

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560
HRT Patient Information

\$4.50

Male/Female Testosterone Replacement Therapy

Testosterone is the hormone responsible for the experience of sexual desire not only for men but also for women. Testosterone is a *female* and male sex hormone. Testosterone deficiency is a condition, which potentially threatens both men and woman's health and "quality of life". Research has also shown a women's normal physiology includes a critical amount of testosterone, just as it does in greater quantity in men. It is essential to both for normal sexual development, to the healthy functioning of virtually all tissues in the body, and to the experience of vital energy and sexual libido. This critical amount of testosterone decreases after menopause, in many women resulting in a loss of vital energy and sexual libido.

In men testosterone also decreases with aging usually at a later age than women and in larger amounts. It can also be responsible in men for a loss of vitality, well being, muscle mass, and libido.

Supplementary testosterone can be a substantial help in restoring familiar levels of energy, libido, and well being. Only the use of irresponsibly high doses of testosterone over a sustained period of time can produce undesirable effects of significant growth of facial and body hair in women and aggression or irritability in both sexes.

Testosterone is converted into estrogen in both men and women in varying amounts. A woman's ovaries primarily produce testosterone from which estrogen is then made. Not all the testosterone becomes estrogen in women. Enough testosterone remains unconverted to estrogen to amount to 25% of the daily production of this hormone. Another 25% is produced by the adrenal glands, and the remaining part is made by many different parts of the body, including the liver, the skin, and the brain. These tissues manufacture testosterone from precursor hormones that are made in the ovaries and the adrenals. In other words a woman's ovaries and adrenals are responsible for producing all of a woman's testosterone-directly or indirectly.

As long as women have functioning ovaries, their bodies produce, on the average, 3/10 of one milligram a day. Men's bodies produce more than twenty times as much, or on an average 7 milligrams a day.

Testosterone is carried in the blood, most of it attached to a protein known as "sex hormone binding globulin", or SHBG. Only a small amount of testosterone is unattached to protein, or "free" in the plasma and free to produce its effects on tissues. At any given time, 97 to 99% of a woman's testosterone is attached to protein. Therefore only 1 to 3 percent is available to act on tissues in women.

Both testosterone and estrogen are carried on the same protein. Estrogen actually stimulates the production of more SHBG, especially when given orally. This causes more binding up of still more testosterone, leaving less testosterone free to work on cells. This explains why taking supplemental estrogen at menopause can tie up a little more of whatever testosterone may still remain, sometimes tipping the balance and causing the symptoms of testosterone deficiency.

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560
HRT Patient Information

\$4.50

The cells of some tissues produce and contain more testosterone receptors than others. The cells of the genital area, for example, are abundantly supplied with receptors. As aging occurs testosterone receptors gradually decrease as well as the enzymes involved in utilization at a cellular level.

During mid to late teens, women's adrenal glands produce peak amounts of testosterone and other androgens. Even before the approach to menopause, during mid to late 30's, adrenal production decreases by more than ½. This is "adrenopause", and reflects the decline in DHEA and DHEA-sulfate. The adrenals continue to produce some androgens throughout a women's lifetime but the amount is greatly reduced, down to 18% of original levels after age 70. When the ovaries shut down, the amount of testosterone they produce is reduced by ½. Both adrenal glands and ovaries are the source for the building blocks of testosterone that are produced by other tissues. When the ovaries and adrenals slow in their production, the end result is a significant reduction in overall testosterone.

If a woman of any age, even a 19-year-old, whose adrenals are at peak androgen production, should have her ovaries removed surgically (or functionally destroyed by chemotherapy), her adrenal glands will subsequently produce less androgen. She will lose not only all of her ovarian estrogen, progesterone, and testosterone, but also a portion of her adrenal testosterone and other androgens.

The average age for menopause is about 50 years of age but this age has been dropping in recent years. Eight percent of all women have a full, natural menopause before the age of forty. Symptoms of testosterone deficiency can develop for these women as early as their mid to late thirties.

During the years before menopause or perimenopause, the ovaries produce estrogen but often fail to mature an egg follicle. This means the ovaries fail to ovulate, and so fail to produce progesterone, which is made by the follicle cells of the ripening egg. For 50% of all women, when the ovaries stop producing eggs, the ovarian tissue that produces testosterone responds to the pituitary glands attempt to get it to ovulate by producing more testosterone. When this happens, a woman may experience some increase or return of vital energy and libido. How long this level of testosterone effect may last depends on the rate at which production by the adrenals and ovaries continues to decrease, as well as on the genetically determined receptor and enzyme functions. Following menopause, 50% of women will have ovaries that do not make a major contribution to the testosterone production. These may be the same women who suffer a significant loss of libido following menopause.

During the 2 or 3 years preceding menopause and through the 5 years following menopause 50% of the women, who approach menopause naturally, with uterus and ovaries intact, will notice symptoms of testosterone deficiency. For some women the onset may be rather sudden, over a period of a few months. For others, the change may be more gradual over a period of several years. Nearly ½ of the women who have their ovaries removed (most often accompanying hysterectomy), no matter what their age, are likely to develop testosterone deficiency

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560

HRT Patient Information

\$4.50

precipitously, due to total loss of ovarian testosterone together with the reduction in adrenal androgens that follows the total loss of ovarian function. Women who have a hysterectomy leaving their ovaries intact can expect to go through menopause 4 years earlier, on the average, than if they had not had their uterus, (and therefore prostaglandin production that would normally stimulate the ovaries), removed.

Sensitivity to testosterone is variable and not yet completely understood. The effect of a blood level of testosterone varies from woman to woman. The genetically determined differences in the numbers (and tissue distribution) of testosterone receptors may be one factor. Due to these differences each woman's case must be considered individually. It is most likely that a woman and her Health Care Professional will need to tailor a hormone supplement program to meet her needs than any programmed dosage schedule to suit her.

There does not appear to be a simple "dose/response curve" in the use of supplementary testosterone. In other words, the effects of testosterone do not vary directly with the dose of testosterone given. By no means is it true that if some is good more is better when it comes to the effectiveness of supplemental testosterone. Many women benefit more from a lower effective dose of testosterone than from a higher dose.

The amount of testosterone, tiny as it is, that a woman's body is continually producing is an *essential* amount. There is a critical point, which appears to vary somewhat from woman to woman for the complex of factors we have mentioned, at which less available testosterone results in symptoms of deficiency. If testosterone drops below the critical point, for a particular woman, she will notice a loss of vital energy and feeling of well being. She will experience a loss of her familiar level of sexual desire and capacity for orgasm. Her nipples and genitals will become less sensitive, and her pubic hair might become thinner in texture and sparser. She will experience a "flatness" of mood and might notice some loss of mental sharpness. She may develop dry skin and brittle scalp hair. She will notice some loss of muscle tone. Other effects of testosterone deficiency can include decreased production of red blood cells by bone marrow and loss of calcium from bones, which can contribute to osteoporosis. Testosterone deficiency may also contribute to the loss of muscle tone in the bladder and pelvis, resulting in symptoms of urinary incontinence. (Other possible causes of urinary incontinence include infection, anatomic defects, and cardiovascular-renal disease, which must be ruled out or treated appropriately, if present.) Women who need and use supplemental testosterone, conceivably in conjunction with Kegel exercises (contracting and relaxing inner pelvic muscles), have a maximal opportunity for maintaining bladder sphincter tone.

Women whose bodies produce a normal level of testosterone can develop different amounts of body hair, depending upon the genes they have inherited that influence the degree of activity of a particular skin enzyme, known a 5-alpha-reductase. Research has shown that women who are "hairy" have more enzymatic activity in their skin than women who are less "hairy". Some women who develop symptoms of loss of energy and libido when their testosterone drops below a critical level may continue to have the same amount of pubic hair they had previously, due to genetically determined higher levels of skin enzyme (5-alpha-reductase) activity.

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560

HRT Patient Information

\$4.50

Since the 1940's, reports have appeared from time to time in the medical literature noting one or another beneficial effects of maintaining adequate testosterone levels. The common thread running through these various reports is the observation that adequate levels of testosterone contribute to the health of blood vessels, assuring a better blood supply to the heart muscle, brain, and even to the retina. What this suggests is that an adequate level of testosterone can help to prevent heart disease, stroke, and diabetic blindness.

There can be as many differences in the experience of menopause, vital energy, and sexual energy from woman to woman as there are menopausal women. Physiologic developments specific to the shutdown of the ovaries and the effects of this shutdown on the adrenal glands, together with factors of aging (on testosterone receptors, on enzyme functions, and on the adrenals), all contribute to the menopause experience, making it unique for each woman.

Very often the resistance to prescribing testosterone supplements for woman suffering from symptoms of deficiency boils down to a rigid holding to the irrational notion that "testosterone for women is unnatural"

Free testosterone is that small percentage (1 to 3 percent) of the total testosterone that is not bound to the carrier protein. Normal blood ranges of free testosterone may vary from lab to lab. One may need to verify how low a blood level a laboratory may be able to measure. This problem has been presented by some patients having no detectable blood levels! Some laboratories can not test below 20 nanograms per deciliter. A salivary test is also available and these levels are typically 1/10 of normal blood levels.

Methyltestosterone is absorbed from the gut; it is carried directly to the liver, where 44% of it is immediately processed to be excreted. This is what accounts for liver toxicity that begins to occur at 5mg or greater doses, making this a poor supplementation choice for men. After the 44% is processed some of the remaining 56% is acted upon by the liver to remove the "methyl" elements, and as the hormone circulates, most of the testosterone (with and without "methyl") gets bound up to carrier protein. Some small percentage of testosterone (with and without "methyl") is free to attach to receptors. The free testosterone that still has the "methyl" has less affinity for testosterone receptors. This means that any free methyltestosterone is less clinically active than free testosterone that has been unmethylated. Unless there is some way to measure methylated and unmethylated free testosterone, to know exactly how active the free methyltestosterone can be, we can only estimate the level of testosterone activity at any dosage of methyltestosterone. Therefore there is no way to obtain an accurate measurement of the level of testosterone activity a person may have when she is taking methyltestosterone. This can be a drawback for female supplementation.

One important consideration in selecting natural testosterone versus methyltestosterone exists. Testosterone is a precursor of estrogen and can be acted upon by an enzyme (aromatase) which converts it to estradiol (one form of estrogen). Methyltestosterone is not readily converted to estradiol. For women who have had cancer where it may be desirable to keep estrogen levels as low as possible while allowing the benefits of testosterone supplementation, methyltestosterone may be the drug of choice. Even for women who have not had cancer and who use estrogen

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560

HRT Patient Information

\$4.50

supplemental therapy to prevent heart attack, stroke, and osteoporosis, maintaining the lowest dose of estrogen may be prudent. For this reason primarily, methyltestosterone may actually be preferable to natural testosterone for long term use.

Low dose testosterone therapy can be achieved by the sublingual, buccal, or topical route, which should also bypass the liver. Since both sublingual and buccal allow for some 'swallowing' of the dose which then affects levels of other hormones, primarily SHBG, transdermal or topical is preferred.

Due to the pervasiveness of our processed food diet, a limited number of nutrients should be supplemented peri and post menopausally, and for persons not consuming a balanced diet.

Suggested Dietary Guidelines to follow:

Diet:

Restrict or avoid carbonated beverages or "soda" and limit red meat to 3 or fewer times per week. Choose whole grains over refined flour. Limit alcohol use. Estrone levels can increase 300% for up to 5 hours after ingestion of alcohol. Dairy products are not necessary. Cheese is OK. Avoid sugar, refined carbohydrates, and refined fats, choosing instead plenty of fresh vegetables of all sorts particularly broad leafy greens, and ensuring a good intake of the essential fatty acids as from olive oil, flaxseed oil, fish oil, or Black Currant oil.

Daily recommendations:

Vitamin D	2000-5000 I.U. daily.
Vitamin C	1 gram twice daily.
Betacarotene	15000mg/day (or Vitamin A 10,000i.u/day).
Zinc	15 to 30 mg a day.
Calcium	Seek to obtain 800 to 1000mg/day by diet and supplements
Magnesium	300 to 1000mg/day supplement.
Essential Omega 3 and 6 Fatty Acids, Flax seed oil, borage oil	1000mg 2 to 3 x daily.
Acidophilus cultures	15-17 billion cultures per dose 2 times a day for 25 days
Proanthrocyanadins (Grape seed extract or pycnogenol)	30mg to 60mg a day

Pycnogenol is an antioxidant that potentiates vitamins A, E, and C. (It has been shown in some studies to shrink tumors, improve rheumatoid arthritis, asthma, multiple sclerosis, and other autoimmune disorders. Dosage should be increased in autoimmune cases to 50mg, four capsules bid.) Antioxidants can help prevent and/or slow the progression of Alzheimer's disease, arthritis, cancer, cataracts, diabetes, heart disease, all forms of hepatitis, immune weakness, inflammatory disorders, macular degeneration, and Parkinson's disease.

Suggestions for better nutrition try,

Potency Guaranteed Supplements Beginning with;

1. **Meno Support or PMT Support or Executive Support** are super potency multi-vitamins, mineral, trace mineral preparations in a herbal based designed to assist in whatever stage of life one is in. Take 2 tablets 2 times a day
2. **Grape seed extract and proanthrocyanadins** are antioxidants that are 20 times more powerful than **Vitamin C** (1gm 2xd), 50 times stronger than **Vitamin E**(400IU 2xd) and, that potentiates **Vitamin C, E,**

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560

HRT Patient Information

\$4.50

It is important to find practitioners that are experienced both in prescribing and pharmacists that compound natural hormones, to maximize results. It is not uncommon to experience failures due to lack of compounding and prescribing knowledge.

Use this information in the absence of more specific or personal advice given you by your health care professional

Patient Medication Information

Medication:

This compounded prescription you have received contains testosterone.

Use:

This medication is a hormone that is found naturally in the body. It is used to treat hormone deficiencies, hypogonadism, and other conditions as determined by your Health Care Professional.

Side Effects:

Side effects of this medication include nausea, vomiting, diarrhea, agitation, depression, acne, change in libido, hirsutism, clitoral enlargement, voice changes, electrolyte retention, change in coagulation time. If you are using a formulation that is applied to the skin you may experience itching, discomfort, or irritation. These effects may go away during treatment. If they continue or are bothersome, check with your Health Care Professional.

Precautions:

Contact your Health Care Professional as soon as possible if you experience frequent or persistent nausea, vomiting, change in skin color, ankle swelling, or headache. If you notice other effects not listed above, contact your Health Care Professional. There is an increased risk of developing prostatic hypertrophy and prostatic carcinoma while using this product.

If you have diabetes mellitus and use insulin, this medication may affect your blood sugar and insulin requirements. Check blood glucose levels closely and ask your Health Care Professional before adjusting the dose or your insulin.

IHHS Health & Wellness Center

1607 South H Street, Bakersfield, CA 93304
Custom Rx Compounding & IV Pharmacy
Hormonal, Homeopathic, & Nutritional Services
Office (661)-837-0453 FAX (661)-837-0560
HRT Patient Information

\$4.50

Directions:

This medication may be administered as a gel or cream applied to your skin, a sublingual drop or troche, or an injection. Always follow your Health Care Professional's instructions. Do not exceed the dosage prescribed by your Health Care Professional. Store this medication at controlled room temperature or under refrigeration.