

IT'S ALL ABOUT BALANCE ...

How important is a healthy hormone balance? Can the hormones that keep us healthy and happy be the same hormones that cause emotional and physical distress? Our hormones are the most delicately balanced system of our bodies. Women with a healthy hormone balance tend to enjoy long, healthy and productive lives. Longterm hormone imbalance however, can make life pretty miserable for women and their loved ones. Hormone imbalance can contribute to such common problems as premenstrual syndrome (PMS), perimenopausal difficulties, infertility, miscarriage, osteoporosis, breast cancer, heart disease, fibroids, endometriosis, menstrual difficulties, mood disorders and ovarian cysts.

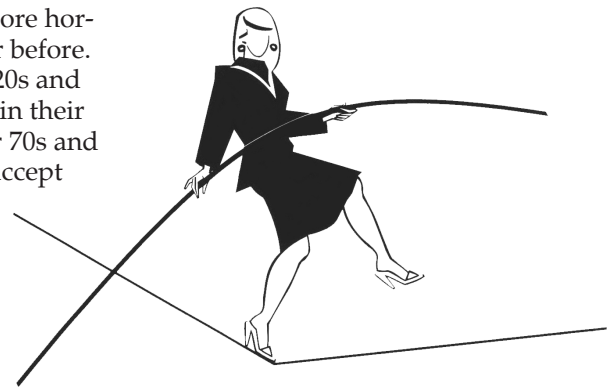
Hormone treatments of all kinds are growing steadily more popular. Women are taking proactive approaches to finding a healthy hormone balance. Many women feel that if they can keep things in balance they can prevent adverse health conditions from insidiously developing over the years, producing problems with more dangerous consequences. Women are now less likely to accept their lot in life, especially an unhealthy state of being.

Hormone fluctuations can take a strong body and render it weak, unpredictable and unreliable. However, hormonal problems should not be seen as an inevitable part of being a woman or something that we should just accept. Hormonal problems that occur at different stages of life do not have to be accepted as "normal." It definitely seems, however, that

women are experiencing more hormonal difficulties than ever before. Whether it is PMS in their 20s and 30s, menopausal problems in their 50s, or osteoporosis in their 70s and 80s, women don't have to accept these health problems as a normal part of the aging process.

Women, by nature, are made to be strong and resilient. These attributes are necessary components to enable them to bear and raise children. Women's bodies have been created to be healthy and in harmony and balance. Strength, energy, productivity and glowing health should be enjoyed throughout all the stages of a woman's life, from girlhood through motherhood to old age.

Good health is possible to obtain if we are making the right choices. If our bodies' needs are not completely met from the food we eat, the amount of exercise we receive, and from reducing the stress in our lives, we may experience health difficulties. Diet, nutrition, exercise, and stress reduction are some of the basic changes women need to make in their lives in order to restore hormone balance. Some women may need hormone supplementation to help bring their bodies back into balance. Obtaining a basic understanding of our hormones will begin the process of restoring our body's natural synchronization. Hormones have too much impact on our lives to ignore. Every aspect of our lifestyle can



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In this article, we look at the role that different hormones have in our body and what happens when that balance gets upset. At the end of the article, we discuss the pros and cons of bioidentical hormones (those identical to the hormones produced by the human body) and those that are not.

The Role of Hormones . . .

Hormones coordinate the continuous biochemical activity that occurs in all of our cells in our body and brain. They are the chemicals that make things happen on a day-to-day basis within the systems of our body. As the body's chemical messengers, they orchestrate our metabolic processes by stimulating changes in body cells. As hormone levels fluctuate throughout your

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lifetime, you may notice mood changes, body composition changes, your overall sensitivity changes, and your potential for various types of activity is different.

There are many different types of hormones in our body. Hormones, which originate in various glands throughout the body, are found in the blood, where they circulate to continually bathe our tissues. Receptors within our cells are sensitive to particular hormones that causes them to react. The more hormone present in the cell or the more highly sensitized the receptors, the more intense the reaction.

Estrogens

Estrogens are some of the most powerful hormones in the human body. Almost all tissues have receptors that make them responsive to estrogens. Estrogens help the urinary tract, breasts, skin, blood vessels, and uterus to stay toned and flexible.

Estrogen levels start to rise in girls before menarche, sometimes as early as age 8. The hypothalamus signals the pituitary to release hormones, which then signal the ovaries to produce more estrogen. Estrogen levels continue to rise in girls until they start menstruation, usually by age 11 or 12. It also starts the development of breasts and the growth of pubic hair and hair under the arms.

In their early 30s, most women begin to experience declining levels of estrogens and progesterone. With this decline, there is also a drop in fertility.

In their early 40s, most women begin the climacteric, which is a period of more rapidly declining hormone levels leading up to menopause. The symptoms during this period become quite obvious. The skin becomes dryer, the hair becomes more brittle, pubic and underarm hair becomes more sparse, there is a loss in libido, and you may experience mood swings. The chart above identifies common menopausal symptoms caused by a deficiency in estrogens, progesterone, and testosterone.

Progesterone

Estrogen and progesterone are made by the ovaries of menstruating women.

Menopausal Symptoms Caused by Estrogen, Progesterone and Testosterone Deficiency

| | |
|------------------------|--|
| Bladder/urethra | Infections, change in the urethral opening, frequency and/or urgency of urination, inability to hold in urine |
| Breasts | Shrinking, sagging |
| Cardiovascular | Coronary heart disease, atherosclerosis, angina, decreased endurance |
| Neuroendocrine | Hot flushes, insomnia or frequent waking from sleep, decreased libido |
| Musculoskeletal | Osteoporosis; backache and fractures related to osteoporosis; decreased integrity of muscles |
| Skin/mucous | Atrophy, dryness, itching, easily bruised, loss of skin tone, dry hair or loss of hair, major hairiness of face, dry mouth |
| Uterus/pelvis | Dropping of the uterus and the vagina |
| Vulva/vagina | Shrinkage, itching, painful intercourse, vaginal infection, blood stained discharge |

Progesterone is made by the corpus luteum starting just prior to ovulation. Progesterone is a precursor hormone that can be converted by the body into other steroid hormones. It prepares the lining of the uterus for the fertilized ovum and is necessary for the survival and development of the conceptus. Progesterone is produced in the placenta, which maintains pregnancy, and is secreted at a level of 300 to 400 mg a day during the third trimester. Progesterone is produced in smaller amounts by the adrenal glands and is an important component in the biosynthesis of adrenal cortical hormones.

Before ovulation, the levels of progesterone are about 2 to 3 mg per day. At ovulation and the development of the corpus luteum, the production of progesterone rapidly rises to an average of 22 mg per day, with peak production as high as 30 mg per day, a week or so after ovulation. If fertilization does not occur after 10 or 12 days, then the production of progesterone falls dramatically, triggering the shedding of the lining of the uterus, resulting in menstruation.

Ideally, in a woman's menstrual cycle, estrogen and progesterone levels should rise from the time of ovulation until just before menstruation. If the levels of progesterone

are inadequate, then only estrogen rises during this time, causing many symptoms, such as low blood sugar levels, salt and fluid retention, blood clotting, fibroid and tumor development, increased cholesterol and triglyceride levels, allergic reactions, reduced oxygen levels in the cells, the retention of copper and loss of zinc. Low levels of progesterone also cause interference with thyroid hormone function, which may lead to weight gain and feelings of exhaustion.

Progesterone's functions are:

- act as a precursor of other sex hormones (i.e., estrogens and testosterone)
- maintain secretory endometrium
- protect against breast fibrocysts
- act as a natural diuretic
- help use fat for energy
- act as a natural antidepressant
- help thyroid hormone action
- normalize blood clotting
- restore libido
- help normalize blood sugar
- normalize zinc and copper levels
- restore proper cell oxygen levels

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- protect against endometrial cancer
- protect against breast cancer
- stimulate osteoblast-mediated bone building
- provide survival of the embryo and fetus throughout gestation
- promote cortisone synthesis as a precursor in the adrenal cortex.

Testosterone

While most women think of testosterone as a male hormone, it may come as a surprise to you that it is also a female hormone. Women with functioning ovaries produce, on average, three-tenths of one milligram of testosterone per day (men produce 20 times as much). One of testosterone's roles in women during pregnancy is in the development of the embryo. Testosterone signals the cells of the genetically male embryo to develop as a male.

Testosterone also plays an important role in a woman's normal physiology. Women produce a small amount of testosterone, which is critical to the healthy functioning of most of the tissues in the body. It is responsible for a sense of well-being, sexual libido, and vital energy. It is testosterone in a young woman that stimulates the growth of pubic hair and underarm hair. It also stimulates the skin to produce more oil, which contributes to teenage acne, but also gives shine to the hair and a healthy glow to the skin. There are testosterone receptors in the nipples of developed breasts and in the clitoris and vagina. These receptors make these areas sensitive to sexual stimulation.

Testosterone's other functions are to keep the cells of the body functioning efficiently, contributing to healthy bones and muscles and making the best use of nourishment for growth and maintenance.

Postmenopausal women commonly experience a decrease in the amount of testosterone in their body, which results in symptoms of decreased sense of well-being, a loss of vital energy, and reduced sexual libido.

Testosterone and estrogen are carried on the same protein in the blood, known as the sex hormone binding globulin (SHBG). Between 97 and 99 percent of testosterone is attached to this protein, so very little is left to produce any effect on the tissues in the body. Estrogen stimulates the production of more SHBG, which binds up more testosterone, leaving less available to work on the cells. When women take supplementary estrogen at menopause they actually tie up a little more of the testosterone that's left. This can cause symptoms of testosterone deficiency. Testosterone supplementation has sometimes been feared by women because they've heard that if they take it they will experience significant growth of facial and body hair. These unwanted side effects can occur only at excessive dosage levels and can be reversed by stopping the testosterone supplementation.

Thyroid

Thyroid problems are a very common, and often undiagnosed, health problem for women. In thyroid testing, when TSH (thyroid stimulating hormone) is measured, it has been found not only to fail to accurately measure thyroid function, but it often misses many cases of thyroid system malfunction. Individuals with thyroid system malfunction seem to exhibit cellular level tissue resistance to the thyroid hormone in their blood. Even though normal amounts of thyroid hormone are present in the bloodstream, the individual cells do not receive sufficient amounts to optimally perform.

Recent research has also discovered different types of thyroid receptors. One type of receptor regulates pituitary stimulation of thyroid production and a different type is present in other areas of the body. It is thought that the pituitary receptors may not know that these other receptor areas are low in thyroid hormone, and so therefore do not signal for an increase.

Individuals with a malfunctioning thyroid system often have a slow metabolism, which leads to a

low body temperature. The *Barnes Basal Temperature Test* is a very simple, effective, and low cost way to determine if you might have hypothyroidism. For menstruating women from day 2 to day 12 of their cycles, the basal temperature should normally read between 97.8° and 98.2° F when taken in the underarm position. Some doctors recommend starting thyroid treatment if the temperature is below 97.4° F.

It is believed by some specialists that a majority of women with premenstrual syndrome (PMS) have thyroid abnormalities as indicated by TSH response. Thyroid system malfunction has been linked to PMS because of its effect on immune system function and its connection to *Candida albicans* infections.

Low thyroid function is capable of affecting the onset of menstruation in puberty by either hastening the onset or delaying it. Thyroid hormone has been effective in benefiting women who suffer from excessive flow, scant flow, painful cramps, irregular cycles, and some cases of infertility and miscarriage.

Other symptoms of low thyroid function are frequent headaches, repeated respiratory infections, fatigue, depression, weakness, dry skin, lethargy, slow speech, decreased sweating, cold sensations, cold skin, thick tongue, coarseness of hair, impaired memory, constipation, edema of eyelids, pallor of skin and heart enlargement.

DHEA

Dehydroepiandrosterone (DHEA) is the most abundant naturally occurring steroid hormone secreted by the adrenal glands. It has been called "the mother of all hormones" because it watches over, supports, and regulates the functions of other steroids in their immune system activity. The body uses DHEA to produce the sex hormones: testosterone, estrogen, progesterone and corticosterone. The function of DHEA appears to be important in keeping the metabolic balance of youth (anabolism), as contrasted with the "wearing out" metabolism

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of old age (catabolism). Levels of DHEA are high in the developing fetus and continue to rise until about the age of 25. At this point, DHEA production drops off sharply. A woman at age 50 has less than one-third the DHEA she had at age 19.

Human Growth Hormone

Human growth hormone (hGH) is another hormone that is present in large quantities in our body when we are young, peaks in our mid-20s, but tends to disappear as we age. The primary function of hGH in our youth is to help bones lengthen and expand to help us become taller, stronger-boned, and long-limbed. It also promotes growth by helping to transport amino acids between cells and by inducing cells to accept and synthesize amino acids. In addition, it helps our bodies to use the protein we ingest for cellular repair and regeneration. Without hGH, our muscle and organ tissue would start to break down. Human growth hormone, or somatotropin, is a simple protein made up of a single chain of 191 amino acids. It is released by the pituitary gland, starting in childhood and continuing into old age. It moves from the bloodstream to the liver, where it is converted into somatomedin-C (also known as growth factors), which are messenger molecules that carry hGH's message of growth into other parts of the body. Human growth hormone supplementation is said to help elderly people lose 20 years from their biological clock, particularly in the area of bones and muscles.

A Look at Hormone Supplementation

Bioidentical Progesterone

Progesterone treatment has been used in Great Britain since the 1950s and in the United States since the late 1970s. The progesterone that is used is prepared from extracts of wild yam or soybean and is the exact duplicate of the

progesterone that naturally occurs in the body. Progesterone directly suppresses circulating LH. It combines with progesterone receptor sites and elicits biological effects without undesirable side effects. A woman who takes progesterone feels her symptoms naturally improve. In the treatment of PMS, progesterone is administered during the symptomatic time, from ovulation until the symptoms cease during menses. A similar protocol is used for perimenopausal symptoms. Possible side effects from taking progesterone include feelings of euphoria and possibly an alteration in the timing of the menstrual cycle.

Synthetic Progestins are a Poor Substitute for Bioidentical Progesterone

Synthetic progestins are not only less effective than natural progesterone, but they can also cause side effects. They do not have the full range of biological activity of natural progesterone and have actually been shown to inhibit biosynthesis of progesterone. Synthetic progestins can cause abnormal menstrual flow, cessation of flow, nausea, depression, weight fluctuations, fluid retention, insomnia, allergic reactions, jaundice, and fever.

Estrogen Can Be Prescribed in Conjunction with Progesterone

When estrogen supplementation is prescribed by your healthcare practitioner, using progesterone in conjunction can minimize side effects. Estrogen, unopposed by progesterone supplementation, "decreases libido, increases the likelihood of breast fibrocysts, uterine fibroids, uterine (endometrial) cancer and breast cancer. All of these undesirable effects of estrogen are countered by progesterone. Restoring proper progesterone levels is what is known as restoring hormone balance," according to Dr. John R. Lee in his book *Natural Progesterone: The Multiple Roles of a Remarkable Hormone*.

Conjugated Estrogens

Conjugated estrogens, such as Premarin®, are the most commonly used form of estrogen replacement therapy (ERT) prescribed by healthcare providers. Researchers do not know for sure if conjugated estrogen increases cancer risk. Women with family histories of cancer may be advised against taking standard estrogen therapy. Other side effects of estrogen include vaginal bleeding, high blood pressure, nausea, vomiting, headaches, fluid retention, and impaired glucose tolerance.

Tri-Estrogen

Tri-estrogen, or Tri-est, is a bioidentical triple estrogen combination formula that attempts to minimize the risks of estrogen and maximizes its benefits. Tri-est utilizes the benefits of three bioidentical estrogens—estrone (E1), estradiol (E2) and estriol (E3)—in a safe and effective way. Triple estrogen may be administered in a cyclical fashion, in addition to progesterone at the end of the cycle, or daily in combination with progesterone for practitioners who recommend every day dosing.

Natural Testosterone vs. Synthetic

Remington's, the standard pharmacy text, states that "Testosterone is not effective orally because it is destroyed by the liver upon absorption." However, Dr. Jonathan Wright states that an exhaustive search in the medical literature fails to substantiate this statement. Indeed, he has used testosterone orally in his practice and has confirmed activity both by clinical results and by laboratory measurements. This unfounded belief in the ineffectiveness of testosterone taken orally has led to the widespread use of methyltestosterone in this country.

Popular drug products, such as Premarin® with methyltestosterone, are frequently prescribed for menopausal women. It is

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important to distinguish the difference — testosterone occurs naturally in the human body, but methyltestosterone does not. Testosterone is easy to monitor by measuring levels in the blood, saliva, and urine. Testosterone supplementation only produces side effects when the normal physiological levels are exceeded. Side effects disappear when the dosing is lowered appropriately.

Methyltestosterone is a synthetic analog. It is not possible to correlate blood levels with clinical activity because it is not normally a component of human biochemistry. By introducing a foreign substance that mimics testosterone, it is not surprising to find that more side effects or undesirable effects occur. Primarily, the extra load for the liver to try to detoxify the body from a foreign substance can lead to liver damage. Liver cancer has also been reported as a side effect of methyltestosterone.

In *Testosterone, The Hormone of Desire*, Dr. Susan Rako contends that it is desirable to use methyltestosterone to avoid the production of estradiol from testosterone. Estradiol production from testosterone is a natural event (and would occur anyway from a patient's own testosterone). In actuality, the rate of conversion is not great and is certainly dependent upon the body's own wisdom of balance. There are no long-term studies to verify that the use of methyltestosterone does not produce problems from even low dose applications, as used in menopausal women. The choice between natural or synthetic testosterone is an important topic for patients to discuss with their practitioners.

Thyroid Supplementation

Natural thyroid preparations have been available since 1891, and the individual thyroid hormones T3 and T4 have been synthesized since the 1960s.

Dr. Broda O. Barnes, a pioneer in thyroid research, has always advocated the use of natural preparations, based on the findings of his many years of researching the efficacy of both natural and synthetic thyroid. Most thyroid hormone is given by prescription and must be monitored by a practitioner. T4 preparations, which are the most commonly used thyroid hormone, have proven to be a very poor replacement therapy according to the Barnes Foundation. Their testing has consistently shown that patients on T4 preparations have an abnormally high T4 level and a very low T3 level, indicating their body's inability to convert T4 to T3.

DHEA Supplementation

Proponents of DHEA supplementation believe it may have a positive impact on diabetes (by stabilizing blood sugar levels), cancer, coronary artery disease (atherosclerosis), osteoporosis, blood cholesterol, aging, and autoimmune diseases. It may also enhance the immune system to protect against infection, assist in weight loss and convert fat to lean muscle mass, control Alzheimer's disease, treat menopause, depression, memory problems and herpes. Women with higher levels of DHEA show evidence of less risk of breast cancer and better functioning immune systems as they age.

DHEA is available by prescription when it is custom compounded and also available without a prescription (over the counter).

Human Growth Hormone

Proponents of hGH supplementation have found that it offers striking health benefits including improvements in energy level and sense of well-being, younger and thicker skin, stronger bones, gains in muscle mass, loss of body fat, a stronger immune system, faster healing of wounds,

enhanced exercise and sexual performance, greater cardiac output, lower blood pressure, lower cholesterol, fewer wrinkles, sharper vision, mood enhancements, better retentive memory, improved kidney function, and regrowth of organs (heart, liver, spleen, kidneys) that shrink with age.

What are the potential problems with hGH? Because it promotes connective tissue growth, hGH has been reported to cause carpal tunnel syndrome and arthritis in some users. It has also been theorized that it may trigger precancerous cells to turn to cancerous cells. As the studies continue, researchers have also expressed fear that the hormone may lead to edema, high blood pressure, irreversible joint diameter enlargement, vocal cord thickening, osteoporosis, heat intolerance, or impotence. However, current dosing trends seem to be much lower than the original dosing prescribed by practitioners. There appear to be fewer side effects with more judicious use.

Benefits of Proper Hormone Balance

Restoring hormone balance has been shown to have a beneficial effect on quality of life. Estrogen and progesterone therapies are believed to reduce the risk of cardiovascular disease, significantly protect from heart attack, and reduce the bone loss associated with osteoporosis. Treatment with bioidentical progesterone and natural thyroid has been found to be effective in preventing miscarriages, solving some cases of infertility, and helpful in treating menstrual difficulties, mood disorders, and PMS. Obtaining the proper hormone balance may help you avoid minor health irritations, as well as major health concerns, throughout the stages of your life.

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Resources

This article was originally published in 1997, as written by Lauri Lee. It was republished with minor modifications in January 2002 and again in August 2010.

The original resources included:

- *PMS—Solving The Puzzle* by Linaya Hahn.
- *Hormonal Health* by Dr. Michael Colgan.
- *Natural Hormone Health* by Arabella Melville.
- *What Your Doctor May Not Tell You About Menopause: The Breakthrough Book on Natural Progesterone* by John R. Lee, MD.
- *Natural Progesterone: The Multiple Roles of a Remarkable Hormone* by John R. Lee, MD.
- *Estrogen: The Facts Can Change Your Life!* by Lila E. Nachtigall, MD.
- *Testosterone, The Hormone of Desire* by Susan Rako, MD.

A Note from the Publisher ...

We are pleased to bring you this complimentary issue of *Connections*. It has been our privilege to bring current, up-to-date health information to women and their healthcare providers for many years. Hopefully, our newsletter has helped raise your awareness and made you a better healthcare consumer. Please continue to contact us with your questions, concerns, and topic suggestions. We love hearing from you!

Many healthcare consumers are looking for the most effective care they can find to maintain their current good health into the later years of their life. The goal of this issue of *Connections* is to give you some basic information to help you make decisions about hormone replacement therapy (HRT) and some of the new hormone therapies on the market, and how it benefits your overall health as you age. We hope this information helps you enter your menopausal and postmenopausal years more in control of your body and emotions than ever before in your life.

Although the cessation of hormone production is gradual, the effects on our body are very noticeable to us. We become fearful when we begin to look and feel different. By regulating the hormone balance within our bodies, our good health and radiant appearance can be maintained and enhanced as we enter our menopausal stage of life.

Hormone replacement therapy started out using conjugated estrogen alone, and then it evolved to include progestins. Now, it also includes bioidentical estrogens, bioidentical progesterone, testosterone, and thyroid therapies. Some individuals are also looking at therapies with DHEA and human growth hormone. Each of these hormones offers different health benefits and some are known to have health risks and side effects. If the information in this article has piqued your interest, we encourage you to go to your local bookstore or do some research online to read up on these topics, and then discuss them with your healthcare provider to see if they are viable options for you. Remember, you are the one who is responsible for taking the first step in achieving optimal health for yourself.

To your health!!
Connie

Connections is a publication of **Women's International Pharmacy**, which is dedicated to the education and management of PMS, menopause, infertility, postpartum depression, and other hormone-related conditions and therapies.

This publication is distributed with the understanding that it does not constitute medical advice for individual problems. Although material is intended to be accurate, proper medical advice should be sought from a competent healthcare professional.

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