings in perimenopausal women, it does NOT seem to be effective in treating major depression or in enhancing the effects of older antidepressant medications.

Mood changes, if they occur, are often due to the above-mentioned hormonal fluctuations that can influence the levels of several CNS neurotransmitters such as dopamine, norepinephrine, acetylcholine and serotonin, all of which are known to influence mood, behavior, cognition and sleep patterns. As a result of these fluctuations in neurotransmitter levels, women who have easily managed life’s stresses up to this point may find that they are becoming increasingly irritable, anxious and forgetful during the perimenopausal period of their lives. New coping skills may be required in order to deal with these changes.

Women tend to be more susceptible to depression/anxiety reactions than men. Over the course of a lifetime the prevalence of depression is almost twice as high for women as it is for men; only about 25% of depressed persons ever receive treatment for it because they view it as a sign of weakness to ask for help. One recent study helps to shine some light on why women are more prone to depression than men. This research focused on the deeper dissimilarities of how depression is felt between men and women. According to the research, the primary emotion associated with depression in women is sadness. For men, it is irritability and anger. This disparity in emotions often causes healthcare professionals to overlook depression in men, due to the fact that sadness is usually the hallmark of depression. Moreover, depressed men are much less likely to seek help than depressed women. However, they are much more likely to commit suicide. The US Centers for Disease Control and Prevention has reported that the male suicide ratio is four to one compared with that of women.

There is also a physiological counterpart to the difference in depression between men and women. Evidence has revealed that testosterone and estrogen have varied effects on the brain’s transmitters, such as the hypothalamus and amygdala. Several studies have shown that during early development, testosterone and estrogen have the opposite effect on the neurotransmitter - gamma-aminobutyric acid (GABA). Testosterone helps to stimulate GABA, while estrogen inhibits it. During one of these studies, testosterone administered to mice helped to protect them from depression-like symptoms. However, the effect was only successful when given during adolescence.

Signs and symptoms indicating the presence of depression may include the following: a sad or discouraged mood, the inability to feel happiness, negative thinking such as self-blame and/or guilt, difficulty concentrating/remembering, self-destructive behavior, sleep disturbances and appetite/weight changes.

There appear to be certain times in a woman’s life when she is more prone to depression than other times. These windows of vulnerability include premenstrual days, pregnancy,
postpartum, post miscarriage, infertility, the perimenopausal years and old age. Most of these times in a woman’s life are also associated with fluctuations in estrogen levels which leads many experts to believe that estrogen fluctuation may have a profound effect on some women. Little is understood as to why some women are more affected than others are.

In theory, estrogen be used to improve mood during the perimenopausal years, either alone or in conjunction with antidepressants and/or psychotherapy. Until this approach has been tested in clinical randomized studies, however, it is not recommended that women take estrogen solely as a mood elevator.

It is also important to keep in mind that there are many things happening in the lives of middle-aged women which, when combined with the physiological predispositions suggested in the above paragraph, may lead to emotional difficulties that are unrelated to menopause. These challenges or life changes may be exacerbated by the decreased estrogen levels associated with this phase of life.

Such changes include rearing teenagers, caring for elderly parents, empty-nest syndrome and a husband coping with his own middle-age crisis. The alert nurse looks for signs of these emotional issues and tries to ascertain whether they could be contributing to the patient’s depression. If the feelings associated with these major life changes are not expressed then the unresolved anger and grief may lead to depression. It is recommended that any middle-age woman showing signs of depression/anxiety/stress be encouraged to:

- Talk with other women about her concerns (menopause support groups are available in most major cities)
- Discuss her feelings with her partner and listen to his feelings in return
- Read about ways to use this time of life for creative release
- Engage in activities that promote relaxation such as yoga, meditation and aerobic exercise
- See a professional counselor if symptoms persist.

The United States Centers for Disease Control and Prevention outline several common reactions to stress. These reactions include:

- Shock and disbelief
- Difficulty concentrating
- Tension and irritability
- Fear and anxiety
- Sadness and depression
- Insomnia
- Headaches and back pain
- Loss of appetite
- Anger

There are several coping techniques that healthcare professionals can educate their patients on how to effectively deal with stress. These suggestions include:

- Aerobic exercise at least three times/week to elevate brain endorphin levels (the importance of regular exercise will be discussed in greater depth in a later section)
- A balanced diet to ensure proper nutrition and body function (this will be discussed more fully in a later section)
- Eight hours of sleep/night
- Make a conscious effort to slow down and to do only one thing at a time
- Focus on the big picture instead of getting mired down in the details
- Learn to delegate
- Laugh daily to elevate brain endorphin levels
- Counter all critical messages you give yourself with positive self talk
- Learn to live in the present moment
- Do something relaxing and fun at least three times a week (watching TV does not count)
- Maintain a healthy sex life (inappropriate sexual behavior often leads to further stress)
- Do something good for someone else at least once a week
- Learn to forgive past grievances and jettison envy by concentrating on gratitude for what you have
- Talk openly about your feelings (at least three times a week) with your spouse or a close friend in order to develop a mutually accountable relationship
- Do one thing each week to become close to a relative
- Develop a support network
- Learn and practice assertiveness skills, self-acceptance and self-forgiveness
- Learn to recognize distorted thinking

### ALTERATIONS IN BODY METABOLISM DURING STRESS

**Carbohydrate Metabolism**
- Glucose is mobilized by increased glycogen synthesis and glycogenolysis.
- Glucogenic amino acids and glycerol are used for energy.
- Vitamin B1, B2, B3, B6, B12, Biotin, K, Mg, Inositol metabolism affected.

**Protein Metabolism**
- Increased protein breakdown occurs in peripheral tissues
- Amino acids then converted into glucose in the liver.
- Increased urinary excretion of nitrogen and creatinine Vitamin B3, B6, Folate, K, Mg, Zn, Biotin

**Fat Metabolism**
- Fat stores mobilized to produce energy.
- Increased circulatory fatty acids and cholesterol
- Increased fats in liver.
- Increased oxidation free radicals Vitamin B1, B2, B3, Biotin, Mg, iron, Phosphorous.

**Steroid Production**
- Increased gluco-mineral corticoids affecting metabolism of cholesterol, B2, B3, and pantothentic acid.

**Catecholamine Production**
- Increased epinephrine and norepinephrine production affecting metabolism of tyrosine, Iron, B6, Mg, Vitamin C.
patterns and then change them (e.g., perfectionism, people-pleasing tendencies, overgeneralizing and black-and-white thinking)

- Seek balance in all areas of your life
- Set attainable, measurable and flexible goals for yourself

Relaxation Techniques

Many mind/body medicine techniques such as yoga, meditation and prayer exist to aid in the promotion of relaxation. The theoretical framework underlying each of these practices states that health is determined by an interaction between many variables in a person’s life. These factors include genetic pre-dispositions to certain illnesses; exposure to certain elements in the environment such as germs, viruses, pollutants and chemicals; and psychological factors such as stress tolerance, lifestyle choices and attitudes.

Additional factors include the social environment such as supportive relationships, economic status, access to health care facilities, family and cultural attitudes toward health and illness. Some of these elements are under the individual woman’s control while others are not. Mind/body medicine operates on the principle that many of these factors, which appear to be out of our control, can be controlled with training and practice.

Thoughts and feelings have a direct influence on the body via the chemicals produced in the nervous and circulatory systems. In turn, through biofeedback patterns, the body impacts the brain and thus impacts the thoughts and feelings produced in the brain. Mind/body feedback loops work primarily through the stress and relaxation responses.

Much of the early research into the body’s reaction to stress and relaxation was done by a Harvard physician, Herbert Benson. Benson’s book, The Relaxation Response, first published in 1975, quickly became a bestseller because of its practical advice on using the mind and spirit to promote wellness.

The stress response, according to Benson, is a series of changes in the body that result from a person experiencing what he/she perceives to be a threat or challenge. The key phrase here is “what he/she perceives to be” because what one tells oneself about a situation directly determines whether a situation is perceived to be a threat or challenge. The key phrase here is “what he/she perceives to be” because what one tells oneself about a situation directly determines whether a situation is perceived to be a threat or challenge.

The relaxation response is the opposite physiological effects on the body. It is characterized by reduced blood pressure, respiratory rate, heart rate, oxygen consumption, blood flow to skeletal muscles and perspiration. Because of the relaxation response, the body can be better resist disease and repair injuries.

By discovering the direct connection between one’s thoughts, nervous system arousal, muscular tension and discomfort level, it is possible, through the relaxation response, to reduce one’s level of discomfort (for example, learning how to elicit the relaxation response may decrease the number and severity of hot flashes). Practicing these relaxation techniques usually changes the rate of lifestyle in order to incorporate these new activities into one’s daily life. It is also important to keep in mind that the interventions described in this section are rarely used alone. Instead two or three techniques may be used together according to the particular needs of the individual.

Yoga has been around for about 6000 years and is a perfect way to connect the mind, body and spirit. This is especially true of the yoga form known as Hatha yoga due to its emphasis on bending and stretching. This form of yoga has helped many women become more flexible, build bone mass, tone muscles and relieve many of the symptoms of menopause such as hot flashes, night sweats, bloating and incontinence. It is very gentle and therefore may be started at this time in life without too much concern for injury. It is still recommended, however, that women get approval from their health care provider before starting any exercise regimen.

When choosing a yoga video or class it is important to look for one that is slow-paced and that offers explanations as to the health benefits one can hope to achieve through this practice. Some will even explain the health benefits of each particular exercise as it is done. At any rate the main thing to be on guard against is a program that moves too quickly for one to be able to get the full benefits of relaxation. It is also important that each woman go at her own pace; to be helpful as a stress release, yoga should not become a competitive activity. The paradox of yoga is that the best results will be attained by trying to attain nothing at all.

Yoga, when combined with mindfulness meditation practice, can be a powerful tool for inducing the relaxation response. Mindfulness meditation concentrates on breathing and is very helpful in helping women learn to live in the present moment rather than worrying about past or future events. By learning to live in the moment and concentrate on one’s breathing for a formal practice period each day, it is hoped that the person practicing will begin to breathe at a slower pace on a regular basis and to worry less, thus reducing the level of anxiety and stress in his/her life. For best results this form of meditation should be practiced for twenty to thirty minutes a day.

The most important thing is to practice the technique of watching the breath and seeing how the mind wanders onto other topics and then to gently bring the mind back to the focus on the breath. It is far better for someone to do this for two minutes a day than to not do it at all. As with yoga, this should not become a source of competition (with oneself or with anyone else) as this will defeat the purpose. Mindfulness meditation is not a goal-oriented practice simply because goals are future-oriented and this practice is geared to orient the practitioner in the present.

Another form of meditation, known as progressive relaxation, is used by many health care disciplines to help patients relax. In this technique the mind is again focused on one thing but in this case the point of focus is not the breath, but the body itself. It is usually done in a reclining position and involves progressing through the body and focusing on one major muscle group at a time. It usually starts with the feet and moves upward, spending about one minute on each muscle group (feet, calves, thighs, buttocks, abdomen, chest, arms, shoulders, back and facial muscles). The muscles of each group are progressively tensed for a certain amount of time before moving on to the next group. The physiological response to the tightening and releasing of the muscles is to induce a state of muscle relaxation. When the muscles are deliberately tensed beyond their normal state, they usually relax beyond their normal state of relaxation and thus produce the benefits of the
relaxation response.

Techniques have been developed that can help alleviate anxiety for many people. One such procedure is known as Eye Movement Desensitization Reprocessing (EMDR). It was developed by Dr. Francine Shapiro, a psychologist at the Mental Health Research Institute in Palo Alto, CA. This procedure can help practitioners to quickly get to the heart of anxiety reactions, often within a few sessions. It is therefore much cheaper than traditional talk therapies. It works by mimicking the eye movements of REM sleep and therefore aids in processing events that may not have been adequately processed at the time in which they occurred. It is believed that the eye movements link the two hemispheres of the brain so that cognitive, sensory and emotional aspects of an experience can be processed together.

Once adequate processing takes place then anxiety levels drop. While this may not be necessary for many perimenopausal women, there are a significant number of women who may have unprocessed traumatic events in their past for which EMDR can offer great relief (it is especially promoted for those suffering from post-traumatic stress disorder). Nurses should at least be aware that the technique exists and scope out trained practitioners in their area so that they may give adequate referrals. It is also important to note that Dr. Shapiro warns the public to make sure that any EMDR practitioner chosen has gone through her training process. Suicidal and pre-psychotic patients are not good candidates for EMDR.

One recent study concerning the effectiveness of EMDR for stress reduction investigated its application on children with pediatric medical traumatic stress (PMTS). This condition is defined as psychological and physiological responses of children to pain, illness, injury and frightening treatment experiences. Common PMTS responses are fear, anger, stress and depression. Through a combination of over 20 randomized controlled studies and a recent meta-analysis, EMDR has been proven to be beneficial for children experiencing PMTS. Moreover, EMDR is now frequently recommended as one of the primary treatments for adults dealing with post-traumatic stress disorder (PTSD).

Another relatively new technique for anxiety reduction is known as "thought field therapy." This procedure, developed by psychologist Dr. Roger Callahan, utilizes various acupressure points on the body to help release tension associated with specific emotions. For example, there are pressure points on the face for anxiety, rage, shame, guilt and trauma. Some of these emotions may also be activated on other body parts such as the throat, underarm and the hands. It is believed that by lightly tapping these acupressure points while thinking anxiety producing thoughts, the person is able to release some of the energy stored in the body as a result of these thoughts. The theory is that over time, this may reduce the anxiety associated with the thoughts.

One of the benefits of this technique is that, once trained in the use of the technique, one can perform it on oneself. This helps to give one a sense of control over the anxiety-producing thoughts and the resulting emotions. This sense of control often serves to further decrease anxiety levels. No serious side effects have been identified with this procedure. However, according to the American Psychological Association, to date, there is no scientific evidence that thought field therapy is effective. In fact, one study published by the Scientific Review of Mental Health Practice showed no difference between thought field therapy and randomly selected tapping sequences.

Biofeedback is another technique that may prove useful in helping patients learn to relax. This technique uses special instruments attached to the body to provide information about what is occurring in the body at any given moment. The instruments pick up very subtle signals within the body of which the patient is often unaware. These signals then help her to see where impediments to relaxation may be occurring. An electromyelograph is often the instrument used in biofeedback sessions. In this process, sensors that measure electrical activity are attached to the skin. The readings provided by these sensors help determine the amount of tension existing in the muscles and help the patient learn to voluntarily control a number of autonomic processes that can reduce the pain associated with many types of injury and disease. The pain associated with headaches, including tension headaches and migraines, both of which are often associated with the perimenopausal period, can be significantly reduced with biofeedback training. By the end of treatment most patients have reduced their headache pain by 80-99% and are also able to give up their reliance on prescription pain medications in favor of OTC remedies. The improvement is usually life long because once the relaxation skills are learned they can be applied whenever needed.

Contraindications for the use of biofeedback include those who suffer from severe psychiatric conditions such as schizophrenia, paranoia, dissociative disorders, mental retardation and dementia, as well as some diagnosed with seizure disorders.

The ancient practice of acupuncture has been used for many conditions from headaches, pain, nausea and has also recently gained momentum as an alternative to medication and herbal remedies for menopausal women experiencing hot flashes. This procedure is used to treat patients by inserting and manipulating tiny needles into the skin. The central idea of acupuncture is that is a type of life force, or energy, known as qi (pronounced “chee”) flows through energy pathways, known as meridians, in the body. Each meridian corresponds to an organ responsible for certain bodily functions. Achieving the correct balance of qi is thought to promote health. A recent study published by the Journal of Acupuncture in Medicine sampled 53 post-menopausal women. Half of the subjects received traditional acupuncture medicine, while the control group was treated with sham needles that did not penetrate the skin. The women who received the traditional acupuncture after a 10-week period had a significant decrease in hot flashes compared to the other group. Researchers attribute the success to the increase of endorphins caused by acupuncture. The increased level of endorphins is thought to help stabilize the temperature control system of the body and therefore reduce the severity of hot flashes.

Medications may also be helpful in treating more severe and/or chronic depression such as where psychotic features are present or where there is a family history of the disease. The decision to treat with psychotropic medications is one that must be made by the woman and her doctor working together to determine which course works best for her. Drugs used to combat depression increase the availability of neurotransmitters in the brain, which help to control and improve emotions. Major types of antidepressants include:

- **Tricyclic antidepressants (TCAs)** affect the levels of the two neurotransmitters norepinephrine and serotonin in the brain.
- **Serotonin and norepinephrineuptake inhibitors (SNRIs)** increase the production of serotonin and norepinephrine.
- **Selective serotoninuptake inhibitors (SSRIs)** increase the availability of serotonin in the brain.
- **Monoamine oxidase inhibitors (MAOIs)** are usually prescribed to patients who do not respond to other types of medications. Because of the harmful interaction with other medication and even certain

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foods, these drugs aren’t usually the first antidepressants used.

Most antidepressants have some side effects that may or may not necessitate discontinuation of treatment depending on how the individual woman responds. Sometimes it is necessary to try different drugs to ascertain which one works best. In less severe cases, women are often helped by taking estrogen replacement. This will be discussed further in the section on Hormone Replacement Therapy.

A calming herbal remedy known as Kava is creating excitement as a “natural” alternative to anti-anxiety medications. This drug has been around for centuries, is widely used in South Pacific rituals and has been used in Europe for decades. Kava’s relaxing effects have been verified in clinical trials. There is some evidence to suggest that Kava may exacerbate the effects of benzodiazipines such as Valium and Halcion - there is one reported incidence of a patient entering a coma while taking Kava in combination with Xanax.

Kava is an extract from a species of pepper plant. The active ingredient is kava-lactone and it appears to work as a CNS depressant without affecting alertness when given in standard doses (these standards have been established by the German regulatory agency known as Commission E). Side effects are rare in the studies done on the substance, but those countries where it has been used routinely report that the development of a rash is rather common. The rash, in which the skin becomes red, rough and scaly, can only be treated by stopping Kava treatment.

A recent human clinical trial was the first documented study in history that assessed the antidepressant efficacy of Kava. This double-blind crossover trial recruited 60 participants, who experienced anxiety. The subjects were prescribed five 250 mg tablets of Kava daily, while the control group was prescribed a placebo. The analysis revealed that the subjects who were administered the Kava showed a reduction in anxiety as well as depression.

Standardized extracts of Kava are available in drug stores and in health food stores. Nurses should remind patients that this supplement has not been approved by the FDA, and that anyone taking the drug should report it to her health care provider in order to monitor any interactions with other medications she may be taking.

St. John’s Wort is another natural herbal remedy that is widely used in the treatment of depression. The St. John’s Wort plant has yellow flowers and has been used for medicinal purposes throughout the world for thousands of years. The typical dose is 300 mg, three times a day. The research has had mixed results regarding this herb’s mood-improving benefits. Current research is aimed at the investigation of the herb’s benefits on minor depression and other mood disorders.

Headaches

Hormonal shifts may increase susceptibility to headaches. Management is recommended by doing the following:

- Eating a well-balanced diet
- Cutting down on alcohol and caffeine
- Practicing stress management techniques
- Obtaining medication from a health care provider

Changes in the Skin

Perimenopausal and postmenopausal changes in the skin are due to both intrinsic and extrinsic aging factors. Intrinsic factors are those that occur as a result of chronological aging and often are determined by genetics. They include such things as a decrease in metabolic processes (which often affects the skin); epidermal thinning; decreased number and density of hair follicles, sweat ducts and sebaceous glands; decreased collagen production and elastic fibers; and decreased subcutaneous fat.

All of these changes contribute to a decreased ability of the skin to act as a physical barrier and, as a result, the body becomes more susceptible to environmental agents. A reduction in immune function, decreased melanocyte production (10-20%) and blood vessel atrophy lead to the increased bruising and bleeding associated with the elderly. Wound healing capabilities and the skin’s ability to produce Vitamin D are also reduced.

The primary extrinsic aging factors affecting the skin are sun exposure and smoking. Prolonged exposure to the sun leads to a saliowness of the skin, decreased elasticity, an irregular surface, wrinkling and dryness. About half of a person’s sun exposure occurs before the age of 18 but the resulting damage may not become apparent for another 20-30 years. Smoking causes wrinkling of the skin (the amount of wrinkling is directly proportional to the amount of cigarette use).

At the time of the perimenopause many of these aging factors are increased due to the decrease in the amount of estrogen being made by the body. It can be difficult to ascertain which factors are the result of decreased estrogen and which are the results of other factors. Few studies have been done because of the difficulty in ascertaining data concerning sun exposure (this makes it hard to design a study that controls for it). Decreased collagen formation and pigmentation changes may be caused by both sun exposure and decreased estrogen levels.

One study done on the effects of increased systemic estrogen given in the form of hormone replacement therapy (HRT) showed a maintenance or even a mild increase in collagen content after menopause in those women receiving HRT. Those not on HRT showed a decrease in collagen production. The study concluded that the number of postmenopausal years, and not chronological age, seemed to be the key factor in determining collagen production. This suggests that estrogen plays an important role in the process of collagen production.

Another large study of 3,875 postmenopausal women suggests that estrogen use may decrease the amount of wrinkling and dryness of the skin. Experts are hesitant to draw too many conclusions from this study because it had some significant design flaws (such as failure to control for sunscreen usage). The results do suggest, however, that further research into this matter is necessary.

To address the specific issue of HRT’s application to an anti-aging effect on the skin, studies have investigated the use of topical estrogen. One such study sampled women for three months that used the topical estrogen treatment estradiol. The results showed an increase of 38% in hydroxyproline - a chief component of collagen. This corroborated the fact that the topical use of estrogen helped increase collagen synthesis in the skin. Moreover, the use of topical estrogen has proven a safer alternative to systemic HRT for skin treatment purposes. The key is to control the dosage, frequency and application of estrogen topical applications.

Although the aforementioned studies have shown successful increased skin collagen from the administration of HRT in postmenopausal women, several risks of HRT, such as breast cancer and cerebral vascular problems restrict its use for anti-aging purposes.

The use of alphahydroxy acids (AHA) in the form of cosmetics has become widespread. These chemicals originally came from natural sources, primarily glycolic acid derived from sugar cane and lactic acid derived from milk. Today many of these compounds are synthesized in laboratories. There are very few studies to validate the claims of cosmetics companies that AHAs reduce the signs of aging in the skin. One double-blind, placebo-controlled study did, however, show a modest improvement in the signs of photaging with the application of an 8% glycolic or lactic acid solution. Greater gains were seen on the skin of the arms than that of the face. Most OTC preparations contain less than the 8% acid concentration used in this study. Experts are, therefore, skeptical about their effectiveness. Concentrations as high as 25% are needed to increase collagen density, add thickness to the skin and to improve skin elasticity.

AHAs used in the form of chemical peels
may contain solutions at concentrations as high as 70% and are, therefore, probably effective in shedding the keratinocytes in the epidermis. These high-concentration solutions are regulated by the FDA and may be applied by physicians only. Products with 30% concentrations may be applied by cosmetologists. AHAs (at any concentration level) may increase the skin’s sensitivity to the sun. Therefore, anyone using these products should be advised to follow AHA application with a sunscreen of at least SPF 15.

Other topical chemicals that are being used today in the fight against aging skin are known as retinoids. Unlike AHAs these chemicals can only be obtained by prescription. Retinoids are defined as naturally occurring and synthetic compounds similar to Vitamin A (retinol) in their biological activity. Vitamin A is necessary for proper vision, light detection, embryonic development and the growth and differentiation of the epithelial tissues. It must come from diet because the body is not able to manufacture it. Good sources of Vitamin A include fats (especially fish oils), green and yellow vegetables and carrots. High doses of Vitamin A can lead to liver toxicity.

Retinoic acid is the primary active metabolite of Vitamin A and it can substitute for Vitamin A in most biological systems (except vision and reproduction). For skin protection it must be used in conjunction with sunscreens of at least SPF 15. Sun avoidance is recommended as the chemical may increase photosensitivity. It is also recommended that the application be done at night to decrease risk from sun exposure. It is usually given in doses of .01 to .05% depending on tolerance levels; it is given daily for 6-9 months and then may be reduced to once or twice a week. Six to nine months of therapy are needed for results to become apparent, and any gains are lost once the treatment stops. It is, however, still considered the best non-surgical remedy for photoaging. It has been used as an acne treatment for over twenty years and so far no adverse effects have been documented. Mild irritation or itching may occur at the beginning of treatment but the symptoms are usually well tolerated and disappear within a few months. Retinoic acid is most effective against wrinkling and pigmentation changes associated with aging. It is less effective in improving skin elasticity. A combination of retinoic acid used at night and an 8% glycolic acid each morning appears to be the most effective regimen to decrease wrinkling and improve skin tone. Studies of retinoids published by the British Journal of Dermatology have showed that the active ingredient, retinoic acid, binds to proteins in the skin that help to stimulate the wound healing process. Further studies are needed to investigate the efficacy of retinoids on photodamaged skin.

There are currently three prescription-strength retinoids available on the market tazarotene (Avage, Taxaracon), tretinoin (Retin-A, Altralan, Avita, Renova), and adapalene (Differin). While these prescription retinoids offer the greatest potency, there is an OTC alternative - Retinol. This topical cream also helps to improve skin, but it can take up to 12 weeks before working due to slower conversion of retinolic acid than prescription-strength retinoids.

Ultraviolet light is one of the main culprits in aging the skin. While sunscreens are widely available now, it must be remembered that most women currently of menopausal age did not have the benefits of today’s very effective sunscreens. Current sunscreens are constantly being updated as more information is obtained on the effects of sun exposure on skin. Sunlight can be broken down into two types of ultraviolet rays-UVA and UVB. Very little of the UVB rays can penetrate the earth’s atmosphere but those that do are the ones responsible for sunburns. UVAs do not cause burning and they make up the vast majority of rays reaching the earth. Most tanning salons use only UVA so they do not cause burning but UVAs are believed to affect the deep collagen layers of the skin and as a result exposure to UVAs, whether by sunlight or tanning salons, may lead to the wrinkling associated with photoaging.

Until recently most sunscreens have been formulated to work against UVBs. Now sunscreens that serve as physical barriers are being formulated because they will work against UVAs as well. Look for zinc oxide or titanium dioxide as active ingredients in these sunscreens.

Recommendations for maintaining good skin as one ages include the following:

- Use sunscreens of at least SPF 30 unless fair skinned, red-haired, blonde or blue-eyed in which cases an even higher SPF is recommended. Look for labeling that states ‘full spectrum protection’ in order to be certain that both UVA and UVB rays are screened out. Sunscreens should be reapplied every two hours during the period of high exposure (between 10 a.m. and 3 p.m.) and even more often if the woman has been sweating a great deal or has been swimming.
- Avoid the sun by wearing a broad-brimmed hat, protective clothing and a good pair of sunglasses which filters out UV rays
- Stop smoking
- Maintain healthy diet and exercise regimens
- Drink plenty of fluids
- Try topical AHAs
- Retinoid use
For those who already have significant skin damage, cosmetic treatments such as chemical peels, collagen injections, facelifts and laser resurfacing may improve the look of the skin. However, these processes are unlikely to improve actual skin health.

Changes in the Hair

Changes in the hair also occur with both aging and menopause. Studies have been conducted which have helped women understand the typical changes in hair hat occur during menopause.

Normal hair loss is about 50-100 hairs/day. Normal hair grows more in the summer and less in winter. A study of 5,000 post-menopausal women in New York has provided some valuable information on changes in hair growth pattern as we age. The authors caution that some of these factors could be affected by the weather in New York and therefore may not be applicable in more temperate climates. The study is showing, however, that increased hair loss does occur with age and that it is higher in African American women than in Caucasian women. Hair loss appears to accelerate with each decade of life. What is not known from this study is whether hair loss is due to the decreased estrogen associated with postmenopausal women (less estrogen is available to counteract the androgens associated with hair loss) or if it is genetically induced. Further research is needed to determine this.

A more recent study published in the British Journal of Dermatology warranted further medical evaluation. This was the first epidemiological study in over 20 years that investigated the specific causation of facial and body hair loss. Authors of the study reported that scalp hair loss in women could be explained by falling estrogen levels. Research showed that frontal thinning was related to androgen action, similar to pattern-balding in men. While hair on the scalp decreased, facial hair increased in menopausal women. The theory that androgen increases during menopause because of the loss of ovarian estrogen lends crediblity to the hypothesis that facial hair increases after menopause. The results of this study yielded potential clues for the treatment of unwanted facial growth in women. Future studies regarding options in the form of 5-alpha reductase inhibitors may play a role as therapeutic options for unwanted hair growth in menopausal women.

Postmenopausal women generally show two forms of scalp hair loss patterns. The most common pattern is a loss that is diffused across the top of the head while sparing the front. A wide part is a good indication that this type of hair loss is occurring. The other pattern is one that is more typical of male-pattern baldness and results in excessive frontal hair loss.
Most women also gradually lose axillary and pubic hair. Paradoxically, while aging women experience hair loss on the head, the underarms and the pubic area, they may also experience excessive hair growth on the face, primarily on the chin. This, too, increases with each decade of life after 50. Data for the treatment of excessive hair growth is not available for postmenopausal women.

However, in premenopausal women experiencing excessive hair growth oral contraceptives, antiandrogenic agents and cimetidine have been shown to be effective. Further research is needed to determine if such treatments might work on postmenopausal women as well.

Hair pigmentation changes with age as well. It is believed that the timing of the onset of graying as well as the pattern of graying is genetically determined rather than associated with the hormonal changes of menopause.

**Other**

There are a variety of additional body parts that may be affected by decreasing estrogen levels in the body. Low levels of estrogen may trigger heart palpitations, especially when the woman is tired or stressed. She may also experience muscle/joint aches, weight gain (due to decreased caloric needs and the tendency to retain water) and memory loss. Most of these symptoms can be managed by an improved diet, moderate exercise and drinking more fluids.

It may also be helpful to remind patients that some common medications may interfere with cognition and memory. Such drugs include but are not limited to the following:

- **antihistamines** most of these drugs induce drowsiness which can make recall of information more difficult as well as impair the acquisition of information
- **anti-anxiety drugs** such as the benzodiazepines may affect brain function
- **prescription pain medications** may contain opiates, which serve to dull the central nervous system

There is good news in all of this for some women. These women find that the cessation of hormonal ups and downs associated with the normal menstrual cycle leads to a time of postmenopausal tranquility and composure. It is, therefore, important not to assume that this will be a time of negativity for all of your patients but rather to listen to each woman as an individual to see how these changes in her body are affecting her personally and how she is coping with them.

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**Nursing Diagnoses Related to Menopause**

There are several NANDA-approved nursing diagnoses related to the menopause. Interventions for most of these diagnoses have already been discussed in a previous section of the course or will be discussed in greater detail throughout this course. These diagnoses include the following:

- anxiety
- body image disturbance
- caregiver role strain or high risk for developing caregiver role strain
- ineffective coping patterns
- family processes, altered
- fatigue
- fear
- grieving, either anticipatory or dysfunctional
- hopelessness
- knowledge deficit, concerning menopause issues
- incontinence, stress
- altered nutrition status, either more than body requirement, less than body requirement, or high risk for developing altered nutrition status
- parental role conflict
- personal identity disturbance
- powerlessness
- role performance, altered
- self-esteem disturbance
- sexual dysfunction or altered sexuality patterns
- skin integrity, impaired
- sleep pattern disturbance
- social isolation or impaired social interaction
- spiritual distress
- stress syndrome
- altered thought processes

**Osteoporosis**

In the ever-changing world of women’s health care, few areas have moved as rapidly as the detection, prevention and treatment of osteoporosis. A generation ago it was termed a “silent disease” and the term made sense since the disease wasn’t commonly recognized until a fracture indicated its presence. Today the widespread availability of technology to measure bone density has made it possible, in many cases, to identify women at risk for osteoporosis long before a bone is broken.

Over 50% of women over the age of 50 have mild bone thinning, which is the beginning of osteoporosis. Moreover, one in two postmenopausal women in the United States will suffer from a fracture related to osteoporosis during their lifetime. The life expectancy for women in western societies today is eighty to eighty-five years. The fastest growing segment of the population is women over the age of fifty-five. A menopausal woman can, therefore, anticipate another thirty to forty years of life after she has reached menopause. The long-term effects of living with significantly lower levels of sex hormones in her body are only recently becoming apparent. These effects vary from individual to individual depending on genetic, psychological and environmental factors.

The development of osteoporosis, a synonym for low bone density, is one of the major health concerns related to menopause. Although menopause is not a disease, osteoporosis is. Osteoporosis involves a wasting or deterioration of bone mass that normally begins slowly at about age 35 but develops much more rapidly with the decrease in estrogen levels associated with menopause. Currently, it is estimated that one in three postmenopausal women in western countries are afflicted with it.

As stated previously, because osteoporosis has no symptoms it has often been called “the silent epidemic.” Unfortunately, in many cases even today, the first sign of a problem is a bone fracture of the wrist, hip, or spine. Until recently it could not be diagnosed until a fracture had occurred because there were no tests to determine bone weakness.

To date, the US Preventative Task Force suggests annual screening for osteoporosis for women over 65 years of age (this is covered by Medicare). There are currently several options available for screening. One specific technique known as “dual-energy X-ray absorption” or DXA, has made it possible to detect mineral loss within intact bone. This test uses less radiation than a standard chest x-ray, measures mineral loss in the hip and spine and takes about 10-15 minutes to perform. The main purpose of this test is to determine the likelihood of fracture risk. The results are measured in Z-scores and T-scores. The Z-score compares the patient’s bone density to the normal rate of someone their age. The T-score is used to diagnose the standard deviation (SD) above or below the mean compared to others of the same sex and ethnicity. An increase or decrease of 1.0 equates to a 10% to 15% change in bone density.

The accuracy of DXA scans is very precise - a rate of 1% to 2% precision rate is frequently reported. Because of the accuracy and the low dosage of radiation, the American Academy of Orthopedic Surgeons has labeled DXA as the gold standard bone mineral density today. The information gleaned from the test can help the patient and her physician to determine whether or not to use hormone replacement therapy as a prevention method or whether to take advantage of other drug interventions designed to prevent and/or treat osteoporosis.
Decreased levels of serum calcium lead to renal, gastrointestinal and skin excretion. If one knows what to look for there may be earlier warning signs that point to a problem developing. These include:

- A gradual reduction in height - if a woman’s clothing becomes too long, developing osteoporosis may be the reason for it.
- A stooping posture and rounding of the shoulders may be due to changes in the shape of spinal vertebrae as a result of developing osteoporosis. This process may lead to what is commonly referred to as the “dowager’s hump”
- General aches and pains in the bones may be attributed to arthritis when in actuality they are the result of osteoporosis.
- Changes in skin texture such as thinning and loss of suppleness may indicate that collagen loss is occurring in the bones as well. Loss of teeth and brittle nails may also be signs of problems developing in the bones.

The human body loses calcium daily through renal, gastrointestinal and skin excretion. Decreased levels of serum calcium lead to increased secretion of the parathyroid hormone, which in turn, acts on the kidney to decrease calcium and Vitamin D secretions. The extra Vitamin D in the blood encourages the intestinal tract to increase calcium absorption. If these natural feedback loops are not functioning properly to maintain adequate levels of serum calcium, the parathyroid hormone causes bone to be broken down for its calcium (bone reabsorption). Chronic bone reabsorption leads to bone loss and eventually the disease of osteoporosis.

Even under the best of circumstances the body is not very efficient at absorbing calcium - it only absorbs about one-third of the calcium ingested whether that ingestion comes from whole foods or calcium supplements. Calcium intake in American women is far below the levels needed to ensure that serum levels remain high enough to prevent bone reabsorption.

From childhood to adulthood bone is made faster than it is broken down with maximum bone density usually reached at about age 35. By age 50 most American women have lost up to one-third of their peak skeletal calcium without even realizing it. This process accelerates even further with the onset of menopause, resulting in nearly a million fractures a year (250,000 of which are hip fractures) in elderly American women.

About one in four women will experience some sort of fracture between the ages of 60 and 90 years and nearly 50,000 a year will die from complications of the disease. Medical costs run in the billions per year.

The bone is composed of calcium and protein. Each bone has two components - compact bone and spongy bone. Compact bone (sometimes called cortical bone) is on the outer part of the bone and it is hard and solid while spongy bone (also known as trabecular bone) is on the inside and is porous.

Type 1 osteoporosis (postmenopausal) causes a loss of trabecular bone and is mainly due to when the amount of estrogen greatly decreases. This process leads to an increase in the resorption of bone (the bones loses substance).

Type 2 osteoporosis (senile osteoporosis) typically happens after the age of 70 and affects women twice as frequently as men. Type II osteoporosis involves a thinning of both the trabecular bone (the spongy bone inside of the hard cortical bone) and the hard cortical bone. This process often leads to hip and vertebral body fractures, and is mainly due to deficiencies in calcium and/or Vitamin D intake.

The first signs of osteoporosis are seen in bones with the greatest amount of spongy bone material such as the spine, hips and wrists. With the development of osteoporosis the walls of compact bone become thinner and the holes in the spongy bone become bigger. Tooth loss may also occur as a result of weakened bone structure in the jaws.

In the early post-menopausal years the cause of bone loss is primarily due to decreased estrogen levels leading to increased rapid bone loss in the spine and hip. Calcium and Vitamin D supplementation does not appear to prevent or even decrease spinal reabsorption and may not decrease hip reabsorption either. Calcium supplementation, however, appears to decrease bone loss of the forearms and to increase total body bone density.

When this period of rapid bone loss is over, inadequate calcium intake can cause bone loss to continue. At this point studies show that calcium supplementation can significantly alter the process of bone reabsorption by keeping serum calcium at adequate levels.

The United States Preventative Service Task Force also recommends a noninvasive online tool to screen for osteoporosis. This convenient measuring algorithm, developed by the World Health Organization, is known as the fracture risk assessment tool (FRAX), and can be found at http://www.shef.ac.uk/FRAX/. The program estimates a person’s 10-year risk of fractures based on clinical information, such as age, parental fracture history, tobacco and alcohol use, body mass index and other previous medical conditions.

### Risk Factors

Risk factors for the development of osteoporosis are numerous and fall into two major categories - genetic/medical and lifestyle.

#### Genetic/Medical Risk Factors

- Caucasian or Asian heritage
- Being thin (less than 127 lbs.) - thin women have less estrogen and therefore less dense bones.

Even after menopause some estrogen is converted from adrenal gland hormones and is stored in the body’s adipose tissues. Being normal to slightly plump may be advantageous at this stage of life. The goal of one recently published study was to determine the major risk factors of osteoporosis. The study used DXA technology to measure T-scores of 540 postmenopausal women. Descriptive statistics, such as body mass index, age, weight and height were also measured. According to the analysis, the rate of bone loss was the quickest just after menopause, but slowed down in the woman aged. During the 5 to 10 postmenopausal years, bone loss accelerated at a 1% to approximately 5% rate. The researchers believe that the reduction in female hormones is responsible for the bone loss.

- Fair-skinned women

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Female relatives (a mother grandmother, or sister) with osteoporosis, especially hip fractures

A history of easily occurring fractures (especially after the age of 45 yrs.)

A history of anorexia nervosa, especially if it occurred in the adolescent years when a great deal of bone mass is normally being developed. This process is impeded by the poor nutrition and low calcium intake associated with anorexia nervosa.

Chronic diarrhea or surgical removal of intestine

Renal disease with dialysis

Liver disease

Daily use of certain medications such as cortisone, thyroid medication, Dilantin and aluminum antacids. It is also recommended that one not cook with aluminum pans or other cooking utensils as they may provide a regular supply of unwanted aluminum. Excessive amounts of aluminum may interfere with the body’s ability to metabolize and use the calcium it takes in.

Menopause, with its associated drop in hormone levels, is by far the biggest risk factor for the development of osteoporosis. The earlier the onset of menopause the greater the risk. Onset of menopause (before age 40) whether by natural causes or by surgical removal of the ovaries dramatically increases the risk for osteoporosis (unless hormone replacement therapy is started).

Lifestyle Risk Factors

- High alcohol consumption (greater than 4 to 5 drinks/week) which both suppresses new bone growth and is toxic to the ovaries where the majority of estrogen is produced
- Smoking - reduces the level of hormones produced by the ovaries and, therefore, can lead to decreased serum estrogen levels and increased loss of calcium and other minerals from the bones
- Lack of weight-bearing exercise in which the body moves in an upright position so that body weight is transmitted through the spine, pelvis and legs. This includes such activities as walking, jogging, aerobics and/or yoga. It is important not to exercise excessively, however, because this can result in decreased body fat and decreased estrogen stores.
- Low calcium diet
- Insufficient intake of Vitamin D (at least 400 IU daily) that helps the body store calcium. Vitamin D is synthesized by the sun exposure into a form that can be metabolized by the body. Women who avoid the sun or have digestive diseases that cause fat excretion (Vitamin D is fat soluble) are at risk for developing osteoporosis.
- Insufficient intake of other minerals such as boron, Vitamin K, copper, zinc, manganese and silica may also result in weaker bones. A good daily multiple vitamin supplement is usually sufficient to correct these deficiencies.
- High protein diet - the kidneys excrete calcium along with the by-products of protein metabolism. A diet of less than 50 grams of animal protein/day is recommended to prevent this problem from developing.
- High salt diet - causes calcium secretion by the kidneys
- Never having borne children - the elevated levels of hormones during pregnancy also lead to bone growth
- High caffeine intake (more than 6 to 7 cups of coffee/day) causes renal calcium excretion
- High intake of phosphorous (e.g. carbonated beverages) may cause an imbalance in the delicate calcium/phosphorous ratio that is necessary for good bone development. A 2:1 Calcium/Phosphorous ratio is recommended while the average western diet contains significantly more phosphorous than it does calcium. The difficulty in assessing the risk of carbonated beverages stems from the fact that most studies of this problem involve teenage girls. While there does appear to be an association between increased intake of carbonated beverages and decreased bone density, experts must admit that the problem may be that carbonated beverages are often substituted for milk in this age group. It is hard to determine whether the problem is the increased carbonation or the decreased milk intake. To further complicate things, most carbonated beverages contain caffeine, which has also been shown to cause calcium excretion. Once again it is hard to determine whether the culprit is the carbonation or the caffeine.

Additionally, some carbonated beverages contain minerals that bind to calcium and thus nullify calcium’s actions in the body. One study of middle-class women age 44-98 found no link between carbonated beverage intake and bone loss no matter how frequent or how prolonged the carbonation intake had been. Until further determinations can be made, experts suggest that women take their calcium supplements with plain water, milk, or orange juice (which has been shown to increase calcium absorption) rather than with seltzer water or other carbonated beverages.

Prevention of Osteoporosis

The prevention of osteoporosis falls into two broad categories: medical and lifestyle.

Medical prevention methods include the following:

- Bone density studies (briefly discussed earlier) that help the individual assess her own personal risk for developing osteoporosis. These are usually done in centralized locations such as larger cities and they may be quite expensive. It is best to have this study done while the woman is passing through the menopause phase rather than several years later because bone mineral loss is the greatest in the first five years after menopause. The test takes a few minutes to perform and does not involve injections, drugs or discomfort. There are also urine and blood tests that identify markers, which help to yield clues about osteoporosis. These tests include a bone-specific alkaline phosphate and osteocalcin measurements, which estimates the rate of bone formation in the body; a urinary N-telopeptide of type I collagen measures the amount of bone resorption or loss; vitamin D levels are important factor concerning the amount of calcium in a woman’s body.
- Progestin replacement therapy for those who cannot take estrogen - this method is not as effective as estrogen replacement in protecting bone and it can have negative long-term side effects on the heart, blood vessels and the breast. Often progestin and estrogen therapy is combined. The biological progestin in women is progesterone; all other progestins are synthetic steroids.
- Calcitonin is a thyroid hormone extracted from salmon and eels and acts to reduce bone loss by slowing the rate of bone reabsorption, but does not appear to strengthen bone or prevent fractures. It may, however, reduce bone pain in the spine. Calcitonin must be taken daily by injection or nasal spray.
- Calcitriol is a prescription drug that is also an active form of Vitamin D. This drug has been shown to reduce the incidence of new spinal fractures. Evidence is less strong on its reduction of other fractures. It must be monitored carefully, however, because overdose can cause calcium-containing kidney stones. For this reason those on calcitriol should not take calcium supplements as well.
- Etidronate, a prescription drug that reduces the reabsorption of bone, is most helpful in those who have severe osteoporosis and cannot take estrogen. It has been shown to reduce the incidence of spinal fractures. It is most commonly used in treating Paget’s disease, another bone disease affecting primarily the elderly, as well as other metabolic disorders. A bone specialist
with an interest in osteoporosis is the best referral for a woman interested in trying this drug.

- **Fosamax** is in a class of drugs, known as a biophosphonate that appears to slow the rate of bone reabsorption, help build new bone and prevent fractures (especially those of the spine). Unfortunately it may have unpleasant gastrointestinal side effects (primarily nausea and vomiting) that make it intolerable for some women to take. It is taken 30 to 60 minutes before breakfast with at least eight ounces of water (fruit juice or mineral water reduce its effectiveness so tap water is recommended). The drug must also be supplemented with at least 500mg of calcium per day for best results. Recent studies suggest that Fosamax in combination with HRT may produce better gains in bone density than can be achieved with HRT alone. Other examples of biophosphonates include Actonel, Reclast and Boniva. Unlike most medications, biophosphates remain in the body for decades. Recent studies and caution advisories published by the US Food and Drug Administration warned that long-term use of biophosphates could cause jaw decay and thigh fractures.

- **Selective estrogen receptor modulators** (SERMs) Another option is Evista (raloxifene), one of a class of drugs known as selective estrogen receptor modulators, or SERMs, designed to offer some of the benefits of estrogens without their potential drawbacks (such as increased breast cancer risk).

- **HRTs** are used much less in recent years, and always with caution, because of research showing that they can increase the risk of blood clots (so can Evista), heart attack and stroke, and breast cancer. FORTICAL and Micocalcin contain the active ingredient calcitonin, which is a naturally occurring hormone that inhibits bone loss. It is available as a nasal spray or injection. Undesirable side effects include nausea and skin rashes. Prolia is a treatment approved for the treatment of osteoporosis in postmenopausal women who are at high risk for fracture. Prolia is a so-called monoclonal antibody -- a fully human, lab-produced antibody that inactivates the body’s bone-breakdown mechanism. It’s the first “biologic therapy” to be approved for osteoporosis treatment. It is given by injection twice a year. The most common side effects seen in patients taking Prolia are back pain, pain in the extremities, muscle and bone pain, high cholesterol levels, and urinary bladder infections. The drug also appears to lower calcium levels. Patients with low blood calcium levels should not take Prolia until the condition is corrected.

- **Anabolic steroids**, natural and synthetic male hormones, may also be given for those with established osteoporosis to slow down bone loss and perhaps even bring about bone gain. They are given either in injection or pill form and are recommended for women who cannot take estrogen. They do have some unpleasant side effects such as oily skin, pimples, fluid retention, weight gain, increased facial hair and deepening of the voice. Some may also experience an increased libido.

**Lifestyle prevention** methods include:

- Increasing calcium intake to 1500mg/day in postmenopausal women. It is recommended that these supplements be taken at night because serum calcium levels fall during sleep and, as a result, bone reabsorption occurs most often at night. Calcium taken at bedtime may prevent or slow this process.

- Increasing calcium intake to 1500mg/day in pre-menopausal women at high risk for the development of osteoporosis.

- Drinking low fat or skim milk - even one glass a day can help a woman begin to meet her calcium needs. Those on a dairy-free diet can drink calcium-enriched soymilk instead.

- Weight-bearing daily exercise. Recent studies show that weight training exercises may also be as effective as antidepressants in relieving depression in those over the age of sixty.

- Vitamin D3 intake of 400IU/day in pre-menopausal women. Either in multi-vitamin tablets or whole foods such as dairy products (this will be discussed further in the section on diet).

- Vitamin D3 intake at even higher levels for premenopausal women, especially if living in conditions where sun exposure is significantly decreased (institutionalized women, those living in northern latitudes and those having medical conditions which require them to stay out of the sun).

- Adequate sun exposure for proper Vitamin D3 synthesis to ensure absorption of calcium.

- Avoiding caffeine, alcohol and tobacco, excessive protein intake (greater than 50 grams a day) and phosphates often found in preservatives.

In conclusion, it is safe to say that adequate calcium and Vitamin D3 intake may slow bone loss, decrease bone turnover, enhance the body’s response to other therapies such as HRT and play a role in the prevention of osteoporosis. The emphasis in patient teaching should be on prevention through lifestyle changes such as diet, exercise, calcium supplementation and hormone replacement therapy. It is not inevitable that one becomes unhealthy as one ages.

**Cardiovascular Disease (CVD)**

Until the time of menopause, women enjoy a certain amount of protection against cardiovascular disease when compared to the risks for men of a similar age. After menopause women begin to lose this protection and by the age of 75 the risk is similar for both sexes.

Studies show that postmenopausal first heart attacks in women are twice as likely to be fatal than are first heart attacks in men. The protection in the pre menopausal years is believed to come from the woman’s elevated estrogen levels. Once estrogen levels drop at the time of menopause this cardiovascular protection evaporates; overall cholesterol levels increase, and the ratio of LDL/HDL becomes unfavorable as well. This results in an increase of atherosclerosis, especially in women who smoke, are obese or who live sedentary lives.

As with osteoporosis, this problem is increased in women who have an early menopause whether naturally or surgically induced. Those who go through menopause before the age of 40 are at increased risk. Worldwide, 8.6 million women die from heart disease annually. According to the American Heart Association, an estimated 44 million women in the U.S. are affected by cardiovascular disease. Cardiovascular diseases and stroke cause 1 in 3 women’s deaths each year, killing approximately one woman every 80 seconds. By the age of 55 it is the leading cause of death in women. When women get heart disease they are usually sicker than men are when they finally seek treatment. Women who have MIs are also twice as likely as men to die within the first few weeks after the attack. Women are also less likely to receive certain state of the art treatment protocols.

Heart Disease is the leading cause of death for women over 65 years of age. While age is a significant cause of heart disease regardless of gender, current studies have shown that it may be more relevant in women than in men. During this depletion of estrogen, total cholesterol and triglycerides increase, while HDL cholesterol levels decrease. This lethal combination increases the risk of coronary heart disease two to three times than that of premenopausal women. Historically, HRT replacement was universally prescribed to menopausal women to help reduce negative symptoms, and was also thought to curb heart disease. However, findings from the Women’s Health Initiative (WHI) revealed that HRT does not prevent heart disease, and may actually increase the risk of negative coronary events.

Previous observational studies showed that HRT reduced the risk of coronary heart disease; however, newer large scale clinical trials,
known as HERS I and HERS II has shown negative outcomes regarding HRT on heart disease risks and negative coronary events such as stroke. Because studies previous to HERS I and II and WHI revealed positive outcomes of HRT treatment on heart disease, there is still controversy in the medical community regarding HRT. Other recent observational and randomized studies have suggested that HRT could have some cardiovascular benefits on early postmenopausal women, and have negative outcomes on women who wait too long to begin the therapy. Additional studies are needed to explore the age, time of initiation, duration of therapy and dosage variations to help answer questions about HRT.

Risk Factors

Other risk factors for the development of cardiovascular disease are important to consider as well. These include the following:

- smoking - this is more strongly correlated with CVD in women than it is in men
- high blood pressure - the stress placed on the arteries from hypertension can damage the vessels and thus cause build-up of plaque in the blood vessels
- diabetes - this is more strongly correlated with heart disease in women than in men, perhaps because women with diabetes often have other conditions that correlate with heart disease such as obesity and blood vessel disease
- being overweight - even as much as 10% above the ideal weight can lead to a 30% increase in the chances of having an MI.
- Recent years the way experts evaluate weight has changed somewhat - there is less emphasis on height/weight tables and more placed on BMI (body mass indicator) measurement. The BMI is calculated by multiplying weight by 700 and dividing the result by the square of height (inches). A BMI of 25-25.9 is considered overweight while a BMI of 30 and above is considered obese. Some experts, however, believe that this measurement does not adequately take into consideration those who are highly muscular or very tall. In spite of these concerns the BMI has become the standard measure in studies evaluating health risk.
- Increased cholesterol levels and an unfavorable lipid profile - an overall cholesterol level of less than 200mg/dl is considered high. Although high triglyceride levels are not independently a risk factor for CVD, there is a link connecting elevated triglycerides to atherosclerosis. A diet high in fat and sugar can contribute toward elevated triglycerides. Some also believe that the correlation between elevated triglycerides and CVD may be stronger in women in men. Getting an accurate reading on triglycerides can be difficult because the levels rise and fall throughout the day and are particularly high following a meal. For this reason they are usually measured following an 8-10 hour fast.
- high serum homocysteine levels - above 5-15 micromoles/liter
- high fat diet
- diet deficient in raw foods, fish and liquids
- family history of heart disease before age 55 - this is more strongly correlated in women than in men
- increasing age - especially over age 55
- abdominal fat - two recent studies indicate that excess abdominal fat is a risk factor for the development of heart disease in both men and women. In women the risk is measured by the ratio of her waist measurement and hip measurement. A ratio above 0.8 suggests an increased chance of developing heart disease. The risk continues to climb as a woman’s waist measurement approaches that of her hip measurement.
- In one study ratios of 0.8 to 0.84 increased the risk by 26%, 0.84 to 0.9 increased the risk by 50% and ratios of 0.9 or above increased the risk by 330%. (Another study found that a waist measurement of 30 inches or above might increase the risk irrespective of the waist/hip ratio). The problem seems to be that these higher ratios are associated with increased visceral fat rather than subcutaneous fat. Experts believe that this visceral fat may be linked to the development of heart disease and diabetes.

Symptoms, Diagnosis and Treatment of CVD

Chest pain is less likely to signal the development of heart disease in women than in men. This is probably explained by the fact that many other conditions may produce chest pain in women. These conditions include heart spasms, mitral valve prolapse, indigestion, gallstones, esophageal spasms, costochondritis and pleurisy. Angina is just as common in women as it is in men but women may experience more nausea and vomiting, more neck and shoulder pain and more shortness of breath. Studies show that women are less likely to receive the same attention as men do when they present with chest pain. It may be that doctors are less likely to inflict painful and expensive tests on women because they believe that they are less likely to find CVD in women.

However, when testing is done it includes the treadmill, echocardiography and nuclear imaging, all of which are performed while the patient is exercising. If these tests indicate a problem, then the next step is coronary angiography in which a dye is injected in the groin through a narrow catheter and then threaded through the vessel into the heart. This allows the provider to take x-rays of the heart to determine the extent and location of any obstructions. This procedure is somewhat uncomfortable and carries a 0.5% risk of heart attack or stroke.

Pharmaceutical Management

Non-invasive treatment of CVD may include medications to reduce serum cholesterol levels, slow the heart rate, dilate vessels, strengthen cardiac muscle contractions and/or decrease the incidence of blood clots. Drugs used to treat CVD either increase blood supply or reduce the workload of the heart. Medication includes Statins, Beta Blockers, Ace Inhibitors, Antiplatelet Agents, Calcium Channel Blockers and Nitrates.

- **Statins** - This class of medication is used to lower lipids. Examples include: Lovastatin (Mevacor, Altoprev), Pravastatin (Pravachol), Atorvastatin (Lipitor), Simvastatin (Zocor), Fluvastatin (Lescol) and Rosuvastatin (Crestor).
- **Beta Blockers** - These drugs combine with the heart’s chemical receptors to slow the heart rate. This allows for the heart to function properly with less oxygen. Examples include: Propranolol (Inderal), Metoprolol (Toprol), Nadolol (Corgard), Acebutolol (Sectral) and Atenolol (Tenormin).
- **Ace Inhibitors** - The hormone angiotensin has the ability to elevate blood pressure. Angiotensin-converting-enzyme (ACE) inhibitors can lower blood pressure by blocking the conversion of this enzyme. Examples include: Perindopril (Aceon), Captopril (Capoten), Enalapril (Vasotec) and Quinapril (Accupril).
- **Angiotensin Receptor Neprilysin Inhibitor** (ARNI) - sacubitril/valsartan (Entresto, LCZ696) is a first in class medicine, that reduces the strain on the failing heart. A twice-a-day tablet, it acts to enhance the protective neurohormonal systems of the heart while simultaneously suppressing the harmful system (the RAAS) 2015, Novartis
• **Antiplatelet Agents** - These drugs help to prevent blood clots. Examples include: Clopidogrel (Plavix), Dipyridamole (Persantine), Ticlopidine (Ticlid) and Aspirin.

• **Calcium Channel Blockers** - This class of medication relaxes the muscular walls of the arteries, thereby allowing more blood and oxygen to reach the heart. Examples include: Amlodipine (Norvasc), Verapamil (Verelan PM), Nisoldipine (Sular) and Diltiazem (Cardizem, Cartia XT).

• **Nitrates** - These drugs act by dilating the veins and arteries and work by increasing blood flow to the heart to relieve angina symptoms. Examples include: isosorbide dinitrate (Isordil, Dilatrate); isosorbide mononitrate (ISM0); nitroglycerine (Nitrolingual, Nitrostat, Nitro-Dur) sublingual and transdermal patches.

A few guidelines were given for determining the risk/benefit ratio of these drugs. These guidelines include:

- The drugs are known to save lives by preventing heart attacks. Two recent studies showed a decrease of 1/3 the number of MIs in people with cholesterol levels over 250 mg/dl. For these people the comparison must be between a known risk and a hypothetical one that strongly suggests that they should continue to take the drugs.
- For a younger person with only moderately elevated serum cholesterol levels the picture is a bit grayer - these individuals might want to consider diet and exercise therapies first and then proceed cautiously to drugs if these measures do not solve the problem. They should be reminded that all drugs carry a risk of some side effects and the decision for the individual should be made in conjunction with her health care provider.

### Other Treatments

Coronary Artery Bypass Graft (CABG) surgery and Percutaneous Coronary Intervention (PCI) are the two main invasive procedures used in the treatment of CVD. PCI, commonly known as angioplasty, is a nonsurgical procedure that opens blocked or narrowed coronary arteries. A few years ago it was believed that these procedures were less successful in women than in men but current thinking suggests that the difference is not gender related but, instead, may be age related. Women who get CVD are usually older than many of the men who develop it and therefore, they may be less likely to respond as well as the younger men. Studies in which women and men are matched for age, extent of CVD and general state of health show no significant differences in response to treatment.

### Prevention of Cardiovascular Disease (CVD)

As women continue to live longer the long-term effects of estrogen deficiency become increasingly important (some women may live as long as 40 years after menopause). A study cited by the Australian Menopause Society reveals that women on estrogen replacement therapy had significantly reduced risk of death from all causes (including some cancers such as ovarian which showed a decrease of 40%) when compared to women who had never taken estrogen. The lowest death rate was seen in those who used estrogen long-term. The study concluded that taking a form of estrogen replacement could add years as well as quality to the lives of most postmenopausal women.

The following lifestyle and medical recommendations are made in order to prevent the development of CVD. Current guidelines from the the National Heart Lung and Blood Institute suggest:

- **Daily aerobic exercise** (even simple exercise such as walking 30 min./day) can reduce the risk of a fatal heart attack by 50%
- **Maintain a total cholesterol count of less than 200 in order to prevent the build-up of plaque in the walls of the blood vessels that may lead to arteriosclerosis and vessel blockage.** Because the body is able to manufacture all of the cholesterol it needs, theoretically there is no need for any dietary cholesterol.
- **Maintain cholesterol levels at less than 100 mg/dL for LDL and less than 40 mg/dL for HDL.** Foods that help in this process include oily fishes, fruits, vegetables, garlic, onions and peppers. Adequate fiber intake is also important.
- **Estrogen Replacement Therapy (ERT)** decreases the overall cholesterol count while increasing HDL and decreasing LDL and, therefore, should be considered for any woman at high risk for the development of CVD.
- **Minimize dietary fat intake** by cutting down on meat and dairy products and by increasing the amount of fruits, vegetables and fiber in the diet. Change cooking methods from frying to broiling, steaming and boiling foods.
- **Use cold-pressed oils such as canola, olive and sunflower oils**
- **Reduce the amount of saturated fats in the diet by eating less meat, cheese, butter, and palm oil.** Excess saturated fat is converted into cholesterol. Recent evidence suggests that margarine may not be any better than butter in protecting the cardiovascular system. This may be due to the process used to manufacture margarine.
- **Reduce the amount of salt in the diet by avoiding processed and convenience foods.** Encourage patients to read food labels for hidden sources of sodium such as MSG, preservatives, flavor enhancers, hydrolyzed proteins, sodium caseinate, calcium caseinate and autolyzed yeast. Artificial sweeteners also contain a large amount of sodium. Discourage patients from adding salt at the table.
- **Eat eggs in moderation** (up to four a week) because they contain a form of sulfur that inactivates free radicals (free radicals will be discussed further in the section on nutrition). Eggs should be cooked by poaching or boiling; but not by frying because the frying process can generate free radicals.
- **Take nutritional supplements designed to improve the cardiovascular system.** These include Vitamins A, C, E, zinc, magnesium, garlic and selenium. These will be discussed in greater detail in the section on nutrition.
- **Reduce alcohol intake** - recent studies have shown that moderate to high alcohol consumption was associated to incidences of atrial fibrillation in individuals over 55 years of age.

The role of diet and nutritional supplements is also an important factor in the prevention of CVD, especially for women who, for whatever reason, cannot take ERT. All menopausal women should be taught the importance of good nutrition in order to reduce their risk for developing CVD, but it should be especially stressed for those women who cannot take ERT.

### Diet and Nutrition

**General Effects of Aging and Nutritional Needs**

The aging process cannot be eliminated but it certainly can be slowed down significantly. The rate at which one ages is determined by many factors, some of which are under individual control and some of which are not. Genetic factors definitely play an important role in aging and in the onset of menopause. These are clearly beyond anyone’s control. Other factors, over which one does have significant control, include exercise patterns, diet, lifestyle choices, exposure to the sun’s ultraviolet rays (discussed in a previous section) and the health of one’s immune system.

The cells of the body become less efficient at regenerating and repairing themselves as we age. A healthful diet can help slow down the aging process by providing the nutrients necessary for optimal cell function. As a result, women feel, look and function better if proper
nutrition is maintained in the middle and older years. A healthful diet also helps the body fight off chronic diseases such as CVD, osteoporosis, diabetes and many types of cancer.

As the body ages, its basal metabolic rate slows down. As a result, fewer calories are needed to maintain weight. For example, a 20 year old woman weighing 120 lbs. needs approximately 2100 calories/day to maintain weight while the same woman at 50 years of age needs only 1800 calories/day to maintain weight.

Recommendations for an anti-aging diet, especially in perimenopausal and post-menopausal women, include the following:

- Decrease consumption of salt, table sugar, caffeine, alcohol, fat (less than 30% of overall calories) and animal protein. High sugar intake can cause wild fluctuations in blood sugar levels causing lethargy and headaches as well as aggravating any menopausal symptoms the woman may be experiencing. Saturated fats should be avoided and substituted with polyunsaturated and monounsaturated fats such as those found in broiled fish, hummus, seeds, grains, legumes and cold-pressed vegetable oils.
- Increase intake of complex carbohydrates, vegetable proteins and water (at least a quart/day). At least half of the diet should consist of raw foods because they stimulate the immune system and aid in the elimination of toxins from the body.
- It is more nutritionally efficient to eat frequent smaller meals spread throughout the day than to eat the traditional three large meals we tend to think of as the normal eating pattern.
- Remember that beverages containing alcohol, caffeine and sugar actually deplete the body’s water reserves rather than adding to them and may also deplete the supply of water soluble vitamins (Vitamin B complex and Vitamin C). Women should be encouraged to drink fruit juices and water instead.
- Women at menopause should get plenty of fluids in order to prevent constipation, disorientation and fatigue. Fluids also help to dilute serum cholesterol levels and blood acidity, flush toxins from the body’s tissues, improve renal function and lower blood pressure. Patients should be encouraged to drink at least a quart and a half of water every day. This is more easily accomplished if she keeps water with her at all times. This practice may also reduce hot flashes, headaches, joint pain, fatigue and dry skin.
- Cut down on processed foods, frozen foods and refined carbohydrates. These may all be higher in bacteria content and thus make it harder to develop proper intestinal flora to aid in good digestion patterns and to decrease the incidence of bad breath.
- Increase fiber intake.
- Drink at least a pint of juice daily to detoxify the system (combinations of juices can be highly beneficial to ensure that all necessary vitamins and minerals are received).

### What Foods Contain Calcium?

<table>
<thead>
<tr>
<th>Food</th>
<th>Calcium Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Milk Products</strong></td>
<td></td>
</tr>
<tr>
<td>Whole milk, 1 cup</td>
<td>291 mg.</td>
</tr>
<tr>
<td>Lowfat (2%) milk, 1 cup</td>
<td>297 mg.</td>
</tr>
<tr>
<td>Skim milk, 1 cup</td>
<td>302 mg.</td>
</tr>
<tr>
<td>Buttermilk, 1 cup</td>
<td>285 mg.</td>
</tr>
<tr>
<td>Lowfat yogurt, 1 cup (plain)</td>
<td>415 mg.</td>
</tr>
<tr>
<td>Lowfat yogurt, 1 cup (fruit)</td>
<td>345 mg.</td>
</tr>
<tr>
<td>Brick cheese, 1 oz.</td>
<td>191 mg.</td>
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<tr>
<td>Cheddar cheese, 1 oz.</td>
<td>204 mg.</td>
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<tr>
<td>Cottage cheese, 1 oz.</td>
<td>154 mg.</td>
</tr>
<tr>
<td>Swiss cheese, 1 oz.</td>
<td>272 mg.</td>
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<tr>
<td>Ice cream or ice milk, 1 cup</td>
<td>176 mg.</td>
</tr>
<tr>
<td><strong>Meat Group</strong></td>
<td></td>
</tr>
<tr>
<td>Beans, dried, cooked, 1 cup</td>
<td>90 mg.</td>
</tr>
<tr>
<td>Oysters, raw, 7 to 9</td>
<td>113 mg.</td>
</tr>
<tr>
<td>Shrimp, canned, 3 oz.</td>
<td>90 mg.</td>
</tr>
<tr>
<td>Pink salmon, w/bones, 3 oz, canned</td>
<td>167 mg.</td>
</tr>
<tr>
<td>Sardines, w/bones, 3 oz, canned</td>
<td>372 mg.</td>
</tr>
<tr>
<td>Tofu, processed w/calcium sulfate, 4 oz</td>
<td>145 mg.</td>
</tr>
<tr>
<td><strong>Vegetables, Fresh or Cooked</strong></td>
<td></td>
</tr>
<tr>
<td>Bok choy, 1 cup</td>
<td>252 mg.</td>
</tr>
<tr>
<td>Broccoli, 1 cup</td>
<td>136 mg.</td>
</tr>
<tr>
<td>Collards, 1 cup</td>
<td>358 mg.</td>
</tr>
<tr>
<td>Kale, 1 cup</td>
<td>206 mg.</td>
</tr>
<tr>
<td>Mustard greens, 1 cup</td>
<td>194 mg.</td>
</tr>
<tr>
<td>Spinach, 1 cup</td>
<td>167 mg.</td>
</tr>
<tr>
<td>Turnip greens, 1 cup</td>
<td>252 mg.</td>
</tr>
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For the most current dietary guidelines and research, please visit [www.health.gov/dietaryguidelines](http://www.health.gov/dietaryguidelines)

Figure 4
Antioxidants are substances that neutralize free radicals in the body before they can damage the cells. As a result they may prevent many degenerative diseases and thus slow down the aging process. There are many different types of substances that act as antioxidants, including certain vitamins and minerals as well as some enzymes and amino acids. The vitamins which act as antioxidants are A, C, E, B1, B6 and B5. They protect the cells from the damage caused by abnormal internal oxidation, a process that can lead to the development of cancers. Antioxidants, therefore, are important in reducing the risk of cancer.

It is also important to note that normal changes in the gastrointestinal tract, as a direct result of the aging process, often lead to the body’s decreased ability to produce HCl. This, in turn, leads to a decreased bioavailability of the B vitamins. The reduction in the availability of B12, B6 and folic acid may cause changes in blood homocysteine levels, which can contribute to the development of CVD. Vitamins A, B complex and E appear to have a direct impact on the physiological changes related to menopause.

For example, Vitamin A is necessary for maintaining healthy skin, good night vision, a healthy immune system and reproduction. Those with deficiencies of this vitamin may develop skin and mucous membrane conditions in which the tissues become hard and chronically inflamed.

Vitamin A can be found in animal foods as retinol, a form ready for immediate use by the body. In plants, Vitamin A is found in the form of beta-carotene, a substance that has until quite recently been touted as an anticancer agent. Recent studies, however, have cast doubts on the anti-carcinogenic effects of supplemental beta-carotene.

In one study it was actually found to increase the rate of tumor growth in certain people and consequently studies using human subjects have been stopped. As an alternative to beta-carotene, daily doses of Vitamin A are generally considered to be effective and safe. The RDA for Vitamin A is 5,000 IU/day but those who smoke, drink alcohol, eat a significant amount of junk food and/or suffer from diabetes may need more. Because Vitamin A is fat-soluble and therefore can build up in the body, patients with any medical conditions should first seek the counsel of their health care providers before taking the vitamin. Estrogen supplements may increase the need for Vitamin A because high estrogen levels have been shown to inhibit the body’s ability to use the vitamin. It is not recommended that this vitamin be taken in mega doses because chronically high intake levels (25,000 to 50,000 IU/day for six months) have been shown to be toxic. Foods rich in Vitamin A include:

- dark green leafy vegetables such as spinach, collard greens, beet greens and mustard greens
- yellow vegetables such as carrots, sweet potatoes, winter squash and pumpkin
- orange fruits such as cantaloupe, apricots and papayas
- fish oils such as cod liver oil and halibut liver
- liver (which should be eaten in moderation due to the chemical toxins that may accumulate in it)

Vitamin E plays an important role in the production of sex hormones and as a result seems to provide relief from the discomfort of hot flashes for many women. It also acts as an antioxidant but only when taken in its natural form. It strengthens the skin and mucous membranes. The natural forms of Vitamin E are known as dextrotocopherols, a conglomeration of alpha, beta, gamma, delta, eta, epsilon and zeta tocopherols. Each of these has a slightly different antioxidant role to play. D-alpha-tocopherol is the most common natural form of Vitamin E and is sold in supplement form. It is most helpful in fighting skin, breast and colon cancers. It can be found in:

- whole grain cereals, breads and pastas
- green leafy vegetables
- dried beans
- unprocessed vegetable oils such as corn, safflower, olive and soybean

Recommendations for supplemental doses vary but a range of 100 to 500 IUs daily is fairly standard. Some recommendations go as high as 500 to 1000 IUs/day. The individual woman should check with her nutritionist or physician to ascertain a safe dose for her. This is especially important in women with hypertension or rheumatic heart disease, as well as in women taking digitalis. Vitamin E works more effectively when taken with B complex, Vitamin C and trace mineral supplements. It is also absorbed better when taken in conjunction with fat so, as a result, it is recommended that it be taken at the end of a meal containing fat.

Vitamin C is important for a sense of general well being especially during the mid-life years. It acts as an antioxidant, promotes healthy adrenal glands to insure continued production of estrogen, helps heal wounds and broken bones, fights infection, aids in the absorption of iron, promotes healthy gums and teeth and helps in the formation of collagen to keep skin, blood vessels, muscles and bones healthy. It reduces the rate of aging of the skin, joints and bones by keeping them flexible so that...
### Vegetables

- **Very your veggies.**
- Any vegetable or 100% vegetable juice counts as a member of the vegetable group.
- Fill half your plate with fruits and vegetables.

### Fruits

- **Focus on fruits.** Whole fruit is preferable to juice but any fruit counts: fresh, frozen, canned, 100% juice or dried.
- Fill half your plate with fruits and vegetables.

### Grains

- **Make at least half your grains whole.**
- Read labels to find more whole grain foods.
- Whole wheat, oatmeal and brown rice are all good.

### Protein

- **Go lean with protein.**
- Keep portion to 1/4 of the plate.
- Nuts, beans/peas, seeds, poultry, lean meat, seafood, soy and eggs are in this group.

### Dairy

- **Get your calcium-rich foods.**
- Remember to buy skim or 1% milk.
- Go easy on cheese.
- Skim yogurt is a good choice, too.
they are less likely to break or tear. It may also have a calming effect on the brain when taken during periods of stress. Recommended dosages vary considerably because individual needs are quite variable. Women who smoke, drink alcohol, are under stress, are exposed to high levels of pollution, have infections, or have undergone recent surgery will have even higher needs.

Vitamin C can be found in the following foods (remember, this vitamin is easily destroyed by high temperatures and exposure to light and should come from raw sources whenever possible):

- citrus fruits
- dark green leafy vegetables such as broccoli, spinach, collard greens
- strawberries, blueberries, raspberries and gooseberries
- cantaloupe and watermelon
- tomatoes
- peppers
- potatoes and sweet potatoes
- sprouted grains

It is important to note that Vitamin C is quite unstable and therefore can be easily destroyed by cooking and by exposure to light, air and water. For this reason nutritionists often recommend that a supplement be taken in addition to eating a healthy diet. The RDA for Vitamin C is 60mg but a safe dose can be as much as 500mg daily. Some physicians are even recommending doses as high as 1,000 to 2,000 mg/day. During periods of stress the body needs more Vitamin C. Smokers need more of this vitamin as well as do those who have undergone recent surgery. Many nutritionists recommend increased dosages of Vitamin C for those on estrogen replacement therapy as well.

On the other hand, extremely large doses of the Vitamin may lead to other health related problems such as kidney stones. Chewable Vitamin C may cause damage to the enamel of the teeth so it is recommended that this Vitamin be taken in capsule or pill form instead. Some experts recommend that menopausal women take it in the form of calcium ascorbate in order to get extra calcium as well. This form is also better tolerated than the more acidic ascorbic acid.

The B vitamins play a key role in health maintenance during the menopausal years. They improve adrenal function, improve nervous system function and aid in the conversion of carbohydrates into glucose needed for energy at the cellular level. They also aid in maintaining healthy hair, skin and eyes. Estrogen replacement therapy appears to deplete the body’s resources of B complex causing some nutritionists to recommend that women on ERT take B complex supplements. B complex may also be prescribed by some physicians for alleviating the discomfort of hot flashes in women who have chosen not to take hormone replacements.

The following vitamins of the B complex seem to play the biggest roles in the menopausal years.

- **Thiamin (B1)** keeps the mucous membranes, including the vagina, healthy. It also acts as an antioxidant, especially in conjunction with Vitamin C.
- **Riboflavin (B2)** is important in the release and activity of a variety of hormones (including estrogen). It also helps to maintain healthy skin, nails and hair.
- **Niacin** aids in the production of estrogen and other sex hormones. It also reduces cholesterol levels and dilates blood vessels.
- **Pantothenic acid (B5)** and choline are precursors for the neurotransmitter acetylcholine that is required for proper memory function, proper function of the autonomic nervous system, sexual excitement and orgasm.
- **Pyridoxine (B6)** acts as a natural diuretic which makes it effective in reducing water retention and all symptoms associated with water retention, including depression. In conjunction with Vitamin C it helps in the production of serotonin, a neurotransmitter causing calm and restful sleep.
- **Folic acid** helps the body make and utilize estrogen. It also promotes the formation of healthy red blood cells and therefore can be instrumental in preventing anemia. Foods rich in B complex vitamins include:
  - whole wheat foods, oatmeal, dried beans, Brewer’s yeast
  - liver, nuts, eggs and seeds
  - white meat of poultry and fish, especially tuna

The following doses of the B complex vitamins are recommended:

- Thiamin 1.0mg
- Riboflavin 1.2mg
- Niacin 13.0 mg
- Pantothenic acid 4-7mg
- Pyridoxine 2.0mg
- Folic acid 400mcg
- Cyanocobalamin 3mcg
- Biotin 100-200mcg

**Calcium** is another important mineral to consider during the perimenopausal years. When taken in large enough quantities it may prevent or slow the deterioration of the bones that occurs in osteoporosis. It also promotes blood clotting and good muscular function. It may even prevent arthritis and the development of fragile skin. Calcium can be found in:

- milk and other dairy products such as yogurt and cottage cheese (those who are lactose intolerant may also get dietary calcium from milk that has been treated with the enzyme lactase)
- calcium fortified milk (may contain as much as 500mg/8 oz. glass)
- broccoli and other dark green leafy vegetables (spinach is high in calcium but also contains oxalic acid which prevents calcium absorption)
- fish and shellfish
- soybeans (tofu is one source of this product)

There are also common foods, drugs and other substances that inhibit the work of calcium in the body. They include:

- **excess protein**
- **caffeine** - may also trigger hot flashes
- **alcohol** - may also trigger hot flashes
- **sodium** - may also trigger hot flashes
- **fiber**
- **phosphorus**
- **steroid medications** - these drugs decrease the amount of calcium absorbed from foods and increase the amount of calcium excreted in the urine. When taken over long periods of time these drugs can result in severe bone loss. When taken in high doses they may lead to fractures within a year.
- **thyroid hormones** - these medications may be detrimental to bones if the dosage is too high so any woman on them should closely monitor her serum levels to insure that she is on the lowest dose possible for her (annual TSH tests are recommended).
- **aluminum-containing antacids** - these medications can block the absorption of phosphorous from foods leading to excessive loss of calcium in the urine. If one can get relief from indigestion by taking calcium carbonate containing antacids then that is recommended. For many people, however, the aluminum-containing antacids provide the best relief. In some cases it is recommended that one take both types in order to counteract the negative effects on bone. Patients should discuss this with their health care provider.
- **Dilantin and phenobarbital** - their use may interfere with Vitamin D production so Vitamin D supplements are recommended for any woman on these medications.

Calcium dosage recommendations are as follows:

- pre-menopausal women - 1,000mg/day
- post-menopausal women on estrogen replacement -1,000mg/day
- post-menopausal women not taking estrogen replacement -1,500mg/day
- women who already show signs of osteoporosis should discuss the possibility of taking even greater doses of calcium, even as high as 2,500mg/day

Calcium supplements are usually taken in the form of calcium citrate because it is easily absorbed, does not cause flatulence or constipation and has a lower risk of kidney stones.
stone formation than do some of the other forms of calcium supplementation. In recent years it has been suggested that supplementation with antacids is an effective and cheaper means of obtaining the extra calcium needed for good bone health. Women should be cautioned, however, not to use antacids within 4 hours of vitamin supplementation because the antacids may interfere with the absorption of the vitamins.

Magnesium is a mineral that is involved in the production of enzymes and cellular energy release. It regulates muscle tone and may, therefore, help with muscle cramping, anxiety and heart palpitations associated with hot flashes and the perimenopausal period. It is also important for good cardiovascular functioning. Magnesium and calcium supplementation should be in a ratio of 2 mg of calcium per 1 mg of magnesium.

Vitamin D is essential for calcium absorption especially as one grows older and the body becomes less efficient at absorbing nutrients. As we age the skin produces less of the precursor necessary for the synthesis of Vitamin D. Foods containing high quantities of Vitamin D include:

- Vitamin D fortified milk (beware that labels may not adequately reflect the amount of Vitamin D in the milk at the time that it is bought).
- Vitamin D fortified breakfast cereals
- egg yolks
- canned sardines, tuna and saltwater fish
- fatty fish oils
- liver

Recommendation for Vitamin D supplementation is 400-800 IUs/day. It is easy to overdose on Vitamin D because it is a fat-soluble substance. Overdoses of Vitamin D can be quite dangerous.

Vitamin K is a fat-soluble vitamin needed for the synthesis of several blood-clotting factors that can reduce the heavy menstrual bleeding so common in the perimenopausal years. It is also needed for bone mineralization and may even be important in the prevention of osteoporosis (further studies are needed to bear this out). Most people do not have a problem with Vitamin K deficiencies because it can be synthesized by bacteria in the intestines and is also available in a wide variety of foods.

However, a woman who takes frequent antibiotics may have killed off the intestinal bacteria that manufacture Vitamin K and she should be aware of signs of Vitamin K deficiency such as bruising.

Iron supplementation is important in preventing anemia resulting from the heavy periods that often occur during the perimenopausal years. For those who are still menstruating the RDA is 18mg while for those who have stopped menstruating it is 10mg.

Vitamin C is necessary for proper iron absorption. Foods that are rich in both include:

- liver and other organ meats
- meats, poultry, fish
- dark green leafy vegetables

It is also sometimes suggested that women in this age group learn to cook in iron pots as another means of adding iron to the diet.

Manganese is another mineral important to the development of strong bones, a healthy metabolism and the production of sex hormones. It may also serve as an antioxidant and thus help reduce the degenerative diseases often associated with aging. A deficiency may contribute to the development of osteoporosis. The RDA is 3.8-5mg and it can be found in nuts, vegetables, fruits, organ meats, shellfish, milk and eggs. It can also be taken in supplement form.

Selenium is an essential trace mineral that also functions as an antioxidant. The body uses selenium to produce an enzyme that reduces the oxidation damage to cell DNA, RNA and cell proteins. As a result it also acts as an aging agent and may be especially effective against breast cancer and a large range of degenerative diseases.

Selenium can be found in:

- Brewer’s yeast
- garlic
- mushrooms
- fish and organ meats
- grains
- celery, onions, radishes, broccoli, cabbage and cucumbers
- in supplement form as inorganic sodium selenite

Boron is another trace element found in plant foods. It may be helpful in osteoporosis prevention by changing mineral metabolism. It is also important in maintaining healthy hair, skin, and nails and may even prevent muscle and joint aches. Foods containing high amounts of boron include fruits, vegetables and sesame seeds. It is also available in supplement form.

Copper is important in helping hemoglobin carry oxygen to the cells. Adequate intake is needed for healthy skin, bones, nails and the production of collagen. It may also aid in preventing arthritis. It can be found in animal liver, oysters, nuts, legumes, kidney meat, fruits and shellfish.

The trace mineral, silica, is important for maintaining the hardness necessary for healthy nails and connective tissue, including the tissues of the blood vessels. Silica can be found in seafood, whole grains and vegetables, as well as in supplement form.

Zinc is important in the functioning of over 200 enzymes, the functioning of the cell membranes and for a healthy immune system. It can be found in brewer’s yeast, seafood, whole grains, meats, molasses, sunflower seeds and oatmeal. It is also available in supplement form.

L-glutamine is an amino acid that crosses the blood-brain barrier to help in the formation of an inhibitory neurotransmitter known as GABA. This neurotransmitter calms the brain and improves memory function. It also reduces the craving for alcohol in those who use alcohol to deal with stress. It is usually taken in supplement form.

Essential fatty acids (EFAs) are components of unsaturated fats that are necessary for good health because the cells cannot function effectively without them. The membranes that surround each cell are composed of EFAs and, therefore, the physical integrity and the energy production of the cells are dependent upon adequate amounts of these substances. Since the body cannot produce EFAs on its own, it is dependent upon dietary sources in order to function at optimal levels.

Without adequate EFAs to keep cell membranes strong, dangerous substances (toxins, infectious organisms, viruses, free radicals) may pass through the membrane and into the cell where they can inflict damage and speed up the aging process of the cell. If damage occurs to the cell nucleus then the cell may be transformed into a cancer cell.

There are two kinds of EFAs - omega-6 and omega-3. Omega-6 EFAs are important in regulating the body’s prostaglandin balance which, in turn helps to reduce inflammation, regulate hormone levels (thyroid, cortisone, growth hormone and sex hormones) and regulate the brain neurotransmitters affecting mental fatigue, emotional imbalances, chronic fatigue syndrome and adrenal gland functioning. A woman suffering from any of the aforementioned symptoms should be encouraged to take omega-6 EFAs to increase her prostaglandin levels, which in turn should eliminate the symptoms.

Sources of Omega-3 Fatty Acids

- fresh fish from cold deep ocean water: mackerel, tuna, herring, sablefish, flounder, sardines and salmon
- rainbow trout
- bass
- shrimp, oysters
- pumpkin seeds, soybeans, walnuts, wheat germ
- flaxseed oil, cod liver oil, fish oil capsules
- fresh sea vegetables
Sources of omega-6 fatty acids

- sesame, safflower, and sunflower seeds and oils
- corn and corn oil
- soybeans
- nuts and legumes
- leafy green vegetables
- daily supplement of evening primrose oil 2,000 to 4,000mg.

Following all of the above guidelines concerning EFAs may help the body in many of the following ways:

- improve the appearance, health and texture of the skin, hair and nails
- improve both physical and mental energy
- improve immune system function and reduce inflammation and generalized aches and pains
- improve circulation
- reduce breast pain
- reduce menstrual cramping of the perimenopausal period, reduce the incidence of ovarian cysts and decrease any pelvic inflammation

With age the body becomes less efficient at producing some varieties of prostaglandins that can lead to prostaglandin deficiencies. On the other hand, as the body ages it may produce too much of other prostaglandins which may lead to inflammation and pain. Some experts believe that this may be the source of menopausal headaches, backaches and arthritis.

Women suffering from these symptoms may be helped with a combination of nutritional therapy and antiprostaglandin medications such as naproxen.

Nutritional recommendations include:

- Avoid hydrogenated margarine, fried foods and commercially processed oils such as coconut oil and palm oil that may contain damaged fats that could do harm to the body’s cells.
- Eat more foods containing omega-3 and omega-6 fatty acids.
- Take daily antioxidant supplements.
- Take daily supplements of B-complex vitamins.
- Take zinc supplements daily
- Drink at least two quarts of water and one pint of raw vegetable juice daily

Boosting the body’s immune system can help the body fight against the damage caused by infections, toxins, radiation, free radicals, poor diet, stress, cancer and exposure to certain chemicals. It is a very complex process and involves many of the body’s organs (e.g., the liver, spleen, lymph system, bone marrow and the thymus gland). The thymus coordinates the whole process and, unfortunately, shrinks with age causing a general decrease in immune system functioning that increases susceptibility to invading organisms and can cause more rapid aging to occur.

The following guidelines may help to keep the immune system functioning efficiently for a longer period of time:

- Avoid cigarette smoke, including second-hand smoke
- Avoid exposure to toxic chemicals
- Avoid IV drug use, unprotected sex, unnecessary surgery and poor hygiene, all of which expose the body to more infectious agents
- Avoid stress by learning stress management skills
- Reduce alcohol consumption, fat consumption and the consumption of foods with chemical preservatives, artificial flavorings and artificial sweeteners
- Avoid exposure to radiation (from microwaves, TVs and computers), excessive sunlight and unnecessary medications
- Maintain proper body weight
- Eating a well-balanced diet and take antioxidant supplements
- Get enough sleep (six to eight hours/night), regular exercise and regular participation in relaxing activities
- Drink plenty of water and juices
- Learn assertiveness techniques in order to take better care of one’s own needs. (Repressed emotions can be hard on the immune system.)

It is recommended that women learn about anti-aging hormones such as growth hormone, thymus gland extractions given in the form of injections, and thyroid gland boosters. Each of these supplements may improve vitality, provide a feeling of rejuvenation and slow down the parts of the aging process that are a direct result of deficiencies in these hormones (anti-aging hormones will be discussed at length at the end of the HRT segment of this course).

It is important to remember that although we have learned a great deal in recent years about slowing down the aging process, we cannot stop it. Women should be encouraged to do what they can to slow down the process and, thus, improve the quality of their lives as well as extend the number of years they have to live. However, all of us must remember that the amount of time we have is still limited and therefore we must make the best possible use of it by finding our own personal sense of what gives life meaning.

Herbal Preparations

References to menopause and the treatment of its symptoms have appeared in literature as far back as the time of Aristotle in the 4th century. Historical treatments used herbal remedies to encourage menstruation, or attempted to remove “toxins” in the body by other “purification” methods such as blood-letting, inducing sweating, and even applying leeches to the genitalia area. It wasn’t until the 19th century that medical practitioners started to investigate less invasive herbal remedies. Many of the annoying symptoms of the perimenopausal period can be treated with these natural substances. Some of these treatments are dietary and have already been discussed such as drinking plenty of fluids and taking vitamin and mineral supplements.

In addition, there are many herbs and herbal teas that can help a woman traverse the gap between the time when her ovaries stop producing the estrogen known as estradiol and her adrenal glands start producing a different type of estrogen known as estrone. Estrone is generally not considered to be as potent a form of estrogen as estradiol, but once the adrenals start producing it many of a woman’s most annoying symptoms begin to get better.

Many of the herbs used to help bridge this gap in a woman’s estrogen production have estrogenic properties and, therefore, may reduce the incidence of symptoms (such as hot flashes) caused by estrogen deficiency. Some of these herbs include: ginseng, black cohosh, dong quai and oil of primrose. Many are given in doses based on the woman’s weight so it is important to make that clear to any patients who may be considering these preparations. Because these herbs have estrogenic properties, it is also important to have the patient discuss them with her health care provider before taking them.

Some herbs and teas have a calming effect on the central nervous system that can help menopausal women better tolerate perimenopausal side-effects such as anxiety, irritability and insomnia. These include chamomile, peppermint, catnip, hops, valerian root and passionflower. Most of these are available in health food stores. Other major herbal preparations for menopause include:

Black cohosh is a powder usually sold in capsule form or as an herbal tea. It is derived from a plant commonly known as rattleweed and acts by dilating blood vessels and binding to specific estrogen receptors. It is widely used in Europe to relieve the symptoms of PMS and menopause. There has been extensive literature published regarding the potential benefits of treating menopause symptoms with black cohosh. During one recent study of 16 randomized controlled trials, researchers found no conclusive evidence that black cohosh helped control menopausal symptoms. During all of the trials, women were administered a 40 mg daily dose of black cohosh. An analysis of these women compared to the placebo group revealed insufficient evidence concerning
improvement of bone health, hot flashes, night sweats and the health-related quality of life due to menopause. An overdose can cause dizziness and headaches. Safety during pregnancy has not been established.

**Dong quai**, a Chinese herbal preparation, is used to treat the symptoms of estrogen deficiency. This substance is reported to work by dilating blood vessels and preventing vessel spasms. The recommended dosage is one cup of freshly brewed tea containing one gram of dried root taken one to three times daily. Dong quai also can be administered in 500mg capsules taken up to six times daily.

Recent studies have shown that Dong quai may have some beneficial qualities in stimulating osteoblasts involved in the production of bone regeneration. Its main side effect is increased sensitivity to the sun and, therefore, it should never be taken in high doses. Those on this herb should be advised to use a good sun block to prevent skin damage.

**Ginkgo biloba** is often used to improve brain function, circulation, and oxygenation of body cells, and to reduce problems with memory, fatigue and depression. This herb is very popular in Europe where it is sold in 40 mg tablets. It works by dilating blood vessels to improve circulation throughout the body. It may also act as an antioxidant, anti-hypertensive and aid in the reduction of serum cholesterol. In Germany it is used for tinnitus, headaches and emotional instability. Recent double-blind randomized studies have showed favorable outcomes regarding the use of ginkgo biloba for diminishing cognitive abilities in the aging population. Particularly noticeable, was the statistical significance of ginkgo biloba compared to the placebo group in improvement in cognition for people with dementia and Alzheimer’s disease.

Its major side effects, which occur at very high doses, include nausea, vomiting and diarrhea.

**Ginseng** may be given to decrease hot flashes, especially if combined with Vitamin E, improve immune system function, increase energy levels, regulate blood pressure and reduce stress. A randomized controlled trial published in the Journal of Women’s Health studied women who were administered Korean red ginseng for 30 days. At the conclusion of the trial period, the researchers found that the ginseng reduced depression, fatigue and insomnia in 12 postmenopausal women enrolled in the trial.

Ginseng should not be given to patients with severe hypertension. It is from an Asian class of drugs that are known to interact with neurotransmitters. It may also act as an antioxidant. Side effects such as nausea and insomnia are few and usually occur only at very high doses. However, there is some evidence that ginseng may interfere with other pharmacologic agents such as digoxin. Claims that it acts as an aphrodisiac do not have supporting evidence.

**Evening primrose** oil has been shown to mildly reduce night sweats.

**St. John’s Wort** is an increasingly popular botanical remedy for treating depression. It has been around for hundreds of years and is the most widely prescribed antidepressant in Germany. However, its antidepressant mechanism is not understood. It also appears to be helpful in treating depression with somatic complaints (decreased activity, fatigue and sleep disturbances). St. John’s Wort is one of the most heavily researched herbs for the treatment of depression; however, most of these studies have been performed on nonmenopausal populations. In 37 clinical trials, St John’s Wort was rated superior than the placebo in the treatment of mild or moderate depression. These studies also found that the herb was equivalent to antidepressants with fewer negative side effects. Other studies regarding subjects with major depression showed only minor improvements compared to subjects in the control group.

Additionally, St. John’s Wort appears to be effective in treating seasonal affective disorder (SAD). This substance usually provides relief in 75% of those who take it. Its side effects are infrequent and mild. However, studies have also revealed several drug interactions, especially with medications administered for HIV treatment. St. John’s Wort can decrease the blood concentration of these drugs. Moreover, the herb can cause breakthrough bleeding and unplanned pregnancies in women who are using oral contraceptives.

Quality standards are now being developed by several American organizations to evaluate the efficacy of botanicals, and the FDA is getting increasingly involved in the process of quality control, effective research designs and the process of regulation. A recent survey of 500 perimenopausal and postmenopausal women conducted at the University of Illinois Medical Center revealed that 70% of women used herbal supplementation for menopausal symptoms; however, less than 10% of these women could identify any definitive benefit regarding the health benefits of these supplements.

**Soy Supplementation**

It has been documented that the incidence of heart disease, breast cancer and uterine cancer is much higher in Western countries that they are in Asia. Four major dietary reasons are postulated for this phenomenon. The Asian diet is higher in soy consumption (Japanese women take in as high as 200 mg/day while in western nations women consume only 5 mg/day), lower in fat consumption, lower in caloric intake in general and higher in the intake of anti-oxidant-containing green tea. It is likely that all four factors play a role in Asia’s lower rates of heart disease and certain cancers. Soy remains one of the most heavily studied plant and food the natural treatment of menopause; however, the results have been mixed. One of the problems with the past research is the disparity in dosages, products, formulation and length of studies. However, there are some recent studies that have shined some positive light on isoflavone-rich soy. A meta-analysis of 38 controlled human studies showed positive outcomes of soy consumption on the reduction of LDL lipoproteins and triglycerides, along with an increase in HDL lipoprotein levels. Based on this research, the FDA has approved the health claim that isoflavone-rich soy protein can reduce cholesterol.

Recent animal studies have also yielded positive information regarding isoflavone-rich soy protein’s effect on bone mineral density (BMD). The human studies have been mixed, but have shown some modest bone-conserving effects.

In May of 2011, literature was published
regarding a study that analyzed the effect of soy-derived isoflavones have over menopausal women. During the study, 50 women aged 49 to 50, with moderate to severe symptoms, were administered 100 mg of soy daily. After three months of supplementation, the statistical analysis showed a significant decrease in severity, number and presence.

As a result of this research, the use of soy products as part of the diet and as supplementation for the Western menopausal woman has increased. Soy protein contains chemicals known as isoflavones. These chemicals are actually plant sources of estrogen and possess many of the properties of animal and synthetic estrogens. They may protect against the development of CVD, osteoporosis, urinary incontinence and decreases in cognition associated with the decreased estrogen levels of menopause. Those women on a high soy diet often have decreases in total cholesterol levels, LDL levels and triglycerides while exhibiting an increase in HDL levels. Incidences of hot flashes and night sweats do not appear to decrease with the ingestion of soy.

However, the severity of the symptoms is often significantly decreased, especially when the supplementation is given B.I.D. rather than in one large dose. One study also found that women reported fewer mood swings after soy supplementation.

Current recommendations encourage menopausal women to increase their intake of soy foods by one serving a day (by eating more tofu, soy sauce, soy milk, soybean sprouts, miso paste and other soy products) and to increase their intake of fruits and vegetables to five servings a day. Supplementation of isoflavones is not recommended because of the paucity of data on the positive and negative effects. There is some concern that isoflavones given in pill form may not provide the same degree of protection as that of the whole food.

The potential for mega dosing on the pill form is also a concern. Current studies underway should provide more definitive information within the next three to five years.

Some experts have expressed concern that the processing of foods containing isoflavones may substantially decrease their isoflavone levels. Isoflavone is an alcohol soluble substance and therefore any processing using alcohol may not provide enough isoflavone to be effective. Patients should be cautioned to look at labels to ascertain whether or not alcohol has been used in the processing of the particular soy-based food they are eating.

**Exercise Needs and Recommendations**

Middle age spread is not a myth. As women age they tend to gain weight and after menopause this weight tends to go primarily to the waistline and torso. Even those who do not gain weight may find their waistlines expanding for no apparent reason. This has associated health risks such as increased incidence of heart disease and stroke (enlarging buttocks do not have the same health risks as enlarging waistlines). If a woman divides her waist circumference by her hip circumference and receives a value greater than 0.8 she is at a higher risk for developing these CVDs.

Opinions vary as to why we put on weight as we age. Some believe that it is because our lives become more sedentary and as a result calorie expenditure decreases. Others believe that it has to do with the menopause directly. Apparently the normal menstrual cycle is associated with an elevated metabolic rate during the last two weeks. This metabolic increase may account for as many as 15,000 to 20,000 calories a year.

Once menstrual cycles stop, this elevation in metabolic rate stops as well. Post-menopausal women also tend to have a higher proportion of fat to lean body mass than do younger women. Fat does not require the same number of calories to maintain as does lean body tissue.

Therefore, as the fat percentage increases, fewer calories are needed to maintain weight. There is evidence to suggest that increasing one’s overall activity level, not just one’s exercise level, may help keep weight down by increasing caloric needs.

A study published in the International Journal of Obesity investigated the effects of HRT on weight and abdominal fat in postmenopausal women. Many women suffering from menopause believe that HRT causes weight-gain; however, several past clinical studies report mixed results. During many of these studies, the measurement tools consisted of X-ray absorptiometry (DXA) or waist-to-hip ratio (WHR). Unfortunately, these methods do not provide an accurate calculation of abdominal fat distribution. More recent research has utilized CT scans and MRIs to measure abdominal fat in women undergoing HRT. This study, in particular, observed the influence of 12 months of HRT on abdominal fat in postmenopausal women. Except for the control group, each woman received a daily dose of HRT as well as baseline physical examinations and a comprehensive exam at the end of the study. At the conclusion of the study, researchers found an improvement in the distribution of abdominal fat with no increase in weight in women who underwent HRT.

Another study linked middle-age spread to the levels of sex hormone binding globulin (SHBG). This molecule attaches to testosterone. As a woman goes through menopause her SHBG levels drop causing her to have more circulating testosterone in her body and rendering her susceptible to the accumulation of upper body fat similar to that in men and with the same health risks as men.

Because of this tendency to put on weight, especially around the middle, the importance of regular exercise for women of this age cannot be over-stressed. Regular exercise helps reduce the risks of cardiovascular disease (hypertension and elevated cholesterol and triglyceride levels), osteoporosis and weight gain. It may also decrease the pain associated with many conditions, act as a natural antidepressant and sedative, increase stamina, help with the discomfort associated with hot flashes, improve overall appearance, improve the texture of the skin, increase libido, promote an overall sense of well-being and relieve tension and anxiety.

Physical changes associated with aerobic exercise include:

- a stronger heart with fewer beats/minute and increased pumping capabilities
- increased muscle mitochondria which help the body use more oxygen during exercise (this means greater potential for burning off fat)
- increased metabolism, which also aids in burning fat
- increased clearance of lactic acid from the system, which means less muscle soreness
- increased muscle use of glucose, which helps stabilize serum glucose levels
- improved strength in muscles, bones and tendons, which may help to combat osteoporosis
- increase in lean body mass versus fat which increases the metabolic rate thus requiring more calories for everyday activities (this can be very important in the prevention of weight gain during the menopausal years)
- improvement in lung vital capacity levels
- improved cognitive ability, also important during the menopausal years when decreased estrogen levels tend to cause some memory loss.

Approximately half of all menopausal women gain about ten pounds as a result of the decreased metabolic rate associated with the menopause. Some women gain significantly more. Aerobic exercise for 20-30 minutes a day at least three days a week is recommended to help keep weight gain to a minimum and to improve cardiovascular and respiratory function.

Any woman embarking on an aerobic exercise plan for the first time should consult her health care provider to determine the wisdom...
of an aerobic program for her particular situation. Those women with CVD risk factors such as obesity, hypertension, hypercholesterolemia, diabetes, or a family history of heart disease are especially cautioned to seek medical advice.

Other conditions that may be aggravated by aerobic exercise include arthritis and back problems. Once she has the green light from her provider she should start gradually. Five minutes a day at first is recommended with an increase to thirty minutes a day after the course of at least one month.

Flexibility training is another important aspect of any exercise program for women of menopausal age. The benefits have less to do with reduction of long-term health problems and more to do with quality of life. Flexibility training is defined as the range of motion of a joint or group of joints. It is determined by the ends of the bones, the ligaments within the joints, the lubricating fluid present in the joints, the synovial membrane and the muscles and tendons supporting the joint. When the range of motion is increased the chance of injury to the joint is reduced. The stretching associated with flexibility training may also lead to a more symmetrical body, better posture, better balance and the relief of muscle cramps and low back pain.

Many of the positions in Hatha Yoga provide the kind of stretching important in flexibility training. The important joints and muscle groups to be stretched include the gastrocnemius and Achilles’ tendon, the hip abductors, the triceps, the ankle and lower leg joints and muscles, the quadriceps, the hip flexors, the lower back and the buttocks. Results are perceived over an extended period of time (sometimes weeks or months); therefore, patients should be warned to slow down or even stop if they feel pain. Stretching should feel good.

As a woman ages her hip function becomes increasingly important to her overall health. Good hip function can prevent many minor aches and pains, preserve flexibility and prevent hip fractures. The weight on a woman’s hip joints is determined by her pelvic design. Because women have wider hips than men do, they put more stress on the hip joint through everyday routine activities than men do. The simple act of walking and getting up out of a chair exert pressures on the hip joints as much as three times the woman’s body weight. Over time this begins to take its toll on the joint.

The hip has a ball-and-socket assembly with the head of the femur fitting neatly into the acetabulum (pelvic socket) to form a sturdy joint. The network of ligaments, tendons and muscles serve to hold the joint in place while the cartilage and bursae cushion the joint with each movement. Nerves and arteries provide sensation and blood circulation to help maintain the health of the joint.

Strength training to improve muscle tone, flexibility exercises to improve range of motion and water exercise are good ways to keep hips healthy. The advantage of water exercise over other forms is that much of the body’s weight is displaced while in the water, which makes the hip easier to move. Water provides uniform resistance down the entire length of the leg, which forces the muscles to work evenly and thus prevents undue stress on the hip joint.

Three hip exercises are mentioned below that can be performed daily in the privacy of one’s own home. Remember to remind patients that it is important to do a series of gentle stretches to warm up the muscles before they start any exercises. This will minimize the risk of strained or pulled muscles.

The lateral leg lift works the gluteus medius muscle, which helps support the pelvis, the femur and stabilizes the joint. It is done by standing (holding onto the back of a chair to provide balance and prevent injury) and lifting the leg up and away from the body as far as is comfortable and then pulling the leg back in toward the body. Ten repetitions a day on each leg are recommended.

The partial squat strengthens the thigh muscles to prevent buckling when walking or climbing stairs. It is done by standing evenly on both legs with feet about a foot apart and then bending the knees slowly until squatting about one third of the way to the floor.

Hip extension exercises are best performed by lying flat on the back or by standing and then lifting the leg straight out behind and holding for 5 seconds. In order to prevent lower back injuries it is important that the back not be arched while doing this exercise.

If it becomes increasingly difficult for a woman to move her hip or if she experiences sharp pain she should be encouraged to see her provider. Usually a hip assessment is then performed to determine the hip’s range of motion and to specify which particular movements are causing the pain. X-rays and/or MRIs are a common part of such hip assessments.

Often, with exercises such as those suggested above and with some physical therapy, the joint’s strength and mobility can be regained. Sometimes the provider will also recommend weight loss to decrease the stress on the joint. If none of these strategies helps, however, then hip replacement surgery may be required in order to stop the pain.

Osteoporosis prevention is provided primarily by weight bearing exercise while cardiovascular disease is prevented by aerobic exercise. Exercise activities having both properties include the following: walking, jogging, weight training, stair climbing, cross country skiing and bicycling. It is recommended that these activities be done three to five times a week for at least thirty minutes a day in order to obtain maximum benefits.

Many studies and meta-analysis have tied weight training to improvements in depression and anxiety. One recent Australian study compared a progressive high-intensity weight-training program to a low-level weightlifting program. The high intensity program consisted of a 45 minute workout three times a week for eight weeks. At the conclusion of the program, evidence suggested that participants engaged in the high-intensity resistance program had significant improvements in depression compared to the low-intensity subjects. Weight training may be particularly helpful in those who cannot take antidepressants due to the side effects of these drugs. Weight training may also restore mobility and balance, which can improve the quality of life and as a result reduce depression.

Working out in water is both gentle and demanding. It eliminates stress on the joints and provides a cushion against injury while simultaneously providing resistance at a level twelve times as high as air, thus requiring higher energy expenditure than exercise done in air. Water exercise, however, does not appear to reduce the risk for osteoporosis the way that land based exercise does because it does not require the pull on the hips and the spine necessary to reduce bone loss in these areas. The increased muscle tone and flexibility from aquatics can help prevent the falls that so often cause broken bones.

Aquatics can burn as much as 400-500 calories an hour and thus promote weight loss and increase the ratio of lean body tissue to fat tissue. These exercises are performed in the shallow end of the pool and do not require the ability to swim. Classes usually last from 45 to 60 minutes and begin with a warm-up followed by an aerobic program and a cool-down period.

Patients considering aquatic exercise should be advised to:

- search for a program taught by a trained and certified instructor
- consider clothing such as leotards or other exercise clothing rather than bathing suits because these tend to be more comfortable
- use aquatic shoes that help support the foot, absorb shock and add traction to the exercise
- keep plenty of water nearby because one often works up a sweat during aquatic exercise
- begin slowly and increase activity gradually-teach them the importance of listening to their own bodies to decide when to increase activity
About 50% of women drop out of an exercise program within six months of starting. Because we want to encourage women to think in terms of developing a long-term commitment, here are some tips that may help your patients stick with a program they have selected:

• Have them determine their motivation for exercising (e.g., to feel healthier, to get some time alone, to lose weight, to meet new people, or to compete in a marathon).

• Set a long-term fitness goal so that fitness is seen as a long-term process. This may be something as simple as having more energy for daily activities or as complex as running a marathon.

• Work toward the long-term goal by setting intermediate short-term goals. If the goal is to lose ten pounds then it is necessary to schedule aerobic exercise sessions of thirty minutes duration at least three to four times a week. Fitness experts recommend that a woman schedule these sessions as appointments so that they are on her schedule and are, therefore, less likely to get crowded out by other demands in her life. It may help to join an exercise class that takes place away from her home or work site to further protect that time from interruptions.

• Eliminate other excuses not to exercise. For example, keep extra workout clothing in the car so that it is not forgotten. This will be easier once the woman has made an internal commitment to exercise regularly.

• Exercise in moderation no matter what the fitness goals may be. It may take as long as six to eight weeks before results are seen and it makes no sense to begin an exercise program at full steam and then burn out quickly due to loss of interest or to injury. (There is some evidence that women are more prone to musculoskeletal injury than are men and therefore need to be especially careful when embarking on a new exercise program).

If your patient has not exercised before, it is recommended that she begin with two sessions a week for about a month and then gradually work up to three to four sessions a week. Even experienced exercisers should be careful not to overdo it because injuries at this age take longer to heal. It is much better to practice moderation and keep up a steady exercise program than it is to risk injury and then have to start over again.

There is some evidence that overdoing may actually evoke the body’s stress response causing changes in hormone levels, metabolic activities, increased susceptibility to infections, mood changes, bone loss and the development of eating disorders. (The development of eating disorders in the elderly is a fairly recently recognized phenomenon that all nurses working with middle-aged and elderly women should consider in their patient assessments).

• Encourage patients to plan an exercise program that is fun for them. This will vary from individual to individual, but it is the only way to ensure long-term success. Some ways to make it fun include exercising with a friend, picking exercise activities that she enjoys (it makes no sense to begin a jogging program if she absolutely hates running), and building variety into the program in order to prevent boredom and to promote cross-training. Cross-training will help to give the entire body a workout. For example, a program that only involves jogging will tend to omit any upper body exercise whereas jogging along with a program of upper body weight training will eliminate this problem.

• Encourage a positive attitude by reminding patients how much better they will feel once they have exercised. For many people it helps to plan exercise first thing in the morning so that they get it over with early instead of dreading it all day. Encourage patients to continue regular exercise by reminding them that lack of motivation is a common problem and happens occasionally even to the most experienced exerciser.

• Encourage women to incorporate fitness into their daily lives by using stairs instead of elevators, parking a few blocks away from work in order to walk briskly for a few minutes and playing actively with children.

Since it is important to the long-term success of any exercise program, nurses should stress to patients that they engage in activities that they enjoy and that fit in well with their lifestyle. Some things to consider are as follows:

• Does she want to exercise with a group or alone?
• Does she prefer exercising inside or outside?
• Does she prefer team sports or individual exercise with her own agenda?
• What activities did she do as a child that she might enjoy doing again now?
• Would she prefer the variety of doing different activities on different days?
• Would she like to exercise on her noon hour or after work?
• Would she enjoy belonging to a gym where she could have a sauna after she is finished working out?

Whatever she decides, it is important that she engage in some form of exercise every day. Caution her to start slowly, however, if she has led an inactive life up until now. Some women new to exercise may feel confused by many of the terms they hear in an exercise class. Here are some common terms and their definitions:

**Aerobic** - uses the large muscles of the body in a rhythmic and continuous way over an extended period of time. It may include dancing, jogging, walking briskly, hopping and skipping.

**Intensity** - this is a measure of how hard the body is working during an exercise session. The higher the intensity the more physical demands placed on the body. Intensity is usually measured by taking the heart rate several times within a session. If one is exercising at the proper level of intensity she should still be able to talk while exercising.

**High impact vs. low impact aerobics** - impact is a measure of the level of contact between the foot and the floor. Repeated and continuous high impact levels may result in various types of injuries. For this reason it is usually recommended that women of menopausal age stick to low impact types of exercise. This is done by removing all jumping and hopping movements and keeping one foot on the floor at a time. It is possible to exercise at a higher intensity level and still keep it low-impact by increasing the size of the movements and energy put into them.

While regular exercise is one of the keys to good health it is possible to overdo it too. Evidence is mounting that beyond a certain point exercise may begin to have negative effects on overall health even in the young. If exercise goes beyond the equivalent of running for 20 hours a week for six months then the stress response is activated, causing shifts in hormone levels which may throw off the menstrual cycle. Changes in metabolism may cause the body to break down muscle for energy and lead to fatigue. Increased susceptibility to infection, changes in mood and loss of cognitive function similar to those seen in starvation may ensue. Additionally, an increased incidence of injuries, bone loss due to decreased estrogen levels resulting from low body fat, and eating disorders may develop.

Always caution patients to consult their primary health care provider before they embark on any new exercise regimen. This is necessary to rule out any underlying conditions that might make exercise more dangerous than it is useful.

**Obesity**

In recent years, with the advent of anti-obesity drugs, the thinking about obesity has changed dramatically. Experts are more willing to see the disease as a result of chemical imbalances in the brain rather than as purely an issue of self-control and discipline. This has increased compassion for the obese within the health care community. Psychological factors that contribute to the problem may be present as well. As we learn more about obesity we are less willing to label the obese as lazy and out of control.
On the other hand, there are definitely health risks to obesity and many of these risks come into play as women hit the menopause years. Some are related directly to the issues of menopause, such as an oversupply of estrogen in the body due to its storage in the fat cells of the body. This may contribute to the development of certain estrogen-related cancers.

Others are more directly associated with the aging process, like the development of diabetes in the middle-age years. Still others, such as the development of CVD, may be related to both the aging process and menopause.

A recent animal study published in the Physiological Society attempted to determine the association between a chronic high fat diet and decreased signaling from the intestine. This research investigated the effects of satiety signals had on the propensity toward obesity. During the study, mice were randomly divided into two groups - a control group that was fed a low-fat diet, and an obese group that was administered a high-fat diet. During the ten week study period, satiety signals were measured in both groups. The high-fat group showed a marked reduction in intestinal satiety signals. Researchers believe this to be an important clue in the pathophysiology of overeating and obesity. The results of this study warrant further investigation into strategies to control brain chemistry that causes overeating.

Dietary fat substitutes have also become popular in recent years as a means of combating obesity. Many experts, however, are concerned that widespread use of these products will lead to vitamin and mineral depletion, especially in those vitamins and minerals that are fat soluble.

In recent years the AA model (Alcoholics Anonymous) has been used to help women cope with many of the psychological issues that often contribute to obesity. These issues include an inability to say “no” for fear of being rejected, a history of childhood sexual abuse which often leads to a sense of powerlessness that spills over into adult life and an inability to identify and cope with difficult feelings such as anger and sadness.

Support groups for obese women suffering from these psychological impairments can be quite successful in helping women deal with these complex issues. Participants often find a sense of support as they make changes in their lives and the way they deal with other people. Often these women are sure that they are the only one suffering from such things, and the presence of a group of other women dealing with the same issues can go a long way toward breaking down the sense of isolation that often leads to overeating.

### Stress Management

Because stress is a trigger for many of the symptoms of menopause and because it can rapidly deplete the body’s store of important nutrients, it is vital that women of this age learn to manage their stress level. Many of these methods were discussed in greater detail in the section on depression/anxiety, but the impact of stress on a woman’s nutritional status makes them worth mentioning again in this section. Menopausal women need to find a balance between being alert and energetic on the one hand and being relaxed and calm on the other.

They should be encouraged to take time for themselves each day, to honor their physical and emotional needs and to give themselves positive affirmations on a regular basis. Stress management techniques that work for most women include:

- **Progressive Relaxation** - This consists of deliberately over-tensing specific muscle groups because over tensed muscles often relax to a deeper state of relaxation than the body was experiencing prior to the tensing. This tensing is done progressively throughout the body, starting at the feet and working up to the head.
- **Hatha Yoga** - This is a gentler of yoga than that of many other yoga traditions.
- **Tai Chi** - This is a Chinese art that is becoming increasingly popular in western cultures due to its health benefits. Benefits may include balance, increased muscle strength, increased self-confidence, delayed onset of CVD, and stress reduction as measured by serum catecholamine levels. Its movements are smooth and flowing, and designed to remind one of one’s holistic nature rather than concentrating on specific body parts or muscle groups. To do this practice successfully requires balance, muscle control, concentration and deep even breathing patterns. To find out more about this form of exercise contact your local YMCA or public recreation programs.
  - **Meditation** - Either alone or in a group.
  - **Visualization/Imagery techniques** - can be done individually or in a group setting with a trained facilitator. In either, the patient is encouraged to think about a relaxing event, real or imagined, in order to decrease her respiratory rate, heart rate and blood pressure.
- **Support groups** (both self-help types and those facilitated by a professional) - These can be very helpful in encouraging women to share their needs and desires with their loved ones.
- **Counseling/Therapy** - These help underlying emotional problems such as low self-esteem, depression and the fear of aging to name just a few.

### Examples of oral Estrogen and Estrogen/Progestin Products

<table>
<thead>
<tr>
<th>Brand</th>
<th>Generic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premarin</td>
<td>conjugated equine estrogens</td>
</tr>
<tr>
<td>Cenestin</td>
<td>synthetic conjugated estrogens</td>
</tr>
<tr>
<td>Estratab</td>
<td>esterified estrogens</td>
</tr>
<tr>
<td>Menest</td>
<td>esterified estrogens</td>
</tr>
<tr>
<td>Ortho-Est</td>
<td>estropipate (piperazine estrene sulfate)</td>
</tr>
<tr>
<td>Ogen</td>
<td>estropipate (piperazine estrone sulfate)</td>
</tr>
<tr>
<td>Estrace</td>
<td>micronized 17-betaestadiol</td>
</tr>
<tr>
<td>Estinyl</td>
<td>ethinyl estradiol</td>
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<table>
<thead>
<tr>
<th>Brand</th>
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<tbody>
<tr>
<td>Cycrin</td>
<td>medroxyprogesterone acetate</td>
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<tr>
<td>Provera</td>
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</tr>
<tr>
<td>Aygestin</td>
<td>norethindrone acetate</td>
</tr>
<tr>
<td>Norlutrate</td>
<td>norethindrone acetate</td>
</tr>
<tr>
<td>Prometrium</td>
<td>progesterone USP</td>
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### Estrogen-Plus-Progestin Pills

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<tr>
<td>Premphase</td>
<td>conjugated equine estrogens and medroxy-progesterone acetate</td>
</tr>
<tr>
<td>Prempro</td>
<td>conjugated equine estrogens and medroxy-progesterone acetate</td>
</tr>
<tr>
<td>Femhr</td>
<td>ethinylestradiol and norethindrone acetate</td>
</tr>
<tr>
<td>Activella</td>
<td>17-beta-estradiol and norethindrone acetate</td>
</tr>
<tr>
<td>Ortho-Prefest</td>
<td>17-beta-estradiol and norgestimate</td>
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Examples of Gels, Creams, Patches and Other Hormone Products

Estrogen Products:

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<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Vaginal Cream</td>
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<td></td>
<td>Ortho Dienestrol</td>
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<td></td>
<td>Ogen</td>
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<tr>
<td></td>
<td>Premarin</td>
<td>conjugated equine estrogens</td>
</tr>
<tr>
<td>Vaginal Tablet</td>
<td>Vagifem</td>
<td>estradiol hemihydrate</td>
</tr>
<tr>
<td>Vaginal Ring</td>
<td>Estring</td>
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<tr>
<td></td>
<td>Femring</td>
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<tr>
<td></td>
<td>Climara</td>
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<td>Esclim</td>
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<td>Vivelle-Dot</td>
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<td>Estrogel</td>
<td>estradiol gel</td>
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<tr>
<td>Skin Cream</td>
<td>Estrasorb</td>
<td>estradiol topical emulsion</td>
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Progestin Products:

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<tr>
<td>Vaginal Gel</td>
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<td>progesterone</td>
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<tr>
<td>IUD</td>
<td>Mirena</td>
<td>levonorgestrel</td>
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Estrogen Plus Progestin Products:

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<tr>
<th>Type</th>
<th>Brand</th>
<th>Generic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Patch</td>
<td>Combi-patch</td>
<td>17-beta-estradiol and norethindrone acetate</td>
</tr>
<tr>
<td></td>
<td>Ortho-Prefest</td>
<td>17-beta-estradiol and norgestimate</td>
</tr>
</tbody>
</table>

- **Massage therapy** to treat the buildup of tension that occurs in the body’s muscles as a direct effect of stress. Despite the wide variety of massage techniques they all tend to hold certain key physiological principles in common. These principles are:
  1. Massage improves blood circulation by releasing tension in the muscles. This improved circulation improves the supply of nutrients to the body’s tissues.
  2. Improved circulation of lymphatic fluid aids in the removal of toxins and waste.
  3. Chronic muscle tension from stress or injury can adversely affect body structure and function. The use of massage therapy can help restore musculoskeletal function by releasing muscle tension.
  4. The body’s systems are improved by increasing circulation and therefore overall physical health is enhanced which in turn improves the quality of life.
  5. Because there is a strong connection between the body and mind, mental health may be improved and psychosomatic ailments reduced through the use of massage therapy.
  6. Massage and other forms of bodywork help redirect patterns of energy flow so that overall health is improved.

- Regular exercise as described in the previous section.
- Good nutrition as described previously.

**Hormone Replacement Therapy**

Women considering hormone replacement therapy (HRT) are often bewildered by the number of choices and the amount of information available to them. Their information needs can be broken down into three basic questions:

- **What should I take?**
- **How much should I take?**
- **When should I take it?**

This section of the course attempts to answer these basic questions so the informed nurse has the necessary information to relay to patients. The woman working in conjunction with her provider, however, makes the final decision.

Estrogen supplements were widely used until the mid-1970s when it was discovered they increase the risk of developing endometrial cancer. New regimens were devised in which a progestin is given with the estrogen to protect the uterine lining from hyperplasia. These combination regimens are prescribed only for women with intact uteri. Those who have had hysterectomies are given estrogen only.

Until July of 2002, estrogen and progestin supplements were among the most commonly prescribed drugs in the US. At that time, however, a large study known as the Women’s Health Initiative (WHI) found a small increase in breast cancer, heart disease, and stroke with combination (estrogen and progesterone given together) hormone replacement therapy. The researchers felt this increased risk was not worth the benefits so they stopped the part of the study using combined HRT. They did not stop the part of the study using estrogen only because it did not show these same increased risks. The study does not address the use of the estrogen patch combined with progesterone. It’s findings are specific for oral combined HRT only.

To put this in perspective, the study predicts that for a healthy woman aged 50-79 years who has been taking estrogen and progestrone for more than five years, the chances of having a heart attack in the next ten years is 3.7% (compared to 3.0% for non-users). Stroke is increased from 2.1% to 2.9% with hormones and breast cancer risk rises from 3.0% to 3.8% for users. These are small increases in risk for the individual woman but when applied to the post-menopausal population as a whole they affect a significant number of women.

The WHI showed that HRT often reduces hot flashes, night sweats, and other perimenopausal symptoms. It did not find any increased risk in women taking combined HRT for less than five years. As a result of these findings, experts suggest HRT continue to be given for one to three years for control of symptoms.

Experts still believe HRT can prevent the development of osteoporosis but they no longer recommend it for that purpose because those same benefits can be obtained with other meds that do not present the CVD and breast cancer risks now associated with HRT.

Along with the WHI study, there were two other landmark clinical trials that have played a role in scrutinizing the long-term safety of HRT. The Postmenopausal Estrogen/Progestin Interventions Trial (PEPI) studied the effect of estrogen-alone on bone mass and cardiac risk. The results showed a reduction in LDL cholesterol and an increase in HDL cholesterol as well as positive implications on bone mass.

The second trial, known as the Heart and Estrogen-Progestin Replacement Study (HERS) investigated the likelihood of estrogen with progestin in the prevention of a coronary event. The results failed to show a reduction of risk after four years of HRT. Conversely, the risk for heart attack had increased during a woman’s first year of HRT. According to the study, HRT also increased the risk of blood clots in the legs and lungs.

Other studies suggest estrogen may play...
Hormones | Indications | Contraindications
--- | --- | ---
**Estrogen** | • Hot flashes and/or night sweats  
• Reverses bone loss  
• Improves sleep  
• Increases HDL & risk of hypertension  
• Decreases number & severity of migraines  
• may cause mild depression | • Risk of endometrial cancer if taken alone  
• May worsen migraines in some women  
• May worsen gallbladder disease  
• Active liver disease, a recent hx of blood clots, and recent uterine cancer contraindications.

**Progesterone** | • A woman on ERT who still has a uterus  
• May exert a positive influence on the breast  
• May be prescribed alone for women who cannot take estrogen | • May adversely affect cholesterol levels  
• Uncomfortable side effects such as:  
• irritability & depression  
• headaches  
• bloating and/or weight  
• pelvic pain

**Combined Estrogen & Progesterone** | • Endometriosis with or without a uterus  
• A history of endometrial ablation  
• Continuous combined for women who find monthly bleeding inconvenient  
• Cyclic combined causes monthly uterine sloughing which may prevent uterine cancer  
• Uncomfortable symptoms associated with hormonal fluctuations (continuous combined) | • Breakthrough bleeding -> uterine biopsy  
• especially with continuous combined  
• may increase risk for CVD  
• may increase risk for breast cancer

**Testosterone** | • A desire to libido, especially in those women on ERT  
• Provides a general sense of well being  
• May prevent Osteoporosis  
• Oophrectomy | • Slight increase in facial hair and acne  
• Voice changes  
• Strong feelings of anger and/or depression  
• Weight gain & liver disease

**DHEA** | • Improves immune function  
• Decreased body weight  
• Improves cognitive function  
• May be anti-aging agent  
• Increases sense of well-being | • Long-term safety not established  
• Mild side effects include acne and increase in facial hair  
• Not regulated by FDA

**Melatonin** | • Regulates sleep/wake cycle  
• May be anti-aging & anti-carcinogenic  
• Maintains youthful level of sex hormones | • Daytime drowsiness  
• Morning-after headaches  
• Impaired fertility  
• Not regulated by FDA

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a role in delaying the onset of Alzheimer’s disease as well as decreasing the overall risk for the development of the disease. The length of time on postmenopausal estrogen may be a factor. One study showed women who had taken postmenopausal estrogen for longer than one year had a greater reduction in risk than those who took it for less than one year or not at all. These studies reinforce what we already know about the effects of estrogen on the brain (increases cerebral blood flow, promotes the growth of new dendrites between the cells, improves memory and perception, and inhibits the enzymes that break down neurotransmitters like serotonin, dopamine, and norepinephrine). These positive estrogenic effects on the brain may explain why the various forms of dementia occur more often in men than in women. Experts stop short of saying ERT prevents Alzheimer’s disease but they do say these studies indicate there may be an important connection between hormone levels and brain function. More studies are needed before we can make definitive claims about Alzheimer’s disease specifically. Colon cancer is the second most common cause of cancer deaths in the US. The WHI revealed that women who took estrogen and progestin had 37% lower risk of colon cancer. The strongest effect seems to be in those women who have used ERT within the last ten years and those who have used it for the longest period of time. Currently nobody knows how estrogen exerts this effect but some experts speculate it may reduce bile acids in the colon (elevated colon bile acids have been shown to promote colon cancer in animals). Further epidemiological studies as well as biologic mechanism studies are needed before anything definitive can be said about estrogen’s role in the prevention of colon cancer.

HRT consists of various combinations of the hormones estrogen and progesterone. Sometimes one of these hormones is given without the other. Methods of administration vary as well; some are given in pill form while others are given by injection or patch. In order to make an informed decision a woman must know all the options available to her. An informed nurse can play an important role in this education process.

The US Preventative Task Force also has concluded that the potential harm of long-term HRT outweighs the known benefits. In spite of the negative reports following the WHI, PEPI and HERS studies, HRT does have a place as an effective treatment option given the correct circumstances, such as for women under 60 and for short term treatment durations. According to a recent article published in Menopause International, these potential benefits include:
• Prevention of hot flashes and night sweats
• Treatment of vaginal dryness and other causes of painful intercourse
• Increased bone density
• Protection of intervertebral discs
• Improved skin

**Estrogen Replacement Therapy (ERT)**

Estrogen replacement therapy is available in both natural and synthetic forms; there are distinct differences between them. Synthetic estrogens are made in labs and are chemically foreign to the body’s systems. As a result they are not as easily metabolized by the body’s natural enzymes and may build up in the body causing stronger than warranted effects. They may also cause metabolic changes in the liver that can cause fluid retention, irregular blood clotting, aching legs, and hypertension. Synthetic forms may also trigger nausea, irritability, and depressive symptoms. Natural estrogens are considered safer and therefore are the preference of most experts. Used in connection with hormones, the term “natural” can be confusing. Some natural estrogens are also synthesized in labs, but even so, their chemical structure is an exact replica of the body’s own hormones. The body reacts to these hormones in the same way it reacts to the hormones produced by the ovaries. These compounds have a chemical structure closely resembling the chemical structure of the body’s three naturally occurring estrogens. According to the US Department of Health and Human Services, the current forms of estrogen include:

**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

The most common truly natural estrogens (as opposed to the natural estrogens synthesized in labs as described in the preceding paragraph) are familiar to the body’s metabolic systems and are easily broken down, utilized, and excreted from the body. As a result, they do not build up in the body and, therefore, have fewer side effects than do synthetic estrogens. ERT is usually given on days 1 to 25 of the menstrual cycle. It is usually administered in pill form but may be given by patch, gels and creams for women with liver disease who cannot properly break down orally ingested meds. ERT may produce the usual estrogenic side effects such as increased weight, breast tenderness, headaches, gastrointestinal upset, vaginal bleeding, and water retention. For women with a uterus, it must be given in conjunction with a progesterin to decrease the risk of uterine cancer. However women without a uterus may take estrogen alone without fear of developing uterine cancer. Calcium supplements taken in conjunction with ERT appear to have a synergistic effect on bone. Benefits of ERT include the following:

- may stop or decrease hot flashes and/or night sweats
- reverses the bone loss that leads to osteoporosis
- increases REM sleep
- may decrease atherosclerotic coronary artery disease by increasing the levels of HDL cholesterol
- may protect against the development of breast cancer
- may decrease risk of hypertension
- may decrease the number and the severity of migraines
- may ease mild depression
- improves the texture of the skin
- may reverse atrophic changes to the genitals thus improving sexual function

**Risks and Contraindications for ERT** include the following:

- increased risk for endometrial cancer if not taken in conjunction with a progesterin
- may worsen gall bladder disease
- may worsen migraines in some women
- may induce the enlargement of uterine fibroids
- may worsen endometriosis
- may adversely affect glucose tolerance
- contraindicated for those with active liver disease
- contraindicated for those with a recent history of blood clots
- contraindicated for those with recent uterine cancer

**Progesterone Therapy**

Progesterone is also produced in the ovaries and serves to balance the effects of estrogen on the uterus. It is now generally accepted that a woman on ERT who still has her uterus must take progesterone for at least 10 to 12 days out of the month to counteract the effects of estrogen on the uterine lining, these effects, if unopposed by progesterone, may lead to uterine cancer. The current progesterone tablets added to ERT regimens are synthetically produced. Synthetic progesterones are known as progestogens. They are not as effective as natural progesterones because they do not quite fit the progesterone receptors on a woman’s body cells. They do, however, still balance the effects of estrogen on the uterus. There is concern that some progestogens may have adverse effects on cholesterol levels. Note: Women who have or have had a history of breast cancer should be advised against the use of Provera, as breast cancer may be hormonally sensitive. Women with a strong family history of breast cancer should be monitored with particular care.

Some women do not tolerate progestogen therapy very well. It’s side effects include irritability, depression, headaches, weight gain, bloating, and pelvic pain. Experts suggest these women try natural progestrogen therapy that is better tolerated due to its decreased strength. Sometimes it is necessary to give progesterone by injection to decrease its side effects. Natural progesterone therapy is expensive and is, therefore, not the first choice for most women.

Along with synthetic progestins, another form of progestrogen available is known as micronized progesterone. While synthetic progesterone has a different chemical structure from natural progesterone, micronized progesterone is identical to biological progesterone produced in the body. The following list shows the current FDA-approved pharmaceutical forms of progestogens available today:

**Micronized Progestogens**

- Oral capsule - Prometrium - 100 to 200 mg/day
- Vaginal gel - ProceieveT - 4% to 8%

**Synthetic Progestins**

- Oral capsule - Provera - 2.5, 5, 10 mg/day
- Oral capsule - Aygestin - 5 mg/day

**Combined Therapy**

The combination of estrogen and progestin can be taken in two ways:

**Cyclic combined method** - in this regimen the woman takes 0.625mg/day of estrogen on days 1-25 of her cycle. Provera 5mg/day (or another class of progestogen) is added either on days 1-12 or 14 or on days 14-25. Both hormones are withdrawn at the end of the cycle causing bleeding and sloughing of the uterine lining. Experts speculate that this sloughing is one way the body is protected against endometrial cancer.

**Continuous combined method** - in this regimen the woman is given 0.625mg/day of estrogen and 2.5mg/day of progestin. Both hormones are taken every day with no withdrawal bleeding at the end of the cycle. This method is good for those who have uncomfortable symptoms associated with the hormonal fluctuations of the menstrual cycle e.g. cyclic migraine headaches. However, many women have breakthrough bleeding on this regimen, subjecting them to uterine biopsies to make certain the bleeding is merely breakthrough and not associated with endometrial cancer.
This regimen is also recommended for women who find monthly bleeding inconvenient and therefore would like to eliminate it.

Most experts do not believe the findings of the WHI warrant immediate cessation of HRT in all women. Patients are encouraged to talk to their doctors about the risks and benefits to them as individuals. If a woman and her doctor determine she should not continue on the combined regimen, a gradual cessation is recommended to prevent the return of symptoms. Those patients with an intact uterus should not just discontinue the progesterone because of the role unopposed estrogen plays in the development of uterine cancer.

More than half of American women have had a hysterectomy by the age of 65. HRT is simpler for them because they do not need to take progesterone to prevent uterine cancer. An exception to this general rule is the woman who has a history of endometriosis, a disorder in which cells of the uterus are found growing outside the uterus in the abdominal cavity. These cells may be stimulated by unopposed estrogen just as they would be if the uterus was intact. Therefore, women with a history of endometriosis should follow a combined HRT regimen rather than taking unopposed estrogen.

Often the ovaries are preserved during hysterectomy in women who are not of menopausal age. In these cases, the woman’s ovaries will usually continue to function normally for many years but menopause will probably occur two to three years earlier than it would have if she had her uterus. Experts speculate this slightly earlier onset of menopause is the result of decreased blood supply to the ovaries as a direct result of removing the uterus. A woman who has had a premenopausal hysterectomy and is experiencing signs of estrogen deficiency should be evaluated for ERT. Many of these women find that oral ERT is not as effective in reducing symptoms as are patches or injection.

A woman whose ovaries were also removed during a hysterectomy procedure will soon begin experiencing the abrupt onset of menopause with severe symptoms. Experts recommend such women begin ERT immediately. Because the ovaries also produce testosterone, these women will often need testosterone replacement as well.

If a woman has had an endometrial ablation (a procedure in which the uterus is attacked with high frequency radio waves to destroy the lining of the uterus in order to reduce excessive bleeding) she may still have pieces of the uterine lining left and will, therefore, need progesterone therapy to prevent the development of uterine cancer.

**Testosterone**

Testosterone is the strongest of the male sex hormones (androgens). Although it is an androgen and, therefore, has masculinizing effects in the body, testosterone is not exclusively a male hormone. In women, it is produced by the ovaries, adrenal glands, and fat cells. It plays a role in the development of muscle tissue, hair follicles, and oil glands as well as affecting the parts of the brain associated with sexual desire and with cognitive function. It helps maintain lean body mass, pubic hair, skin lubrication, sex drive, and memory.

In the premenopausal years concerns about testosterone effects are usually limited to the effects of hormone excess which can cause acne, excessive facial hair, excessive body hair, male-pattern baldness, weight gain in the upper body, clitoral enlargement, and deepening of the voice. These may also be signs of a tumor on the adrenal glands, the ovaries, or the pituitary gland.

The amount of testosterone produced by the adrenal glands drops slowly with age but the ovary continues to produce quite a bit of testosterone even after menopause. For those women whose ovaries are intact there may be very little decline when compared to those women who have had their ovaries removed.

Recently experts have begun to focus on the effects of low testosterone levels in the body. Some of the psychological and sexual problems that develop after menopause may be related to the decrease in testosterone levels that occurs in some women at the time of menopause. Evidence suggests this drop in testosterone levels may be heightened in women on ERT. Falling testosterone levels may be responsible for thinning pubic hair, decreased muscle mass, low energy levels, memory loss, and decreased sex drive. Most women who take testosterone replacement do so to increase their libido. A Cochrane review of five trials of 4,768 participants helped to confirm that steroid supplementation along with HRT has a positive effect on sexual function in postmenopausal women. It should be noted that decreased libido may be related to other factors such as depression, exhaustion, and/or changes in the relationship with the partner. These other possible causes should be explored before testosterone therapy is begun.

Lowered testosterone levels are often treated with testosterone injections over the course of several months. Testosterone may also be given in pill form combined with estrogen, pill form by itself, or applied topically. Topical application of a natural testosterone does not require FDA approval and dosage levels may be tailored to the individual at the request of her physician. Testosterone supplementation usually results in a general sense of well-being that improves a woman’s mental, physical, and sexual health. There may be side effects such as a slight increase in facial hair, acne, voice changes, and elevated cholesterol levels. Most of these side effects can be averted by keeping the dose as low as possible to achieve the desired benefits.

So far the positive effects of testosterone replacement have only been observed in those women who had lower levels to begin with. For example, women with normal testosterone levels do not experience an increase in libido with testosterone supplementation. If testosterone levels get too high on supplementation, a woman may experience strong feelings of anger and/or depression, as well as an increase in acne, hirsutism, weight gain, and liver disease (the latter side effect is rare, however). Long-term effects of testosterone replacement are unknown but there is evidence that it may prevent osteoporosis (experts disagree on this point) as well as concern that it may lead to elevated serum lipid levels resulting in an increased risk of heart disease. The women most likely to respond well to testosterone supplementation are those women whose ovaries have been surgically removed and those who had low levels of testosterone in the premenopausal years. For other women it is better to try alternatives first in order to alleviate the symptoms of menopause. Since there is no evidence that testosterone therapy is more effective than exercise alone in preserving muscle mass, a woman experiencing decreased muscle mass should start off with an exercise regimen designed to build muscle mass before she resorts to testosterone supplementation.

Testosterone supplementation may be given in natural micronized forms such as pills, capsules, vaginal cream, or as a lotion rubbed into the skin. It may also be given in synthetic form but, as with the synthetic forms of estrogen and progesterone, synthetic testosterone may have more side-effects than the natural forms of the hormone.

**DHEA**

One of the most abundant steroids produced by the adrenal glands is known scientifically as dehydroepiandrosterone. It is more commonly referred to as DHEA for obvious reasons and is recently being touted in the popular press as a universal antidote to aging. DHEA is the precursor from which other hormones, including estrogen and testosterone, are made. DHEA and DHEAS (a molecule that has passed through the liver where it emerges with a sulfate attached to it) have, until recently, been regarded as unimportant and weak androgens that did little more than cause acne in teenagers. Recently, however, scientists have discovered that DHEA levels (of both
sexes) rise until age 20 to 25 and then begin a slow decline as the body ages. Normal serum levels are 200–400 mcg/dcl for women and 500–700 mcg/dcl for men. However, by about age 40, most people have serum levels under 200 mcg/dcl.

Levels of this hormone also fall during illnesses such as lupus, rheumatoid arthritis, and severe depression. Some studies also link DHEA decrease to age-related diseases such as CVD, adult onset diabetes, abdominal obesity, and some cancers (including breast cancer and skin cancer) and possibly even osteoporosis. Animal studies have shown that DHEA improves immune function (DHEA receptors have been found on T-lymphocytes), decreases overall body weight, improves cognitive functions such as memory, and as a result may increase longevity.

The exact mechanism by which DHEA works is not clear. Experts do know, however, that DHEA does not act directly on cells but, rather, is broken down into estrogen and testosterone as it circulates in the bloodstream. Because individuals differ in their ability to convert DHEA into estrogen and testosterone, there is no way to predict its effects on any one person. However, recent studies do suggest it may be helpful as an anti-aging agent in many women, possibly due to its ability to increase cell protein production. In one study of postmenopausal women, a daily dose of 50 mg of DHEA elevated levels to those of a young adult and increased natural killer cell activity (a lymphocyte known to prevent the development of tumors). Other research in postmenopausal women suggests that DHEA supplementation may reduce serum triglyceride levels, serum cholesterol levels, and total body fat as well as increase muscle mass and the production of insulin growth factor 1, a hormone that has been shown to protect against obesity and diabetes.

During recent randomized, placebo-controlled clinical trials, postmenopausal women suffering from vaginal atrophy were administered daily DHEA or a placebo for a period of three months. The results of these trials showed promising results for DHEA supplementation in menopausal women. Subsequent to the three month testing period, significant improvements were seen in vaginal atrophy with no negative side effects or sign of toxicity. This clinical data also suggested improvements in other related sex steroid deficiencies associated with menopause, such as muscle and bone loss, skin atrophy and type 2 diabetes.

Additional research has shown beneficial effects of DHEA on the reduction of visceral fat. During a six month study on postmenopausal women, 50mg of DHEA cream was applied to women. At the conclusion of the study, the analysis showed a decrease in visceral fat and an increase in muscle mass. Since the negative press generated on HRT therapy after results of the HERS, PEPI and WHI studies were published, DHEA supplementation has shown promising results in the published literature for the treatment of menopause. Notwithstanding the vaginal atrophy trial, large-scale randomized-placebo controlled studies are still needed for the aforementioned indications.

Synthetic forms of DHEA have not been approved by the FDA even though they are used regularly in Europe. Natural DHEA, however, is available in the US through a small number of pharmacies who will make custom preparations for physicians to prescribe for specific patients. These natural forms of DHEA may also be available in some health food stores. They are marketed as DHEA precursors and advertised widely in both print media and on the internet. Because there is no FDA regulation of these natural compounds, quality and purity standards have not been set. However, these substances are classified as food supplements and therefore fall under the jurisdiction of the NIH. If the NIH determines they are harmful the FDA will take them off the market. In the meantime any use of these compounds should be considered experimental and patients should be made aware of this fact.

**Melatonin**

Melatonin is a hormone made by the pineal gland and plays a role in regulating the sleep/wake cycle. It is often used to counteract the effects of jet lag and to help those suffering from insomnia. It is sometimes promoted as an anti-aging and an anti-carcinogenic agent. It may have antioxidant properties which protect against oxygen free radicals associated with some cancers, but further studies are needed before this claim can be made. In animal studies, melatonin has been shown to boost immune cells, maintain the production of sex hormones at youthful levels, and to keep sex organs from declining with age. Melatonin use comes with some risks such as daytime drowsiness, morning-after headaches, and impaired fertility. Long-term use may program the body to need high levels of the hormone to induce sleep. It is sold as a dietary supplement and therefore is not regulated by the FDA. As a result some OTC preparations may contain considerably more of the drug than the body normally produces. Anyone taking this hormone should be encouraged to tell her health care provider so that interactions with other meds may be avoided and the proper dosage levels for the individual can be determined.

**HRT Administration**

Tablets are the most common form of HRT administration but many women are not able...
One patch lasts three days and is usually applied either to the buttocks or the torso but never to the breasts. There is no need to take a break from the patch but women who still have their uterus must take progesterone tablets 10-12 days a month to prevent endometrial cancer. Patches are marketed under the name Estraslim and come in strengths of 0.1 and 0.05. They may produce skin irritation in some women but this discomfort is easily overcome by teaching women to leave the sticky side of the patch open to the air for 30 minutes prior to application. Experts also recommend that women rotate the application site in order to prevent irritation from developing in one spot. Vit. E applied directly to the irritated area immediately after removing the patch may help reduce irritation. Even with all these remedies there do remain a small number of women for whom skin irritation reaches the level of an allergic reaction; they should consider a different method of HRT administration.

Vaginal administration of estrogen is another possible solution for women unable to tolerate oral ERT. The estrogen is rapidly absorbed into the bloodstream and maintains adequate serum levels. It comes in the form of creams, suppositories, and vaginal tablets. This form of administration may help with vaginal dryness and shrinkage, and with urinary problems such as frequency, burning, and/or incontinence. It is usually self-administered once a week before going to bed at night, after intercourse, and after emptying the bladder. If needed it can be administered more often so those women who continue to have problems should be encouraged to consult their physicians for advice on increasing the use of the cream. Once again, any woman who still has her uterus will need to take some form of progesterone therapy in order to encourage sloughing of the endometrium.

Hormone implants placed into the fatty layer under the skin of the abdomen or buttocks are another form of administration for women who cannot tolerate the side-effects of oral ERT (testosterone implants may also prove effective). Unfortunately the FDA has not approved their general use in the US even though they have been widely used in Europe and Australia for years. Some American physicians are experimenting with implants in some patients so women interested in trying this form of administration should at least discuss it with their doctors. If physicians apply to the FDA for its investigational use then implants can be imported from overseas and used in American women. This form of ERT is especially helpful in women with severe menopausal symptoms that do not respond to other therapies (following a hysterectomy, an oophorectomy, and in those with early menopause) because it best mimics the hormonal function of the ovaries. There are several factors to be taken into consideration when choosing a form of HRT administration for the individual woman. What symptoms are most important for her to manage? What does her individual risk profile look like? What is her family history? For some women, convenience of administration is an important factor and for others cost is paramount. When helping a woman sort through her options, the health care provider will take all these factors into consideration. Important facts include:

- The patch is more expensive than oral estrogen. The adhesive used to hold the patch in place may cause skin irritation at the site.
- Patch administration does not elevate serum triglyceride levels because it bypasses the liver while oral forms of administration may elevate triglyceride levels.
- Estrogen creams can be very effective in treating urinary and vaginal problems associated with estrogen loss but they do not appear to offer much protection against osteoporosis.

Alternatives to HRT

For those women for whom HRT is contraindicated or for those who want a natural approach to menopause there are other ways of alleviating perimenopausal symptoms. Each woman must decide for herself whether her symptoms justify HRT, trying one of the alternatives, or just putting up with the symptoms until her body adjusts to the lower hormone levels. Some tolerate symptoms for a long time and then try something else. Most of the alternative therapies come from Chinese medicine, the use of herbs and vitamins, changing nutrition habits, and learning stress reduction as described previously. These natural approaches to menopause may also prove beneficial to those women who decide to take HRT as well.

Many of the alternative remedies involving Chinese medicine and the use of herbs were discussed in greater detail in a previous section. These include Dong Quai, black cohosh, and St. John’s wort. As with these herbal preparations, most of the other popular alternative remedies are related to the specific symptom the woman is struggling to overcome. For example:

- Heavy irregular menstrual bleeding can be helped by the bioflavonoids found in citrus fruits, cherries, and grapes.
- Water retention may call for natural diuretics such as cranberry juice, watermelon, asparagus, and Vit. B6.
- Psychological concerns may be alleviated through professional counseling or support groups, diet, exercise, and stress reduction as well as the ingestion of herbs (such as oatstraw, ginger, cayenne pepper, dandelion root, passion flower, valerian root, ginseng). Vit. B complex, bioflavonoids, potassium, magnesium, lecithin, and Vit. B12 may also prove helpful.
- Hot flashes may be decreased by slow abdominal breathing done the moment the woman feels a flush coming on and by practicing such breathing twice/day for 15 minutes at a time. Exercise, acupuncture, drinking two quarts of water a day, and ingestion of phytoestrogens such as those found in soy products may help. 100IU of Vit. E taken three times a day and 1,000 mg of Dong Quai daily may also help. Remember to tell your patient to discuss these remedies with her provider to be sure there is no medical contraindication.
- Dry itchy skin and vaginal dryness may be helped by drinking two quarts of water/day and by antioxidant therapies such as Vit. E, Vit. A, and Vit. C. Many women find it difficult to drink two quarts of pure water/day but once they get into the habit their bodies will crave it. It can be helpful to flavor the water with herbs or citrus juices. The importance of developing this habit should be stressed to all women because it may prevent the development of joint pains, bad breath, and osteoarthritis. Once in the habit of drinking this much water, women may notice that the frequency of headaches decreases, hot flashes are reduced, dry skin is alleviated, and fatigue is lessened.
- Phytoestrogens were discussed in the section on nutrition. However, they warrant further discussion in this section as well. Phytoestrogens are defined as non-steroidal plant compounds with estrogenic or anti-estrogenic biological activity. They can be found in plant and food substances. They bind to estrogen receptors in the body to exert their effects. There are over 300 different plants that contain estrogenic substances. Some are more potent than others but even the weaker ones, when eaten often enough and in large enough quantities, will exert mild estrogenic effects without the uncomfortable side-effects of HRT. Plant estrogens are found in the following list of common foods: alfalfa, apples, yeast, barley, beets, cabbage, carrots, cherries, corn and corn oil, cucumbers, garlic, green beans, oats, olives and olive oil, papayas, peas, plums, potatoes, pumpkin, rice, rye, soybeans, sunflower seeds, and wheat. Most of these foods are also high in fiber, vitamins, minerals, and essential fatty acids as well as low in saturated fats. For all of these reasons they are an intelligent addition to the diets of most menopausal...
women. It is recommended that women try to eat a wide variety of these foods and that they consume at least two cups/day from this list.

- The most common phytoestrogen for the purpose of this discussion is the category known as isoflavones, found primarily in soybeans. As discussed in an earlier section, there has been considerable research conducted on the effects of soy isoflavones on both perimenopausal and postmenopausal women regarding the successful treatment of symptoms such as hot flashes. Moreover, investigators have reported no adverse effects related to soy treatment in any of these studies. The isoflavones found in soy appear to protect against bone loss with effects similar and equal to those of the conjugated equine estrogens (such as Premarin). A small human study has shown increased bone mineral density after six months of isoflavone therapy. Larger studies conducted over the long term are needed before definitive claims can be made.

Iproflavone

Iproflavone is a synthetic isoflavone derived from naturally occurring isoflavones. It appears to be tissue-specific for bone in its estrogenic activity; it does not provide systemic estrogenic effects. This drug is available in about 25 countries world-wide but is not approved for use in the US. Many randomized double-blind studies of humans beginning in 1990 show strong evidence that iproflavone is effective in preventing osteoporosis in those women at high risk for it. Other metabolic disease states causing bone loss, such as hyperparathyroidism, also respond to iproflavone.

Iproflavone may be effective in three different kinds of women - those with bone loss from uterine fibroids, those experiencing surgical menopause through oophorectomy (iproflavone is believed to preserve bone density for these women), and the general post-menopausal woman.

There is good data from studies done worldwide on the average postmenopausal woman. They suggest iproflavone is especially helpful in women with low bone mass and already established osteoporosis. One study showed increased spinal bone and radial bone density in those women on the drug. All women in these studies were taking calcium supplements of 1,000 mg while on the iproflavone.

Most experts believe that the true test of the effectiveness of iproflavone is its ability to reduce the number of fractures. Large scale fracture studies are currently underway so data should be available soon.

Iproflavone has few adverse reactions and those that it does have (primarily of the gastrointestinal tract) are usually mild and well-tolerated.

Selective Estrogen Receptor Modulators (SERMs)

SERMs are a class of drugs available for the prevention of osteoporosis. SERMs bind to estrogen receptors producing both estrogen-like and estrogen-blocking effects. Raloxifene is one of the first to be approved for use in the US. It is a non-steroidal and non-estrogenic substance which acts as an anti-bone resorption agent and may lead to increased bone density as a result. It helps in bone formation and current studies support the theory that it helps form normal bone rather than diseased bone. A large study of 7,709 patients showed a decrease in new vertebral fractures in patients on raloxifene. However, it probably does not halt bone resorption as well as estrogen does. Tamoxifen is another SERM that has been around since the late 1970’s. Like raloxifene it has both anti-estrogenic and estrogenic properties.

In addition to the studies regarding the effects of SERMs on bone tissue, current literature also indicates that SERMs have beneficial properties and agonist effects on skin aging, scarring and wound healing. These studies have showed that raloxifene and tamoxifen help to accelerate wound healing by diminishing the inflammatory response and assist in scarring by delaying the growth of dermal fibroblasts. There is also recent data from studies that indicate SERMs have the potential of reducing cardiac events in women by lowering LDL cholesterol levels. Raloxifene also appears to decrease LDL to levels seen with conventional HRT but it does not increase HDL. It also decreases fibrinogen but does not elevate triglycerides.

Raloxifene has few side effects. It may cause a mild increase in hot flashes. A recent study showed the risk of venous thromboembolism is about the same as that for HRT therefore women at risk for this rare CVD dysfunction should not take raloxifene or HRT. Studies on the effect of raloxifene on cognitive function are currently underway. One small study recently showed no adverse effects after one year of raloxifene therapy, but most experts agree that long-term studies are required before any definitive conclusions can be reached about raloxifene and cognitive function.

New meta-analysis has confirmed that SERMs are effective in both premenopausal and postmenopausal women in the treatment of breast cancer. When compared with chemotherapy, SERMs have revealed lesser efficacy. However, some trials have shown that SERMs has a positive effect on the reduction of recurrence and mortality rates in women with node-positive and node-negative cancer. Moreover, approximately one-third of women with metastatic breast cancer who were treated with SERMs have shown a regression of cancerous tumors during a 12 to 18 month period. Finally, SERMs have also been observed to reduce the incidence of contralateral breast cancer.

SERMs are not without risks and side effects. Some of these risks are reasonable trade-offs for the benefits of the drug in women who already have breast cancer but may not be worthwhile for other women. Many women (as much as 50%) experience hot flashes while taking tamoxifen. Since they cannot take estrogen because most of them have been placed on tamoxifen as a treatment for breast cancer, counsel these women about other ways to counteract hot flashes e.g. dressing in layers, regular exercise, avoiding caffeine and alcohol, acupuncture, and behavioral relaxation techniques as well as vitamin E supplements and some antihypertensive drugs. Because some of the dietary remedies have mild estrogenic effects which may render them unsafe, those on tamoxifen as a result of breast cancer should avoid soy products and herbs such as ginseng, black cohosh, and garden sage.

One of the major concerns about tamoxifen is that it might increase the risk of endometrial cancer. Recent studies suggest, however, that the drug has different effects in women over 50 years of age versus those under 50 years of age. The risk to the endometrium appears to be much lower in younger women than in those over 50. Adding a progesterone to prevent endometrial proliferation is not recommended because there is some evidence to suggest that progesterone may increase the risk of developing breast cancer.

Because the decision to take tamoxifen usually is not an easy one to make, the National Cancer Institute has developed the Breast Cancer Risk Assessment Tool - a computer program to help women determine whether tamoxifen is a reasonable choice for them. It takes into consideration whether a woman has the established risk factors, her race, and her history of negative breast biopsies. The program can be ordered by physicians and is a suggested assessment tool for any woman who fits the criteria for high risk of developing breast cancer (exactly what these criteria are will be discussed in further depth in the next section).

Tamoxifen should not be used by women planning to become pregnant, who have a history of blood clots, or those women who still have their uterus unless they agree to undergo periodic evaluation for the development of endometrial hyperplasia (raloxifene is
a better choice in these cases because it does not appear to stimulate endometrial proliferation. Tamoxifen may also increase the risk of developing cataracts.

In deciding which drugs to prescribe, most experts agree the appropriate therapeutic remedies for the individual woman must be tailored to her risk profile as well as her needs and concerns about acquiring specific diseases. Some women will want to take tamoxifen as an assurance they have done all they can to prevent breast cancer while others may opt for raloxifene which does not increase endometrial proliferation and has shown promise in preventing breast cancer (even though the evidence supporting raloxifene for breast cancer prevention is not as strong as the evidence for tamoxifen). Like many of the decisions a woman must make during the perimenopausal and post menopausal years, this one should be made in conjunction with her health care provider after taking into consideration her risk factors and her fears of developing breast cancer.

The recommended duration of SERM treatment is five years because of the risk of hyperplasia, endometrial polyps and endometrial adenocarcinoma cancer. The Early Breast Cancer Trialists’ Cooperative Group has also published literature from studies that suggest the enhanced risk of endometrial cancer after treatment with tamoxifen. Like many of the decisions a woman must make during the perimenopausal and post menopausal years, this one should be made in conjunction with her health care provider after taking into consideration her risk factors and her fears of developing breast cancer.

Other SERMs that are currently approved to treat menopausal symptoms, such as osteoporosis include clomiphene, toremifene and fulvestrant. However, raloxifene and tamoxifen remain the two primary SERMs used in chemoprevention of breast cancer.

**HRT and Breast Cancer**

Throughout this course I have alluded to the concerns that many have about the risk of HRT on breast tissue. These concerns increased with the findings of the WHI that combination HRT might slightly increase the risk of getting breast cancer. The study did not, however, show an increased risk of dying from breast cancer (many of these tumors are found early and are less aggressive than other breast cancers). While it is beyond the scope of this course to give a detailed explanation of all that is involved in the development of breast cancer, current concerns do warrant a discussion of the topic, especially as it relates to the menopausal woman and her decision concerning whether or not to take HRT.

Experts do not know what causes breast cancer but do know that most cancers begin growing as much as 10-20 years before they are detected (this is why so much emphasis is placed on early detection). There are two major risk factors for the development of breast cancer - being female and having breasts; this risk increases with age. Other risk factors include a first degree relative with breast cancer (a mother or sister), a personal history of atypical hyperplasia, early menses and/or late menopause (both of which mean longer bombardment of the body with estrogen), never having been pregnant or having a first pregnancy after the age of 30, having a history of ovarian cancer, or having a diagnosis of globular carcinoma in situ.

Recent observational studies have helped to establish a connection between a high-fat diet and the increased risk for breast cancer. Although other studies, such as the Nurses’ Health Study have showed contradictory results, the observational research showed a 15% increase in the risk of breast cancer for women whose diet consisted of 20% fat.

The American Cancer Society (ACS) has published literature regarding the link between alcohol consumption and breast cancer. According to the ACS, moderate drinkers are at a slight risk; however, those who consume at least two drinks daily are at a 51% increased risk for breast cancer. Although the results of several studies on this topic are varied, there does appear to be an increase in circulating estrogen in women who consume moderate amounts of alcohol. This increase in circulating estrogens may be further increased if the woman is also on HRT.

As a woman ages and reaches menopause (if she is not on HRT) the consistency of her breast tissue changes. Ductal and glandular tissue are replaced by fatty tissue. If she is on HRT these changes are not as pronounced. Because the fatty tissue is less dense than the ductal and glandular tissue, lumps are easier to feel and easier to see via mammogram than they are on a younger woman or a woman taking HRT (the dense breast tissue provides a white background against which tumors are difficult to detect).

Breast masses are placed into four categories. These include:
- benign cysts
- benign fibroadenomas that have been there all along
- benign fibrocystic disease
- cancers - these lumps are much harder than the other masses. They are also fixed and stationary while the other types are more movable.

When breast cancer is detected in its early stages, the chances of survival increase dramatically. It is the goal of most early detection programs to make the diagnosis within three months of finding a lump. If this happens 90% of cancers can be effectively treated. There are several components to a good early detection program. These include:

- Breast self exams (BSE) done by the woman herself on a regular basis throughout her adult life. Most lumps are found this way.
- Clinical breast exams (CBE) done by health care providers at regularly scheduled check-ups or after a woman presents with a lump she has already felt herself. The goal is to find lumps before they reach the size of one cm. If this occurs vascular and lymphatic invasion can usually be prevented. The general recommendation is for annual CBEs after the age of 40.
- Screening mammography is for asymptomatic women and should be done every one to two years after the age of forty and annually between the ages of 50 to 69. At age 70 and above there is some controversy as to the value of annual screening. The likelihood of developing cancer increases with age but most of these women have slow-growing tumors which may make annual screening unnecessary. Experts often recommend a woman in her late thirties get a baseline screening mammography for comparison to any future findings. The bottom line is that any decisions about the frequency of mammography screening must be made by the individual in conjunction with her health care provider while considering her unique health history, breast cancer risk, and anxiety level.
- Diagnostic mammography is a more extensive exam with more views taken and is done in women who have symptoms such as a suspicious lump or who have other breast conditions which make detection difficult e.g. breast implants.
- Fine needle aspiration is done in the health care provider’s office. A needle is inserted into the breast lump and the fluid in the lump is aspirated to determine the likelihood of a cancerous lump.

There are several programs nationwide that provide early education, screening, diagnosis, and treatment of breast cancer for low-income women. Partnerships have been created between survivors of breast cancer, health care providers, community organizations, and others to provide information, support, and advocacy.

Over time we have seen cultural implications for communication and screening of women in various cultural sub groups. Consider these cultural implications when educating women about the importance of regular BSE, CBE, and mammography. Women who are more likely to be underserved regarding their options for breast cancer treatment are the elderly and those of lower socioeconomic status. Special outreach programs are in place to offer incen-
tives to women in the above categories to participate in free or low-cost breast cancer screening clinics. In addition to affordability as a major barrier, other cross-cultural considerations must be overcome by healthcare professionals regarding the treatment of a diversely ethnic nation. Factors such as age, religion, race and sexual identity must be addressed. Nurses now have a wide array of literature at their disposal that can assist them with understanding the beliefs and concerns of different ethnicity. By staying informed, nurses will be able to enhance their communicative skills, which will ultimately translate to better care for their patients.

Nurses can help patients in these cultural subgroups feel more comfortable by acknowledging (without judgment) these cultural differences. Such concerns probably play a role in determining whether a woman is comfortable taking HRT (distrust of the system may make her less likely to believe what her provider is telling her about the risks and benefits of HRT).

The Psychosocial and Spiritual Aspects

The Importance of Meaning and Purpose

At any age it is important for a woman to feel a sense of purpose that gives her life meaning. This is especially true for women in the various stages of menopause. All women cope with the physiological and psychological changes of menopause differently. Recent studies published in the Journal of Nursing Science reported that at least 30% of these women experienced distressful emotions such as shame that often resulted in a self-perceived loss of stigma and purpose. According to this study, one of the main predictive factors is a woman’s inability to cope with symptoms associated with menopause such as hot flashes. Many women who were interviewed during the study expressed a fear of experiencing hot flashes in public. This fear often resulted in a sense of shame and silence concerning a woman’s transition through menopause.

The alert nurse is in a position to help such women by actively listening to their concerns, recommending support groups on the topic, and recommending professional counseling for some of them.

Several social and cultural issues arise at this time of life, only some of which are directly related to menopause. Some women have an aging parent to care for while others have children leaving home. Some women have children returning home, often bringing grandchildren with them. Employment often seems less secure which leads to financial stresses. Friends and family members sometimes move away, a mid-life divorce may occur, or a spouse may become ill. All of these changes have dramatic effects on the individual woman trying to cope with them at a time when her hormonal system is out of balance. Is it any wonder that women at this age seem more emotional?

Western culture, with its strong emphasis on female youth and beauty, tends to view menopause as a time of decline and loss of status for women. As mentioned previously, many women view the loss of fertility as the loss of sexuality and as a result no longer view themselves as desirable people. These thought patterns can lead to a great deal of anxiety and/or depression for many of these women.

How to Lead a Full Life at Menopause and Beyond

Experts on the psychosocial and spiritual aspects of menopause suggest some ways to help women counteract these negative messages from society and from themselves. Women who use this time for deep reflection and appreciation of their inner selves often fare better than those who continue to see beauty in a superficial way. Meditation, prayer, counseling, and joining a support group may help in this process. Taking on new interests and developing new dreams can come from this period of reflection as well. Women who find meaning and value in their work, hobbies, and relationships with friends and family members seem to adjust better to the waning of youth. These women see the process as normal and tend to concentrate on the positive aspects of menopause e.g. no need to deal with periods and birth control. This often leads to a sense of personal and sexual freedom that makes the loss of youth seem worth it.

There are five specific nursing interventions related to the spiritual dimension of life. These interventions may help the astute nurse aid menopausal women in the process of accepting and affirming the aging process. These interventions include the following:

- prayer
- use of scripture
- providing a centered presence
- active listening
- referral

Although the exact physiological process by which prayer works has not been determined, it has been demonstrated to stimulate healing. Some speculate that prayer stimulates the relaxation response and enhances the immune system. Nurses in holistic practices concede there is an element of mystery in the use of prayer for healing purposes. Many attribute this mysterious component to the assistance of a “higher power” which they refer to as God.

The concept of “spiritual growth” often helps nurses relate to patients on a spiritual level. In 1981 James Fowler, an American theologian, published a ground-breaking book on the subject of human spiritual growth. The book, entitled Stages of Faith: the Psychology of Human Development and the Quest for Meaning, is based on Piaget’s work depicting stages of human psychological development. Fowler’s work follows Piaget’s stages while expanding them to include the spiritual dimension inherent in each stage.

Fowler suggests seven stages of faith, starting with the newborn and ending with the fully spiritually developed adult (a place very few ever reach). It is Fowler’s contention that movement from one stage to the next is precipitated by some form of crisis such as a death, a divorce, the onset of adolescence, etc. For some women the menopause represents such a crisis, especially if she defines herself primarily by her youth and beauty. Remember, for most women menopause is a time when questions about the meaning and purpose of life take center stage. A nurse who is aware of this fact can provide appropriate intervention through active listening, reflection of the patient’s concerns, and by providing her with a list of community resources to access for help i.e. local pastors or religious counseling centers.

In answer to the question “Is prayer unprofessional?”, an article in the Journal of Christian Nursing stresses the important relationship between the healing of body, mind, and spirit. This is the essence of holistic medicine’s call to view the patient as a whole person. Therefore the article concludes that nurses who believe in God’s power to heal not only can ethically pray for their patient’s healing, but must do so. Because most of Jesus’ ministry was a public one, the article further concludes that the Christian nurse must not only pray individually for his/her patients, but must also publicly ask the body of Christ (the church) to pray as well. The article emphasizes that if one is asked by one’s patient to pray together, the Christian nurse is ethically bound to do so.

Holistic nurses report that intervention with prayer helps clients cope with anxieties surrounding diagnoses in themselves and in their loved ones. Prayer is seen as an important tool to deepen the nurse/patient bond. One nurse reports she was once told by a semi-comatose cancer patient that he felt an electrical current run through his body while she was praying over him; he knew God was there. Holistic practices concede that there is an element of mystery in the use of prayer for healing purposes. Many attribute this mysterious component to the assistance of a “higher power” which they often refer to as God.

An article in the Journal of Christian Nurs-
ing provides four steps to follow to determine if a situation calls for you to pray with your patient. These steps are:

• Ask questions to determine what her particular concerns might be. Keep her focused on the present by asking open-ended questions such as “What is bothering you the most right now?” Give feedback that whatever she is feeling is normal.

• Ask her what usually helps her the most when she is feeling this way. If she doesn’t know, then ask whether family, friends, or God have given her help before. Try to ascertain whether she believes in God.

• Ask God if it is appropriate to offer prayer in this situation and then ask the patient for permission to pray (the author says she is never turned down when she extends this offer). This kind of prayer should be affirming rather than confrontational and the issue of salvation should not be addressed. Prayer of this kind should be used to reaffirm God’s love, to introduce the patient to God’s love, or to ask for strength in coping with one’s particular situation.

• Be willing to pray without fear of what to say. Simply tell God what the patient has said about the hurts, fears, and concerns she is feeling. The author suggests this may be a good time to introduce the use of scripture into the process by quoting passages that assure her of God’s power and authority over all situations as well as those passages that describe God’s love and mercy. The nurse’s role is to bring Jesus to the patient in the roles of healer, comforter, friend, burden-bearer, and savior. This is especially important if the woman has expressed strong emotions such as fear, anger, extreme anxiety, or overwhelming sadness. These emotions may indicate a woman in spiritual distress.

Shared prayer can be one of the most intimate and deepest forms of communication. Anything that brings someone closer to God creates a bond between those involved in the process by creating meaning for all persons concerned. Praying with the patient rather than for the patient has the potential to change both the nurse and the patient. Often the nurse’s faith and sense of connection is deepened by the experience as well.

The authors stress the importance of active listening both in the conversation leading up to prayer and in the one that takes place after shared prayer. The interaction should never end with the prayer itself. Instead, encourage the woman to express her feelings and concerns. Then listen actively and respond accordingly.

To meet a woman’s prayer needs, learn something about her religious background in order to ascertain what kind of prayer is meaningful to her. For example, Roman Catholics often use a rosary to pray so a Catholic nurse who will pray with a rosary may be able to provide the best prayers for Roman Catholic patients. Some people prefer formal prayers while others are more comfortable with spontaneous praying. Different populations and ethnic groups may have their own preferences.

Occasionally a nurse is asked to pray for something that he/she considers inappropriate e.g. an amputee asks to have his leg grow back or a menopausal woman asks to turn back the clock so she can be young again. These requests reduce prayer to a form of magic and God to a big genie in the sky. In such cases, according to the authors, nurses should not pray for what the patient asks because such prayer only serves to reinforce an inaccurate picture of God and to encourage unrealistic expectations. Instead they suggest drawing a picture of God as the Heavenly Father to whom we bring our problems. Encourage the patient to express any feelings about her situation and then pray specifically about those feelings. Stressing that God is in ultimate control of the situation. When praying for healing, both the nurse and the patient should remember that, to God, spiritual healing is more important than physical healing. Pray cautiously for physical healing because it is not always within God’s plan. Spiritual healing, however, is part of God’s plan for everyone.

Studies show that non-whites are more likely to be comfortable with prayer than are whites. In general, non-white subcultures encourage the use of prayer/meditation, a belief in God, a sense of connection to other people, and a sense of connection to nature. These factors contribute to an overall sense of inner strength and self-reliance which helps them cope with difficult situations. The wise nurse will keep these cultural issues in mind as he/she struggles with the question of how and when to pray with patients.

Sexuality and Menopause

Sexual issues surrounding menopause are often hard to discuss. Decreasing estrogen levels may make the vagina dry leading to itching and burning (this may affect as many as half of all perimenopausal women). The thinning of the walls of the vagina (atrophy vaginitis) may lead to bleeding and discomfort with intercourse (dyspareunia). If left untreated, atrophic vaginitis can lead to more serious complications. Sometimes the decreased estrogen levels will cause the clitoris to shrink, become inflamed, and/or become tender to the touch. Decreased libido may be the result of decreased estrogen levels or may be the result of some of these other physical problems.

Some women find this time of life particularly sexually satisfying because they no longer have to worry about unwanted pregnancy and as a result are able to relax and enjoy the experience more than they could when they were younger. Often the children have left home by the time a woman reaches menopause so spontaneity frequently returns to their sex lives. The self-assertiveness that comes with maturity makes menopausal women able to ask for what they need for sexual satisfaction.

It is often difficult for women to raise these issues with their physicians. The nurse can help by asking some simple questions to elicit the existence of sexual problems. These questions include:

• Are you currently having sexual relations?
• Have you noticed any recent changes in the amount of your sexual activity?
• Is sex satisfying for you and for your partner?
• Have you experienced hot flashes, night sweats, mood swings, or loss of sex drive?
• Is intercourse painful for you? Painful intercourse can lead to decreased libido. Atrophic changes in the genital area (as a result of decreased hormone levels) may be the reason behind painful intercourse. Lack of vaginal lubrication may also contribute to discomfort with intercourse.
• Decreased estrogen levels make some women need more stimulation in order to respond sexually. Decrease in arousal may also be the result of marital difficulties, changes in body image associated with aging or weight gain, surgery, medications such as tranquilizers or antidepressants, medical conditions such as diabetes or arthritis, depression, and/or partner’s lack of desire or inability to maintain an erection. Do any of these situations apply to you?
• Do you have symptoms of itching, burning, irritation, and dryness in the genital area?

There are specific steps women can take to cope with sexuality and aging. Kegel exercises often help women feel aroused because they strengthen the perineal muscles and they increase circulation in the genital area. In the process of doing the exercises some women become more attuned to feelings of arousal which helps them feel aroused with their partners as well.

Teach your patient to find the perineal muscles by concentrating on starting and stopping the flow of urine. The same muscle is used in sexual arousal. Once the patient has a clear grasp of how to control this muscle, teach her to alternately tighten and relax the muscles as stated previously. After a few repetitions of this, have her rapidly tighten and relax the muscle. She needs to pull the entire pelvic floor as though she is trying to suck water in through her vagina. Then have her push out as though she is trying to push the water back out. This

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will tighten abdominal muscles at the same time. Have her begin by doing multiple sets of each of these exercises several times a day. Each week she should increase the number of repetitions by five so that eventually she will be doing as many as twenty-five repetitions five times a day. These exercises can be done anywhere at anytime. Encourage her to continue with the practice even if the muscle feels tired - practice will strengthen it. Remind her to keep her breathing steady and even while doing the exercises. This will help her stay relaxed and calm.

Other things women can do to improve the quality of their sex lives include:

- The use of vaginal lubricants such as K-Y jelly, Vitamin E cream, or other OTC preparations designed for this purpose may help relieve vaginal dryness. The woman simply needs to ask her pharmacist about them.
- Vaginal estrogen suppositorys and creams may help thicken, strengthen, and restore the vaginal walls and vulva. These preparations improve blood circulation to the genital area that in turn restores the natural ability to lubricate and to experience orgasm. These creams are massaged daily into the vulva and the vaginal walls to help stretch the vagina so that pain upon penile penetration does not occur. The addition of testosterone cream can help in cases of clitoral shrinkage. These hormonal creams all require a prescription and the dosages should be tailored to the needs of the individual woman.
- Estradiol levels are easily checked by a blood test. A woman with consistently low levels (less than 54.4 ng/ml) will probably benefit from taking HRT if she isn’t already or from increasing the dose of HRT if she is already on it. Some women have very active livers that break down the hormone tablets before they have a chance to enter the bloodstream where they can act on the mind and the sexual organs. For these women a different form of estrogen administration may be necessary.
- Sex hormone binding globulin (SHBG), a substance produced by the liver, helps maintain adequate blood levels of the hormone by binding excess hormone to it. However, if a woman has too much SHBG she may be binding too much hormone rendering the hormone incapable of functioning normally in her body. In such cases she will probably experience decreased libido as well as a generalized sense of fatigue and irritability. Optimal levels of SHBG are between 2,700 and 8,100 ng/ml. Levels above 8100 may indicate the need for a different form of estrogen administration such as patches or injections.
- Testosterone replacement may also help increase libido and provide a general sense of well-being.

Improving diet (especially increasing intake of soy products to at least four times a week) and making certain lifestyle changes such as eliminating smoking (nicotine’s vasoconstrictive properties affect the genitals as well) and excessive drinking may also contribute to a higher libido. There are other diet changes that may induce a general sense of well-being as well as reduce the incidence of vaginal and urinary infections (which often lead to decreased interest in sex). These diet changes include drinking plenty of fluids, increasing fiber intake with added fruits and vegetables, avoiding refined sugars and yeast products, taking vitamin supplements, increasing garlic intake, and eating acidophilus yogurt daily (this kills the intestinal yeast which is usually the source of vaginal yeast infections).

Teach her to assess her general stress level to improve the quality of her sex life. Added stress can contribute to decreased interest in sex. Often those under chronic stress feel fatigued and/or depressed, both of which may contribute to a lack of sexual desire.

Other medications may contribute to sexual dysfunction. These include many appetite suppressants, muscle relaxants, some hypertensive medications, sedatives, antidepressants, anti-male hormone drugs, and some anti-ulcer medications.

Uterine, bladder, and/or vaginal prolapse may cause stress incontinence and/or bowel problems which can often lead to decreased libido. Surgery may be necessary to alleviate these problems in severe cases. In milder cases Kegel exercises done daily for three to four months may eliminate the need for surgery.

Communication with one’s sexual partner is vital for adequate transition through this stage of life. Women must be able to communicate their needs to their partner for both to feel sexually satisfied. If a woman expresses discomfort with this idea a counseling referral may be helpful.

There is sex after menopause and for many women it is better than before. There is a mellowing in attitude and less of a need to assess one’s performance. Often both partners become more affectionate and emotional about sex than they were in the early years of their relationship. Many women find they are simply not as interested in sex as they were before and this does not bother them. Instead, they use this time to develop creative talents, to study, or to take up new pursuits. Often women enjoy the fact that men no longer relate to them as sexual objects. The key is self-acceptance of both the times when one is interested in sexual activity and when one is more focused on other activities and interests.

Developing a Personal Plan

The major educational thrust of the first National Menopause Awareness Month in June of 1996 focused on preparing women in their forties for the important decisions they will need to make as menopause approaches. To do this it is necessary to sift through a barrage of media information on the subject. A key nursing role in this process is helping women develop a personal plan for dealing with menopause before they develop symptoms. This establishes a degree of control early in the process and alleviates some of the out-of-control feelings associated with the body changes inherent in the process. Encourage them to take on the issues of menopause over a period of time so they can experiment with alternatives. The time from onset of perimenopausal symptoms to menopause may last as long as three to six years. The reduction in estrogen levels, however, is gradual so decisions do not have to made all at once. There is no “right” way to do menopause. There are, however, several broad areas of assessment nurses can use to help patients develop their own plans. These include:

- assess the risk for developing osteoporosis
- assess the risk for development of CVD
- teach her the symptoms and signs of menopause and give her tools for coping with them
- teach her how to talk to her doctor
- help her understand the importance of developing a support network
- give her reading suggestions to learn the latest information on menopause
- help her look for meaning in the post-menopausal years

This information regarding the signs and symptoms of menopause helps women to know the things they are experiencing in their bodies are a normal part of the process. They also appreciate the non-medical tips on how to manage these symptoms. I would strongly suggest you include this information in any patient-teaching program you might implement in your work setting. Many women attend menopause classes provided by physicians and often these classes emphasize HRT.

Women experiencing menopause now also have a newly developed online interactive guide to assist them with a clearer understanding of treatment options to include whether or not HRT may be right for them. This tool, known as the “Menopause Map” was developed by the Endocrine Society, and can be found at http://www.hormone.org/Menopause-Map/postmenopause.html.

The tool is based on unbiased research that revealed women were not effectively commu-
nating their symptoms and treatment options with healthcare providers. According to the Endocrine Society’s research, approximately 72% of menopausal women did not talk to their physicians about their symptoms and therefore were not receiving the proper treatment. The goal of this interactive tool is to help women understand their symptoms, which will hopefully open lines of communications with their treating healthcare providers. The US Department of Health and Human Services also publishes an easy-to-use menopause symptom tracker. This helps women to write down and better communicate their symptoms to healthcare professionals.

**Osteoporosis Risk Assessment**

Assess the individual woman’s risk for developing osteoporosis by evaluating genetic/medical risk factors and lifestyle risk factors. Genetic/medical risk factors are things she cannot change but which may help her decide how to proceed once symptoms begin. Points to consider are:

- Ethnicity - Caucasian and Asian women are at higher risk than are African-American women.
- Does she have a history of easily incurred fractures?
- Does she have female relatives with osteoporosis?
- Is she short and/or thin?
- Did she have early onset of menopause (before the age of 40)?
- Does she suffer from chronic diarrhea, kidney disease requiring dialysis, or liver disease?
- Has she ever been anorexic? Special concern should be given to anorexia during the adolescent years when bone is being formed at a rapid rate.
- Has she had an Oophorectomy?
- Does she take cortisone, Dilantin, thyroid medication, or aluminum-containing antacids on a daily basis?

Does the client have any of the following lifestyle patterns that may increase the risk for developing osteoporosis?

- high alcohol consumption
- smoking
- diet lacking in dairy products and Vitamin D
- diet high in protein, salt, caffeine, and phosphorous (soft drinks contain a great deal of phosphorous and many weight-conscious women consume large amounts of diet sodas)
- lack of exercise
- having never borne children
- A woman with several of these genetic/medical and lifestyle risk factors should be encouraged to talk with her physician about bone density studies to assess her current level of bone mass.

**Assessing the Risk for Developing CVD**

In assessing the risk for the development of CVD the patient, nurse and physician should evaluate the following:

- Is she hypertensive?
- Does she have elevated serum cholesterol levels? What is her HDL/LDL ratio?
- Does she smoke?
- Is there a history of CVD in the family?
- Has she had surgical menopause?
- Does she exercise regularly and eat a balanced low-fat diet?

**Other Areas of Assessment**

The patient should be taught the guidelines on daily calcium intake, proper nutrition for this time of life and the importance of regular exercise in reducing CVD risk and in preventing osteoporosis. As stated previously, it is very important that this exercise plan be one that she enjoys and can fit into her lifestyle fairly easily; or, she may not stick with it. Assessment of these areas is critical to determining whether this particular woman is a candidate for HRT.

The patient should also begin thinking about how she will deal with symptoms once they start. You can review the suggestions for dealing with hot flashes and night sweats and help her keep the symptoms in perspective by reminding her that although they can be obnoxious while they are happening, they are self-limited and will not last forever. If medications are part of her personal plan she should discuss this with her provider.

The patient should also be taught the value of a support system to provide the emotional outlets necessary to deal effectively with this time of life. A formal support group with a professional facilitator can be a very valuable tool for teaching many of the concepts and coping strategies that perimenopausal women need to know. Reading material can be presented and discussed at length. At the same time the group setting provides these women contact with others going through the same process. As a result, the members of the group can provide each other with emotional support at a time when family members may not be as patient with them as they would like.

This setting also provides an excellent opportunity to explore self-esteem issues, teach assertiveness techniques and help each woman grapple with the important issue of meaning in one’s life (What provides each woman with her own sense of leading a meaningful life?).

In her book, The Silent Passage, Gail Sheehy discusses this issue with quotes from other women who have grappled with it. The general consensus seems to be that most post-menopausal women need to shift their perspective from one of finding meaning in the home and the immediate family to one of finding meaning in the larger perspective of the whole community. Their world is enlarged and broadened and so is their perspective on life and what it means to be human. Many of these women enter politics or the ministry, return to college, or become active in community and church affairs as different ways to give themselves back to the larger world. What matters is that each woman find a way to use her life experiences and the wisdom gained through them in order to give back to the world at large in a way that is meaningful to her.

Once a woman has traversed the period of menopause and come out the other side, she often has reached a new plateau of self-acceptance and contentment with her life. Many women report feeling a burst of energy in postmenopausal years. When this energy is directed toward the larger world, a life of meaning is often the result. If you are thinking about starting a support group at your facility, the following is a list of resources that can provide valuable information as well as get conversation going:

- The Silent Passage by Gail Sheehy
- Menopause, Naturally by Sadja Greenwood, MD
- Midlife Dimensions-www.midlife.com

Cultural beliefs about aging can block some women’s attempts to find meaning in the post-menopausal years. Often the individual woman’s belief about aging is formed in her early years by how she saw her mother and grandmother cope with aging. Visualizations in which group members describe themselves at age 50, 60, or 70 and then compare those descriptions with how they view those they know who actually are 50, 60, or 70 can be helpful. This shows them that they can make different choices about how they deal with aging. It can also be helpful to join groups where women are positive and excited about life after 50.

Staying connected to the outer world is the key. Paradoxically, one often stays connected to the outer world best by reserving time for the inner world as well. Menopausal women need time for reflection in order to stay tuned into their physical and emotional needs and to feed their creative juices. Many find a renewed interest in nature as a means of expressing their understanding of the connectedness of all life.

Women often have trouble talking with their spouses about the changes they are undergoing because they are embarrassed about them.
The support group setting can help provide the encouragement many women need in order to address this issue. Often men do not know that their wives are having hot flashes - they just know that the house is freezing cold and she's still complaining about being hot or they may characterize the signs of depression (being quick to criticize, crying, etc.) as being in "a bad mood." Talking about this in a group of other women dealing with the same issues can help encourage women to talk to their spouses. It is also a good venue to encourage women to take their spouses to appointments scheduled with their health care providers in order to have the provider explain to the spouse what is going on both physically and emotionally with women of this age.

The support group setting can also help the nurse teach her patients how to talk to their providers about their concerns. The following are some suggestions to get a dialogue rolling. (Remember this information may also be given to individuals as handouts):

- Decide what is bothering you the most and communicate that problem to the appointment clerk, the clinic nurse and the provider.
- Make a list of current medication intake and discuss it with your provider. It is also good to understand why you are taking the medications.
- Make a list of any questions you might have so that you are certain to get them answered. Often women forget some of their questions until after the appointment is over if a list is not made ahead of time.
- Make every effort to understand your tests and their results so that you can ask pertinent questions when you see your provider.
- Develop an understanding of HRT issues and concerns by reading up on this topic so that you are prepared to discuss them intelligently with your provider.

The support group setting can also help the facilitating nurse assess the level of depression a woman may have so that a referral to a proper mental health provider can be given if necessary.

An extensive amount of research has indicated that vasomotor symptoms of menopause contribute to psychological issues such as anxiety and depression. But are there any other underlying psychological factors that have potential implications for menopausal women? According to recent study, a woman's personality can play a role in how she experiences the symptoms related to menopause. During this study, symptomatic menopausal women participated in a four month randomized controlled trial. Researchers administered assessment questionnaires about personality traits such as anxiety, attitudes and expectations. The results of this study revealed that personality characteristics, such as a negative attitude and pessimism can contribute toward increased symptoms reports. Contrary, positive attitudes, satisfactory relationship with family and friends and physical activity can have a beneficial effect on a woman's psychological reaction to the symptoms.

Also, for highly sensitive women the perimenopausal years may be more difficult than for the average woman. She may be more acutely aware of the symptoms of the internal changes going on in her body as her estrogen levels drop. She also may be more susceptible to the emotional fluctuations that occur at this time of life. Coping mechanisms that have worked for most of her life may no longer be effective as her body undergoes such rapid changes. To make matters worse, family members who are not highly sensitive may not be very supportive of her. This can often lead to the downward spiral of depression.

The support group setting provides a good place to talk about the trait and to teach women who have it that they are not weird (many of them think that they are). An aware facilitator can help these women reframe the trait in positive terms so that they see their unique value to the world. For more information on the trait and on the practical application of this knowledge, I highly recommend the book The Highly Sensitive Person by Elaine Aron, PhD. It is written for the layperson and would make an excellent resource for further discussion on this topic.

**Frequently Asked Questions**

The following is a discussion of the most frequently asked questions about menopause. Many of these questions have already been answered within the body of this course. However, for some questions I have added extra information in order to fully answer the question. Please feel free to use this information in designing your patient-teaching program.

**When will I go through menopause?**

Explain and define the terms “menopause” and “perimenopause.” Explain that she will probably go through the symptoms of the perimenopause in her late forties or early fifties. The average age of the last menstrual cycle is about fifty-one.

**How long does menopause last?**

The perimenopause, with its associated symptoms, usually lasts from 2 to 5 years. Menopause, the last menstrual period, is a one-time-only event and is determined after a full year of no menstrual bleeding.

**Should I take HRT and how long will I need it?**

Is it really safe? The pros and cons of HRT have already been thoroughly discussed. Remind her that not everyone needs HRT. Those without unpleasant symptoms should think carefully before beginning HRT.

**What should I do about the side effects of HRT?**

It is important that women know that the side effects of HRT are usually minor and may be managed by taking lower doses or by using another form of HRT delivery. Rarely, more significant side effects such as thrombosis and leg-swelling and/or migraines may occur. A woman experiencing these symptoms should consult her health care provider immediately.

**Will HRT cause me to gain weight?**

Weight gain with HRT is usually minimal (about 4-5 lbs.), but for some women it can be higher. For women seriously concerned about weight gain suggest natural hormones rather than synthetic ones, reducing the dose, or changing the delivery system to the patch form. If she decides she can no longer tolerate the weight gain and she stops HRT, counsel her about diet changes to insure she gets plenty of phytoestrogens, Vitamin D, and calcium.

When women gain weight as a result of HRT it is usually because the dose is excessive. Women tend to put on weight differently depending on their body type. There are four basic body types—the android, the gynecoid, the lymphatic, and the thyroid. Android women generally do not have a well-defined waistline, have muscular thighs and buttocks, and have larger limbs. Their muscle/fat ratio is higher than the other types.

When android types gain weight they tend to put it on in the abdomen, torso, and upper body. This type of weight gain is a risk factor for CVD and therefore should be considered when making decisions about HRT. The second body type, the gynecoid, is the classic pear-shaped figure with fat distributed mainly in the thighs, buttocks, and breasts. The gynecoid woman usually has a narrow waist and shoulders and curved buttocks with wide hips.

The lymphatic body type is characterized by a generalized thickening and puffiness because this type easily retains fluids and fat. Her limbs are usually thick with few curves and her wrists and ankles are thick and puffy. She may have a protruding abdomen with a poorly defined waist. She usually gains weight evenly over her whole body and frequently has a weight problem extending back into childhood.

The thyroid type is defined by a streamlined silhouette with fine bones and long limbs. Fingers, toes, and necks are long. These women are often tall with narrow waists and small curves on their buttocks and thighs. Thyroid types do not gain weight easily but when they do it is usually concentrated in the abdomen and upper thighs while the upper body and limbs remain slender. Some experts believe that each body type has a different metabolism...
and hormonal balance and therefore responds best to a diet designed with body type in mind. For more information on this see The Body Shaping Diet Book by Sandra Cabot, MD.

Is there any way to avoid bleeding on HRT?
Explain the continuous combined method of HRT administration as a possible solution to the problem of continued cycles. However, stress that many women have problems with breakthrough bleeding when taking HRT in this way.

Are there any reasons I should not take estrogen?
Women with either a history of or with a current diagnosis of estrogen-sensitive cancers such as breast or endometrial cancer will probably be advised against HRT. For some endometrial cancers, especially those caught early and of a less aggressive type, doctors may prescribe HRT if the woman is cancer-free for two years and has strong symptoms of estrogen deficit. Some women who have been successfully treated for breast cancer may take an HRT regimen designed specifically for them. Women with liver disease are likely to be advised against oral HRT but may be able to tolerate patch or vaginal forms of administration since these are less taxing on the liver. Other conditions which may contraindicate the use of HRT are severe hypertension, fibroids and/or endometriosis, gallbladder disease, benign breast disease, and systemic lupus. HRT may aggravate these conditions.

Will HRT increase my risk of getting cancer?
The newer combinations of HRT actually appear to reduce the risk for developing endometrial and ovarian cancer as long as the progesterone is taken for at least 10–14 days per cycle. The risk of breast cancer is a more complex topic. Certain breast cancers have an estrogen-receptor protein which increases the odds that estrogen therapy will activate the cancer. One study even suggested that those women who develop breast cancer while on HRT have a better survival rate than those who develop it and are not taking HRT. Some studies (including the WHI) suggest a higher risk the longer one is on HRT. There appears to be no increased risk if HRT is taken for five years or less. Those women at high risk for developing breast cancer should be aware of the pros and cons of HRT. High fat and low fiber diets tend to elevate serum estrogen levels; these elevations may play a role in the development of breast cancer. Progesterone, however, may have a protective effect on the breast but the data is inconclusive at this time.

What should I do about irregular bleeding?
If bleeding starts while on the progesterone phase of the cycle she should see her doctor - it may be necessary to change dosage levels or the type of tablet. If bleeding occurs at any other phase of the cycle it could mean other health problems are developing i.e. uterine polyps, infections, fibroids, or cancer. Any postmenopausal woman who is not on HRT but has uterine bleeding should see her doctor for tests to determine the presence of cancer (usually a uterine biopsy). Treatment can then begin early.

Will I lose my femininity after menopause?
The change in the balance of hormones after menopause means a postmenopausal woman has a higher percentage of androgens in her body than she does estrogen. This can lead to increased facial hair, thinning of scalp hair, thickening of the skin, decrease in breast size, and a small deepening of the voice. Hormone replacement can alleviate these unpleasant side-effects of menopause. Occasionally HRT does not adequately reduce these symptoms and other hormones may be necessary to counteract androgenic effects. Some of these are not yet available in the US but are used in Europe and Canada. Others of these hormones may take a year for significant decreases in symptoms to occur. Even those not available on the American market can be requested by American physicians by applying to the FDA. Therefore, any postmenopausal woman with these concerns should at least discuss with her provider the possibility of using these meds. There are non-pharmaceutical ways of dealing with the androgenic effects of the postmenopausal period e.g. electrolysis, good skin care with regular masking and herbal skin peels, body waves to increase hair volume, and a diet high in natural sources of estrogen, minerals such as calcium, magnesium, and zinc as well as vitamins A, C, and E and trace minerals like manganese, boron, iodine, iron, and chromium.

What if I have an early menopause? Early menopause is usually defined as occurring before the age of 40. Its causes vary but include heredity, stress, smoking, heavy alcohol consumption, and autoimmune diseases as well as the fact that some women may not be born with the same number of eggs as the average woman and therefore their supply is depleted early. Often this is accompanied by very strong feelings such as anger, resentment, and shame which can lead to depression if left untreated. If premature menopause is treated correctly (especially concerning CVD and osteoporosis risk) these women do not have to age at a faster rate than their peers.

Can I still have children if I have an early menopause?
Premature menopause usually means the end of fertility. These women may still adopt children or undergo donor egg or embryo implantation procedures. Donors are usually family members whose eggs are fertilized by sperm from the recipient’s partner. The procedure leads to a viable pregnancy about 20–40% of the time.
effective. Smokers and those with hypertension are usually dissuaded from taking estrogen. For them, the mini-pill or the various barrier methods of contraception are recommended. Encourage women at risk for acquiring STDs to use condoms as long as they are sexually active regardless of menopausal status.

Perimenopausal women already taking oral contraceptives and who do not smoke or have other risk factors (history of blood clots, stroke, MI, thrombophlebitis, breast cancer, endometrial cancer, genetic predisposition to elevated lipid levels) are probably safe continuing to take OCS until age 50 and then making the transition to HRT. Oral contraceptives provide many advantages for women at this stage of life. These advantages include:

- highly effective contraception
- improved cycle regularity
- decreased menstrual flow
- fewer and less severe hot flashes
- increased bone density
- decreased risk of ovarian and endometrial cancer

Sometimes the doctor will order a blood test to detect the levels of follicle stimulating hormone (FSH) in the blood. A level of 30 mIU/ML indicates a woman is probably past her fertile stage and contraception is probably not necessary.

The next step is the physical exam. It usually takes about twenty minutes and involves checking blood pressure, pulse, and weight. The doctor listens to the heart and inspects blood vessels in the legs. The patient can expect palpation of the thyroid gland, the neck, and the armpits to determine the presence of lumps and/or swelling. The breasts are examined for tenderness, lumpiness, thickening, and nipple discharge. The doctor performs a pelvic exam to determine if the vagina and vulva show signs of estrogen deficiency or disease such as thinning of the vaginal lining and/or a significant decrease in vaginal secretions. A Pap smear to test for cervical cancer and internal/external palpation of the ovaries to check for ovarian cancer are routinely performed.

All women age forty and over are asked to have biannual mammograms to detect the presence of breast cancer in its early stages (those over 50 are asked to undergo the procedure annually). Detection of any cancer (even small tumors) is important because HRT may stimulate it to grow at a faster rate. HRT is contraindicated in this situation. Studies document that early detection of breast tumors can reduce the deaths from this disease by as much as 60%

Providers may perform a bone mineral density test, CBC, and check serum glucose and cholesterol levels. A woman with a history of thrombosis should have a clotting factor profile done as well.

Experts recommend a follow-up visit once the results of all the tests are in so the provider can explain the results. At this point a joint decision is made concerning the efficacy of HRT for this particular woman. If she decides to try HRT, follow-up visits are usually scheduled for two months, six months, and for the patient to evaluate its effectiveness. Once she is established on an HRT regimen annual visits are recommended.

It is important at this time in a woman’s life that she have medical care she trusts and a physician with whom she can speak freely about her concerns. Encourage patients to look around until they find someone with whom they feel comfortable. A well-informed nurse is a valuable asset in this process.

The perimenopausal years offer an ideal opportunity to fully evaluate a woman’s health status and to modify those risk factors that can be changed. While age, sex, and genetic makeup cannot be altered, many risk factors can be positively influenced by patient education. The personal period is a time of reassessment and renewal as a woman is forced by biology to consider her needs first after decades of considering others first. This often evokes fears of being a “selfish” which the health care professional must reframe as “taking good care of herself so she has something positive to offer others.” She is now in a position to take control of her life, to shape her destiny, and to enjoy being a woman. Armed with basic information about the signs and symptoms of the perimenopause and their management, the basic nutritional needs of this stage of life, the pros and cons of HRT, her unique risk factors for osteoporosis and CVD, and the alternative therapies available, she is able to make better decisions. She is often more self-confident and decisive as she learns to trust her own judgment about what is best for her body at this stage of life and to set limits with those in her life who still expect her to give without worrying about replenishing herself. In retrospect, some women even view this period as a blessing because they were forced by biological circumstances to pay attention to their own physical, psychological, emotional, and spiritual needs. When women do this they usually find the quality of their lives is greatly improved.

As the focus changes from the home and children to the world-at-large, women often find themselves entering into more traditionally male fields of endeavor such as the ministry or politics. This often fulfills the important need many women have to be useful and productive.

The physical signs of aging such as the wrinkling of skin and the graying of hair can be seen as signs of wisdom and valuable life experiences instead of waning youth. This is especially true if the woman has laid the groundwork for a career or some other way of identifying herself apart from her youthful physical beauty. The role of the nurse is to help women of this age begin to see themselves in holistic terms so each becomes the person she was meant to be. The physical beauty of youth, after all, is merely one form of beauty. As it fades the wise woman learns to see beauty in the soul as well.

Today’s well-trained and well-informed nurse plays an instrumental role in helping women make this transition. If that nurse is also a woman she may find she has taught herself something about beauty and wisdom as well. Since the average nurse is 45 years old and female, we have the opportunity to serve as role models for other women. We help convey that menopause and the transitional years of the perimenopause, are normal stages of life and not illnesses to be feared and avoided. Many of us will live another 25 years or more after reaching menopause and most of us find those years are happy, productive, and full of meaning.

HRT Alert

Here’s one more reason to avoid hormone replacement therapy. Research has shown that women who take hormones to ease their transition through menopause greatly increase their risk of having abnormal or inconclusive mammograms. Either of those can likely lead to unnecessary biopsies or additional visits to the lab for follow-up mammograms—about as much fun as cleaning the bathroom over and over again. Apparently, hormone therapy can increase breast density, which muddies mammograms. But that doesn’t mean the hot flashes win. Natural remedies, including black cohosh (20 to 40 mg twice daily), hops (100 to 120 mg daily), and red clover, also known as Promensil (40 mg a day), can offer relief and they don’t interfere with mammograms.

**Bioidentical Hormone Replacement Therapy**

Bioidentical hormone replacement therapy (BHRT) refers to the use of hormones that are molecularly identical to endogenous hormones. BHRT hormones include progesterone, estradiol, estrone, estriol, dehydroepiandrosterone and testosterone. BHRT is a type of...
alternative medicine for menopausal relief that has been promoted to relieve symptoms such as anxiety, fatigue, hot flashes, loss of libido, depression and mood swings.

Celebrities such as Oprah Winfrey and Suzanne Sommers have supported these claims. In fact, actress Suzanne Sommers released a book titled “Ageless: The Naked Truth About Bioidentical Hormones” promoting the use of these natural hormones. The public promotion of these hormones has raised the awareness of BHRT, but is this treatment effective for menopausal women?

Mainstream medicine has stated that there is lack of current evidence that BHRT offers any clinical benefit over other FDA-approved nonbioidentical counterparts. Because of this, continued studies in peer-reviewed journals, with controlled trials are needed to provide information additional information about the efficacy and safety of BHRT.

Andropause–Male Menopause

That’s right, fellas. The change is coming for you too. Serum testosterone levels decline progressively as men age, with resulting pathophysiological changes. Because the onset of andropause is gradual and many of its symptoms mirror those associated with medications or disease states common in the elderly, a clinical diagnosis can be difficult to make. Symptoms include:

- urinary and sexual dysfunction
- weakness
- fatigue
- insomnia
- loss of motivation
- mood disorders, even hot flashes
- and reduction of bone density.

According to an article found in Natural Solutions: Vibrant Health, Balanced Living/Alternative Medicine magazine. All of the symptoms stem from low testosterone levels, a natural result of aging. While pharmaceutical drugs, antidepressants, and hormone-replacement therapy top the list of standard treatments for age-related testosterone loss, these remedies’ side effects-breast enlargement, sexual dysfunction, sleep apnea, increased stroke risk, and even prostate cancer-make them less-than-desirable solutions. Why not try one or a few of these natural supplements? They just may give you the boost you need to feel like your old self again.

Alternative Medicine Cabinet

Saw palmetto

Dihydrotestosterone (DHT) is an androgenic hormone responsible for male characteristics like deep voice, facial hair, and sex drive. When a guy’s body produces an overabundance of DHT, he may experience hair loss and even an enlarged prostate, which leads to urinary problems and sexual dysfunction. Saw palmetto increases testosterone and lowers DHT in the prostate. Take 160 mg twice a day.

Pumpkinseed Extract

Well known as a prostate supplement in Germany, pumpkinseed gets very little love in America. Plant sterols in the seeds stop DHT from binding to androgen receptors (sex hormones) in prostate tissue, thus preventing prostate swelling and reducing urinary and sexual dysfunctions. Blumenthal recommends taking the equivalent of 10 to 20 grams of raw pumpkinseeds or about 500 to 1,000 mg of an extract daily.

Stinging Nettle

To add insult to injury, urinary tract infections often come with the andropause package. Supplementing with stinging nettle root, in combination with saw palmetto, can work as effectively as pharmaceutical drugs, but with 90 percent fewer adverse side effects, says Blumenthal. Reduce your risk with this root’s anti-inflammatory properties by taking 120 mg in capsule form twice a day.

DIM

Age-related testosterone loss leads to an overabundance of estrogen. This hormonal seesaw can cause male breast cancer and prostate cancer. Research has shown that Dindolylmethane (DIM), found in cruciferous veggies like broccoli and cauliflower, metabolizes estrogen to bring levels back into balance. A recent study published in the Journal of Cell Physiology reported that DIM has positive effects on destroying several types of cancer cells to include prostate cancer cells. According to this research, DIM may also help to block division of malignant breast cancer cells. In a pilot study of women with a previous study of breast cancer, DIM increased the excretion of an inactive form of estrogen. Further research is needed to help validate the information learned from this study.

DHEA

Studies have indicated that in order to treat andropause effectively, you must strengthen the adrenals, which secrete DHEA (dehydroepiandrosterone), a hormone that naturally diminishes as you age. Holistic docs recommend supplementing with DHEA, in combination with DIM. But before you do, get your DHEA levels checked and then have your doctor monitor them throughout your DHEA supplementation.

Web Resources

For more information concerning menopause and related issues, you can visit the following organization’s websites:

- National Women’s Health Information Center
  Phone: (800) 994-9662
  www.4woman.gov
- National Cancer Institute
  Phone: (800)-4-cancer
  http://www.cancer.gov
- National Institute on Aging
  Phone: (800) 222-2225
  http://www.nia.nih.gov
- American College of Obstetricians and Gynecologists (ACOG)
  Phone: (800) 762-2264
  http://www.acog.org
- North American Menopause Society (NAMS)
  Phone: (440) 442-7550
  http://www.menopause.org
- National Osteoporosis Foundation
  Phone: (202) 223-2226
  https://www.nof.org
- American Heart Association
  Phone: (800) 242-8721
  http://www.heart.org/HEARTORG/
- US Food and Drug Administration
  Phone: (888) 463-6332
  http://www.fda.gov
- Life Extension Foundation
  http://www.lifextension.com
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