Women's Hormones

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Female hormonal health is not just related to menstruation and menopause - it is a matter of lifelong well-being and longevity

While a great number of women in our culture develop some kind of sexual reproductive organ dysfunction, most are misled about true sexual and reproductive health and what options exist to achieve it. People tend to think of women's "hormone problems" as starting in midlife with the onset of menopause. In fact, a dysfunctional pattern can begin during adolescent years or even before birth. The severity of hormonal problems may increase with age, but it is not aging per se that is the root of declining health. It is most often the cumulative physiological effects of stress that cause disruption of the natural rhythms and balancing mechanisms of women's hormones (see Quick Definition), thereby eventually compromising overall health as well as sexual and reproductive health.

Quick Definition - **Sex and stress hormones** are chemical messengers formed in endocrine organs and certain body tissues and then carried in the blood to other areas of the body. Depending on how specific their effects, hormones can alter either the functional activity or the structure of one or more organs. Synthetic hormones are different from naturally occurring hormones; they are structurally altered (so as to be patentable).

Allopathic (conventional) medical thinking fails to look for or treat the root causes of women's hormonal imbalances. For example, more young women today are experiencing infertility because they are not ovulating, yet they are being given fertility drugs like Clomid without comprehensive hormonal evaluations.

Though these women often succeed in conceiving, they generally end up paying a price for short-sighted symptom management. The future health consequence is that other symptoms will appear and hormonal imbalance will progress.

Similarly, women are led to believe that it is normal to experience distressing menopausal symptoms. They anticipate having to accept the conventional treatment choice of hormone replacement therapy (HRT) with synthetic hormones. Women are encouraged to do this in spite of the fact that **estrogen supplementation places them at risk for breast cancer and other serious health problems**. HRT and fertility drugs -- as well as birth control pills and other hormonal therapies -- were all designed to treat only specific symptoms with no regard for the effects they have on the entire body. Because of this non-holistic approach, we are seeing an increase in the incidence of not only breast cancer and sexual reproductive organ dysfunctions but also uterine and ovarian cancer.

Another problem with conventional HRT is that it generally employs the wrong forms of estrogen and progesterone. Synthetic estrogens or the estrogens that are excreted in pregnant mare urine are often used. And of the three estrogen hormones (estradiol, estriol and estrone) found in women's bodies, most conventional pharmaceutical products use only estradiol. Many HRT formulas also contain synthetic progestin (as opposed to natural progesterone), which is included to help balance the effects of synthetic estrogen. Yet an artificial hormone cannot function in concert with another artificial hormone to create balance in the body. Worse, these **HRT formulas ignore the increasingly common wisdom that it is progesterone deficiency -- not estrogen deficiency -- that leads to early or difficult menopause and many other health problems affecting women.**

A lot of women are discovering that conventional HRT does not give them the overall health and well-being they had hoped for, and they are seeking out healthier alternatives. What everyone will hopefully soon realize is that menopausal and sexual reproductive problems are actually symptoms of overall hormonal imbalances. Women need to get a complete picture of their hormonal status and find appropriate therapeutic steps to maintaining balance.

Meanwhile, millions of women continue to experience dysfunctions such as PMS, depression, decreased libido, fibrocystic breasts, food and sugar cravings, uterine fibroids, irregular or excessive uterine bleeding and endometriosis (see Quick Definition below). Those whose dysfunctions are extremely painful or debilitating are told that their "health is more important than their reproductive organs" and that "a hysterectomy would be the best thing." Unbelievably, an estimated trillion-plus dollars was spent during the twentieth century to remove women's reproductive organs. **Hysterectomy now out-numbers almost all types of surgery performed in the U.S.**

Reproductive organs play an important role in more than reproduction. Many studies show that each aspect of the female sexual anatomy serves an integral part in the health and well-being of the entire body. Each function is part of the whole, part of a system, or symphony, of interrelated parts and timing.

The Endocrine Interplay

What needs to be understood is that, for example, if a woman's thyroid or adrenal glands are depleted or functioning inadequately -- a fairly common occurrence in our stressful culture -- she will likely experience problems with her sexual reproductive organs. The connection between these organs and the thyroid, the adrenals and other endocrine glands is that they are all governed by endocrine hormones. This is an important interrelationship,

which is why what disrupts one gland can disrupt another, causing a kind of domino effect or vicious cycle. The immune system and the thymus are involved, too, because immune response is inhibited by abnormal hormone levels.

The endocrine system (see below) is responsible for homeostasis, the body's ability to maintain stable internal conditions, including body temperature, regardless of changing external conditions. **Balance is crucial to all life processes.** The body functions within very specific margins, and being forced to function outside of those margins can cause a whole series of negative events, even death. The endocrine system also controls the processes of reproduction, metabolism, growth and development.

The Endocrine System and the Female Cycle

The endocrine system regulates the body's major continuous and prolonged processes, including reproduction; growth and development; cellular metabolism and energy; blood balance of nutrients, electrolytes and water; and the mobilization of body defenses against stressors (things that cause wear and tear on the body's physical and mental resources). It is made up of eight different glands located strategically throughout the body:

- **ovaries (in men, the testes)**
- **adrenals**
- **pancreatic islets**
- **thyroid**
- **parathyroid**

- **pineal**
- **pituitary**
- **hypothalamus, which is also part of the nervous system**

Besides these major organs, the system includes pockets of hormone-producing cells in tissues in the small intestine, heart, kidneys and stomach. The endocrine system develops and begins producing hormones by the end of the second trimester of fetal development.

In the order of endocrine command, the hypothalamus is the body's CEO, orchestrating the events of the rest of the endocrine system. The hypothalamus controls autonomic reflexes (such as the activity of the heart and smooth muscles), and it houses the body's "thermostat" and biological clock, which maintains the body's rhythm of 24-hour sleep-wake cycles. The somewhat mysterious pineal gland also has a role in biological timekeeping, being an organ sensitive to retinal response to light. The pineal gland, believed to coordinate fertility hormones, produces melatonin, the hormone known for its sleep-triggering ability.

The hypothalamus also initiates part of the adrenal stress response,causing the pituitary to secrete the hormone that travels to the adrenal glands to stimulate secretion of cortisol, DHEA and aldosterone. The hypothalamus also initiates the female cycle by producing gonadotropin-releasing hormone (GnRH), which signals the pituitary to secrete follicle-stimulating hormone (FSH). FSH stimulates the ovaries to secrete estrogen, the sex hormone that stimulates development of breast, uterine and ovarian tissue (and in synthetic HRT forms is associated with excessive cell growth that leads to cancer).

When estrogen reaches a certain level, it signals the hypothalamus to trigger the pituitary to secrete luteinizing

hormone (LH). Estrogen levels then fall, while the level of LH rises and peaks (around day 14 of a 28-day cycle), stimulating ovulation, the release of an egg from its ovarian follicle. After ovulation, the follicle (now called the corpus luteum) is filled with cholesterol, which is converted first to pregnenolone and then to progesterone. This newly-made progesterone is used in part for the building up of the uterine lining. If after about 13 to 15 days the egg is not fertilized, the uterine lining is sloughed off (in menstruation) when both estrogen and progesterone levels drop.

Both *estrogen* and *progesterone* are necessary in the female cycle, and their balance is key for full health. Many women in our culture have an imbalance of these hormones, especially, insufficient levels of *progesterone* to counter excessive *estrogen* -- an imbalance further exacerbated by chronic stress. *Progesterone* is a hormone important to a number of body functions. During times of stress or conditions of chronic adrenal hyper-stimulation, *progesterone* is capable of being converted into the stress hormone *cortisol*.

When one goes through chronic or severe long-term stress, the hypothalamus at first triggers an overproduction of the adrenal hormones (especially cortisol and DHEA). This eventually leads to **adrenal insufficiency**, a state in which the exhausted adrenals cannot respond adequately.

The thyroid gland is also adversely affected by chronic stress. This gland's roles include regulating calcium metabolism and glycolysis, the breakdown of glucose for body energy fuel. Under normal conditions, the fight-or-flight response causes the thyroid to increase glucose breakdown. In conditions of chronic stress, however, the thyroid is continually overstimulated and eventually becomes depleted. Thyroid function is also disrupted by excessive estrogen, but this can be prevented by adequate progesterone levels.

Hyperthyroidism (overactive thyroid functioning) and especially hypothyroidism (low functioning) have become more common. The classic symptoms of hypothyroidism include sluggishness, early morning fatigue, cold extremities, lowered basal temperature and menstrual problems, including scanty periods.

Adrenal and other hormonal gland dysfunctions can cause some of the above symptoms and more, including cravings for sweets, weight gain, allergies, heart palpitations, insomnia, depression, fatigue, poor memory, foggy thinking, headaches, nervousness, inability to concentrate, recurrent infections and glucose intolerance.

One very damaging adrenal dysfunction is excessive cortisol production, which causes, among other serious problems, increased calcium mobilization from the bones, leading to osteoporosis, or loss of bone density. In a person with a healthy stress response, excessive levels of cortisol are automatically buffered. Constant stress destroys this feedback loop.

Hormonal imbalances compromise not only physical health but also psychological health, manifesting as problems ranging from depression to panic disorder. One way the body tries to compensate for imbalances created and exacerbated by the demands of stress is to overproduce key hormones. Another way it tries to compensate is by converting sex hormones to stress hormones, thus further diminishing reproductive functions and the enjoyment of sexual health.

It is helpful to learn about these hormonal interdependencies because they allow one to see the bigger picture, that the problems commonly associated with menses or menopause are actually indicators of greater endocrine imbalance. For many women, the next step in understanding the bigger picture might be to look at digestive health -- such as the possibility of malabsorption syndrome or food allergies -- and at nutritional

supplementation strategies (see Supplementation below) that help restore or maintain hormonal balance.

One of the biggest reasons why hormonal imbalances are misunderstood is because "modern" medicine disregards the way the human body deals with its environment. Consider that the body's responses basically have not changed for 50,000 years. **We still respond to our environment with the most primal of mechanisms: the "fight-or-flight" mechanism, the release of adrenaline and other stress hormones.** The stress response, initiated in the hypothalamus and pituitary, and regulated by the adrenal glands, is responsible for redirecting energy and resources away from the reproductive organs when we are under severe or chronic stress, directing it instead to the muscles and organs that are necessary for survival. This redirection is allowed to take place because, on the body's list of priorities, survival comes first and reproduction comes last.

The reproductive system is the only body system whose functions are biologically expendable. With this in mind, we see how the ability to reproduce becomes a privilege in the body, not a right. **Fertility, or the ability to ovulate, is therefore a good indicator of the overall health of a woman.**

The fight-or-flight response can be a detriment as well as a lifesaving response. In a modern environment, many things -- ranging from allergic reactions to being cut off while driving -- can evoke this mechanism. Throughout daily life, there are many hidden as well as overt sources of stress. Most of the time, our response to stress ends without a literal "fight" or some form of physical activity, as our ancestors would have engaged in. One of the problems with this is that **adrenaline, unlike most hormones, has no enzyme "switch" to turn it off**. Once released it must be used or it remains active. As a result, we remain in a state of hyper-stimulation, with abnormal levels of adrenaline and cortisol, the primary fight-or-flight hormones. Other

hormone levels, such as the pancreatic hormone glucagon, also become dysregulated. If hyper-stimulation persists, we have difficulty inducing a relaxation response, and we do not return to a normal state.

Over a period of time, if chronic stress continues, the body adapts to adrenal hyper-stimulation, continuing in a perpetual fight-or-flight mode. This is called maladaptation, a process in which endocrine system organs begin to break down. This process eventually reaches the point where **the adrenals become exhausted and cortisol levels drop**. One example of what can result from adrenal exhaustion is **fibromyalgia**, a condition that can arise when the protective benefits of normal cortisol levels are lost.

The adrenals are usually first in the order of endocrine function breakdown, followed by the insulin-producing portion of the pancreas, thyroid, ovaries, parathyroid, pineal, pituitary and finally, the link to the autonomic nervous system, the hypothalamus. The thymus gland, which produces immune defense cells, is also affected in the endocrine breakdown process. Each of these glands controls specific functions, and as each breaks down new symptoms appear. Symptoms are subtle at first. Then over the years, as the body goes further into deficit, the symptoms will increase and worsen.

The more stress endured, the worse the hormonal problems become. When the endocrine system is severely dysregulated, the hypothalamus is affected. If the production of corticotrophin-releasing hormone (CRH) becomes severely affected, the psychological symptoms can become debilitating. Because CRH controls fear through stimulating adrenal secretion, an abnormal level of CRH can make it difficult to perform routine chores or leave the house. The fear response in turn worsens hormonal problems by further stressing the adrenals, which respond by

converting more sex hormones to stress hormones and becoming more maladapted -- a vicious cycle.

The Creation of Maladaptation

A woman's **hormonal problems can begin even before birth**, during her fetal development. If her mother is under chronic stress and adrenally hyper-stimulated, the mother's body will draw on the developing fetus's "survival chemistry" to supplement her own body's hormonal needs. During the second trimester, the placenta produces on average about 450 milligrams of progesterone a day, and some of this progesterone will be routed to the stressed mother and converted for stress purposes. In the third trimester, the developing baby's adrenal glands begin to produce stress hormones, and these can also be taken and used by the mother.

Quick Definition - **Endometriosis** is the buildup of endometrial (uterine lining) tissue outside the uterus, most often in or on the fallopian tubes, ovaries and pelvic area. It is thought to be caused by or exacerbated by estrogen dominance (too much estrogen in relation to progesterone), and it can in turn cause organ dysfunction or intestinal blockage. Symptoms include painful menstruation and frequent and severe bleeding.

Women are rarely cautioned about this kind of fetal stress before or during their pregnancies. Nor are they told how **the developing baby's adrenal glands will enlarge to meet the mother's demand for additional stress hormones**. A baby born in this state of secondary hyper-stimulation produces too much stress hormone. While the baby's adrenal glands can eventually decrease their output, the glands will tend to reinflate more easily -- like a balloon -- every time extreme demands are made upon them. If severe or chronic stress persists, however, hyper-stimulation continues. As the baby grows and matures into an adult, this maladaptive cycle will be perpetuated, causing her sex

hormones to be routed from her reproductive system and used for her own stress purposes.

Breaking the Stress Cycle

Once a maladaptive stress cycle has been established, it will continue until appropriate intervention takes place to restore hormonal balance. This can be done at any age, and functional hormonal testing is the first step. **The best type of stress and sex hormone testing is known as a circadian test, which is performed over a 24-hour period.**

Sampling is easily accomplished at home, and the test results will determine the exact levels of accumulated stress and sex hormones. Using a collection kit, a woman can obtain a saliva sample every four hours for 24 hours by chewing on a salivette (a small dacron roll). The results will show specific hormonal changes that occur every four hours, demonstrating a 24-hour graphic representation of the body's stress reactions.

Salivary testing is the best test method because saliva contains free fractions of stress and sex hormones. Free fractions are the utilizable hormones, those that the body actually has access to. Many studies have been conducted showing the validity of assaying these steroid hormones in saliva. The usual hormone tests, conducted with blood samples, measure total hormone production, a value that includes bound (not free) hormones that are unavailable for the body's use. **It is important to measure free fractions to get an accurate picture of how sex and stress hormone levels are varying by body function and activity.**

Also, conventional hormone panels usually test only the blood plasma levels of the sex hormones and only at the moment of sampling (when the blood was drawn). The Female Circadian Panel from Sabre Sciences evaluates fluctuations of the salivary

hormone levels of estrogen (estradiol), progesterone, testosterone, cortisol, DHEA and melatonin over a 24-hour period. Important clues about endocrine health are revealed by circadian fluctuations. For example, we know that because human skin regenerates mostly at night, high nighttime cortisol values mean that less skin regeneration is taking place.

Steps to Restore Hormonal Health

- First, support the endocrine system and allow it time to repair.

- Support immune function, thereby reducing stress on the endocrine system.

- Make dietary and nutritional changes according to genetic predisposition,
  allergies, personal weight and exercise objectives.

- Support proper digestive function; eliminate any malabsorption problems.

- Get exercise, establishing your level of capacity and personal training objectives.

- To relieve stress, try meditation, hypnotherapy, visualization, Hatha Yoga, Tai Chi or QiGong.

- Consider individual counseling and group stress management workshops.

- Relax by walking in nature, swimming, pursuing creative activities, changing routines.

Establishing a Baseline

Comprehensive hormonal testing should be performed to establish a baseline before a woman chooses any kind of hormonal treatment, and then should be repeated periodically thereafter. Baseline test results are also needed to order custom-made transdermal hormonal creams from Sabre Sciences and various compounding pharmacies around the country. Women should also consider additional testing, such as a comprehensive, 5-hour glucose tolerance test and a lipid panel (cholesterol, triglycerides and HDL). An abnormal (especially high) level of cholesterol, the basic building block of sex and stress hormones, indicates that the body is attempting to provide more stress hormones. In some cases, testing for gastrointestinal problems, allergies or even parasites is advised.

Note, however, that **"normal" (negative) results from conventional laboratory diagnostic tests do not always mean normal function.** Some tests do not reveal serious existing conditions, others are not able to detect borderline conditions. One example is thyroid testing, which cannot indicate how well thyroid hormone (T3) is able to bind to target cells, a thyroid condition that can be caused by high levels of estrogen. Woman suspecting hormonal imbalances or experiencing distressing symptoms should discuss testing with a healthcare practitioner.

Effective Treatment

By evaluating hormonal changes over a 24-hour period, a pattern can be determined and a treatment protocol designed. An effective plan involving natural hormones, nutritional support and various stress-relief therapies can be successfully implemented to reestablish the proper menstrual dynamics, hormonal balance and well-being.

It should be mentioned that in many scientific circles, the 28-day menstrual cycle is believed to be a result of the impact of the modern world. Up until the last hundred years, the menstrual cycle is said to have reacted to seasonal changes. Fertility was at its peak during the fall months, thus helping guarantee the survival of the newborn during the much more hospitable spring and summer environment. The menstrual/fertility cycle could last as long as 90 days, and was absent during times of serious stress.

When evaluating the "modern" 28-day cycle and hormonal balance it is important to understand that approximately the first 14 days of the cycle are estrogen dominant and the second 14 days are progesterone dominant. This is an over-simplification but it helps to establish an understanding of the healthy dynamics of the menstrual cycle.

The first treatment consideration is that the maladaptive stress response must be interrupted so that sex hormones will no longer be converted for stress purposes. Women must know that, until these conversion pathways are closed, supplementation with the sex hormones estrogen and progesterone is of little value because they will easily be converted. First, therefore, proper levels of the adrenal hormones cortisol and dehydroepiandrosterone (DHEA) need to be reestablished. DHEA is a much talked about hormone these days because of its

importance in maintaining youthfulness; a healthy DHEA level is considered an indicator of longevity.

Hormonal restoral with transdermal creams is accomplished using a dual-phase approach, which uses estrogen-dominant supplementation during the first 14 days and progesterone supplementation during the second 14 days.

Transdermal Delivery System

In addition to individual needs, an important factor regarding the correct levels of any kind of supplement is how quickly it is metabolized and eliminated from the body. This is called metabolic clearance. A supplement, especially a hormone, should not accumulate or remain in the body too long, or it will interfere with the changes that must occur -- in this case, the necessary shift from estrogen to progesterone -- for supplementation to be effective.

A transdermal hormonal cream supplement works best. It is easily applied and delivered, bypassing the obstacle of breakdown in the digestive system or liver. Most of the available hormonal creams claim to be transdermal, but are actually topical. A big problem with topical creams is that most of them use an inexpensive oil cosmetic base. They are absorbed into fat cells, and months after discontinuance they can still be found in body tissues. Also, a topical relies on the small size of the hormone molecule (progesterone being very small, estrogen very large) to transverse the layers of the skin and make its way into the bloodstream. A true transdermal does not rely on the size of the molecule; instead it has a vehicle to carry it to the target. This is called a liposomal delivery system, which employs a molecular coating to control absorption.

A "stealth" liposome has 100 bilayer lipid shells, identical to cell membrane lipids, allowing it to pass through the skin tissue. The shells slowly dissolve, releasing hormones and cofactors gradually into the bloodstream.

The Sabre Sciences transdermal cream delivery system is also pulsatile, meaning that only a small, measurable quantity of hormone is released at one time. This not only allows for easy calculation of the amount that will be in the blood but also comes closest to matching the body's own cyclic hormone rhythm.

Recreating Healthy Dynamics

The key factor in positively influencing estrogen and progesterone levels is to recreate or enhance the healthy dynamics of the menstrual cycle by maintaining estrogen dominance during the first 14 days of the cycle and allowing a shift at mid-cycle to progesterone dominance. A one-phase treatment involves supplementation throughout the entire cycle using only estrogen or progesterone factors. If you use this approach, not only will you not restore hormonal balance but also you will cause further imbalance, negatively affecting sexual and reproductive health as well as the health of the whole body.

To support the adrenal system, dual-phase transdermal creams from Sabre Sciences contain DHEA and pregnenolone, important precursors of sex and stress hormones. The creams also contain cofactors and nutrients (such as Alpha Lipoic Acid) as well as botanicals and homeopathics, all of which help estrogen and progesterone work properly. Custom transdermal creams are formulated using an individual's hormonal test results. Off-the-shelf dual-phase creams called BioEst™ Phyto-Estrogen Formula and Bio-Femme™ Progesterone Formula are also available. These creams are designed to enhance the healthy dynamics of estrogen and progesterone activity in both pre- and post-menopausal women. For example, women suffering from hot

flashes or postmenopausal vaginal dryness are aided by the phyto-estrogen cream.

Supplementation

The following list includes general recommendations for women who are "stressed out" or hormonally imbalanced and would like to restore overall hormonal health. For best results, consult a qualified healthcare practitioner for guidance in establishing a supplement plan before assuming the important responsibility of self-care.

- **Transdermal hormonal supplements** (dosages vary)
- **Vitamin A** (25,000 IU daily as beta carotene)
- **Vitamin B5** (500-1,500 IU daily)
- **B complex vitamins** (25-50 mg daily)
- **Vitamin C & Bioflavonoids** (2,000 mg/1,000 mg daily)
- **Vitamin D** (400-1,000 IU daily)
- **Vitamin E** (400 IU daily; 800 IU for women on HRT)
- **Digestive enzymes** (needs and dosages vary)
- **Probiotics** (including acidophilus; dosages vary)
- **Alpha Lipoic acid** (100-200 mg twice daily)

- **Biotin** (1,000 mcg prior to meals)
- **Chelated calcium** (1 tsp Coral Calcium daily)
- **Magnesium** (1,000 mg daily)
- **Licorice root** (use if cortisol level is low)
- **Phosphatidyl choline** (acetylcholine precursor; use if cortisol level is low)
- **Phosphatidyl serine** (revitalizes nerve cells; use if cortisol level is high)
- **Siberian Ginseng** (use if cortisol level is high)
- **Maca** (affects hypothalamic action; important to all hormonal therapies)

While the use of these creams or any other hormonal therapy should be initiated under the guidance of a healthcare practitioner, the creams provide an individual the ability to adjust the dosage to the exact amount needed during each phase. Supplementing with both phyto-estrogen (from natural plant sources) and progesterone will re-balance the natural monthly cycle. Pre-menopausal women should use the phyto-estrogen cream from day one through 15 of their monthly cycle (day one is first day of menses); the progesterone cream should be used from day 16

through 28. Postmenopausal women can create a cycle by choosing a day to begin using the creams. After four cycles, women should get fully retested to see whether the dosages of the creams and other supplements need further adjustment.

Women have seen amazing results after employing these creams, especially in combination with other treatments, including nutritional supplements (see above) and therapies for normalizing adrenal stress. Some women without a period for years, clinically diagnosed as being post-menopausal, have begun to menstruate again after using this system of hormonal supplementation. Most women find that the healthy, youthful aspects of their skin, hair and nails are reestablished, and they report greatly enhanced moods and feelings of well-being.

Again, it is important to look at all aspects of the reproductive system and its interplay with the endocrine system, especially adrenal health. It is equally important that women become observant and vigilant about what is happening in their own bodies. This is what it takes to maintain optimum sexual and overall health and maximize longevity.

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