The Benefits of Hormone Therapy for Men & Women

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Dr. Shira Miller is conventionally trained and board-certified in internal medicine.

She also specializes in anti-aging, integrative, wellness, functional, complementary, alternative, orthomolecular, and age management medicine.

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Outline

- What is hormone therapy?
- Why would healthy men and women need to think about hormone therapy?
- What are the benefits of hormone therapy for men and women?
- What are the risks?
- Conclusion
- Q & A
- Shmooze

What is Hormone Therapy?

- Hormone *replacement* therapy
- A treatment which puts back into the body (replaces) hormones that are no longer naturally being produced.
- Hypothyroidism (thyroid deficiency) = thyroid hormone replacement
- Addison's Disease (cortisol deficiency) = cortisol hormone replacement
- Type 1 Diabetes (insulin deficiency) = insulin hormone replacement

Hormone Therapy cont'd

- Hypogonadism (primary or secondary loss of testicular function in men) = testosterone hormone replacement
- Menopause (loss of ovarian function in women) = HRT (hormone replacement therapy)
- Growth Hormone Deficiency = Growth hormone replacement
- "Vitamin" D Deficiency = D3 hormone replacement

Reproductive Hormone Replacement Therapy in Conventional Medicine

- Men = primary or secondary hypogonadism, loss of testosterone production and/or fertility - due to brain tumors/trauma, testicular cancer, testicular trauma, infection, genetic diseases, aging (andropause)

- Women = loss of menstrual cycle and fertility - due to brain tumors, ovarian cancer/surgery, infection, infertility, early menopause, menopause

Why would healthy men and women need to think about hormone replacement therapy?

- From an Integrative Medicine perspective, even if you are perfectly healthy, reproductive hormone levels decline during the aging process, and evidence shows that replacing these lost hormones improves quality of life and suggests reduced risk of chronic diseases.

Reproductive Hormone Replacement Therapy in Integrative Medicine is mainly used for:

- Consistently declining and low reproductive hormone levels and corresponding symptoms in aging men and women.
- Hypogonadism or Andropause in Men
- Peri-menopause, Menopause, “Post-menopause,” Postpartum depression, Hormonal imbalances in Women

Andropause is defined as a decline in testicular function as men age, causing a subsequent decline in testosterone levels (a mixed type of hypogonadism.) However, since men preserve the ability to reproduce in their old age, the concept of andropause or "male menopause" is frequently debated. Nevertheless, men lose 1% of their testosterone every year and low testosterone levels are associated with low libido, erectile dysfunction, loss of muscle and bone mass, hot flushes and night sweats, body fat gain, depression/anxiety, decreased urinary flow, fatigue, low motivation and lack of vitality.

Peri-menopause is defined as the years leading up to menopause, and can last up to 10-15 years. It is precipitated by the ovaries declining function, which reduces production of the reproductive hormones – mainly estradiol and progesterone. During this period, usually between the ages of 35-55, women's periods become irregular and they may suffer from many of the symptoms of actual menopause.

Menopause is defined as the first 12 months when a woman no longer experiences menstrual cycles (periods.) The female ovaries no longer secrete progesterone or estradiol in significant amounts and the ability to reproduce completely ceases. Peripheral tissues (such as fat) can still produce estrogens, but only in small amounts. The uterus and vagina become atrophic, breast become fatty, bone loss accelerates, and symptoms such as hot flashes, insomnia, fatigue, depression/anxiety, weight gain, anxiety, heart palpitations, vaginal dryness, decreased libido, and painful sexual intercourse occur in many women. The average age of menopause in the United States is 52.

Post-menopause is defined as the years following menopause, but biologically is worse than menopause in the sense that now a year has passed since ovarian function was lost. Many women eventually adjust to the new low levels of hormones and their hot flashes resolve, but the hormone deficiency state is still present in their bodies.

Estradiol: Estradiol is the most potent female reproductive hormone. It is primarily produced in the ovaries from testosterone, and stimulates the development of secondary female sex characteristics. Peak levels are found during days 12 and 21 of the menstrual cycle. The highest levels are found in pregnancy.

Estrogens: The grouping of naturally occurring estradiol, estrone, and estriol. Frequently used to describe both bio-identical and foreign/alien estrogen molecules.

Progesterone: Progesterone is primarily produced by the ovaries (for approximately 10 days after ovulation (in expectation of pregnancy,) and by the placenta for the maintenance of pregnancy. It acts primarily on the uterus, breasts, and brain, but also affects other tissues. Progesterone levels start declining in peri-menopause, and are produced in minimal amounts during and after menopause, by the adrenals (not the ovaries.)

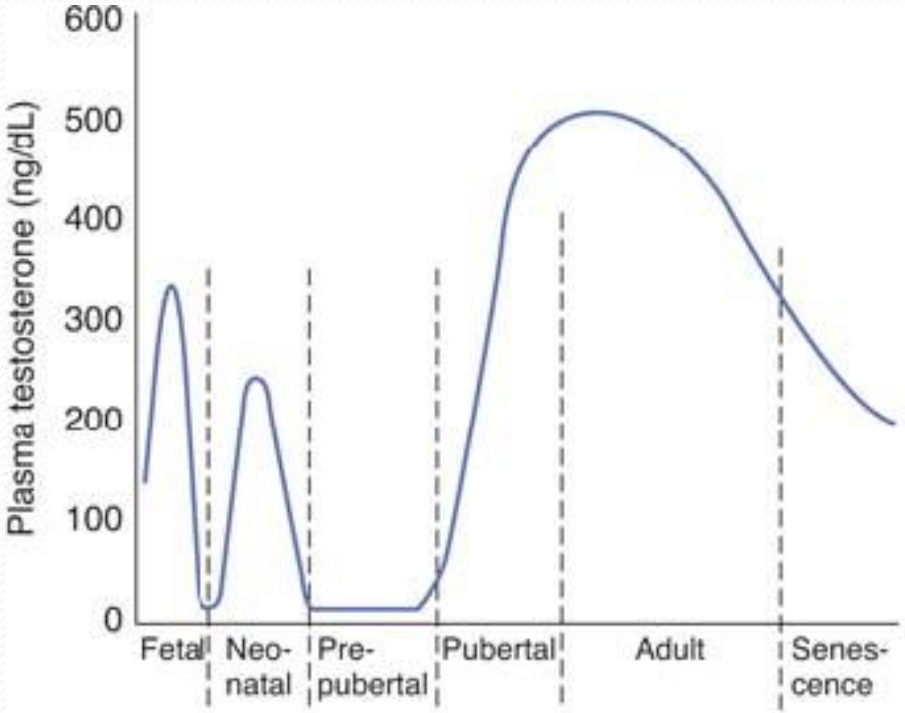
Progestins: Foreign/alien progesterone molecules.

Testosterone: Testosterone is the most potent male reproductive hormone. It is produced in the testes, and stimulates the male reproductive organs and secondary male sex characteristics. The female ovary also produces testosterone, but in significantly smaller amounts.

DHEA and **Growth Hormone** are important and decline in both aging men and women, but will not be discussed here.

Natural History of Testosterone in Men

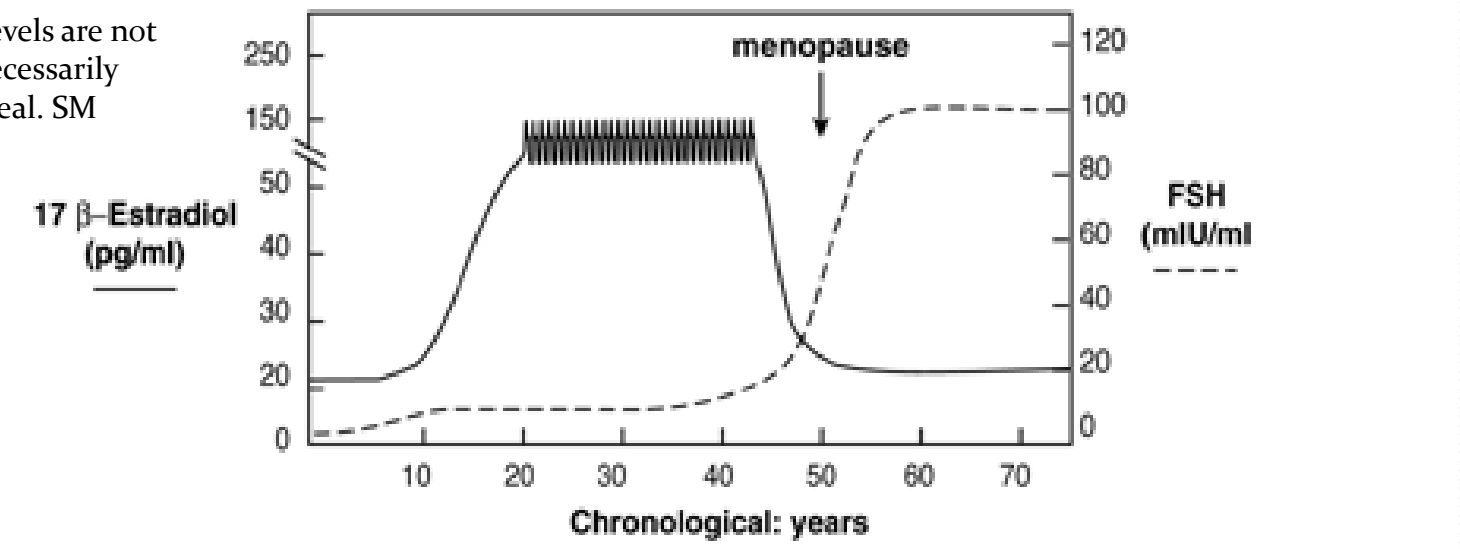
Levels are not necessarily ideal. SM



Source: Barrett KE, Barman SM, Boitano S, Brooks H: *Ganong's Review of Medical Physiology, 23rd Edition*: http://www.accessmedicine.com

Natural History of Estradiol in Women

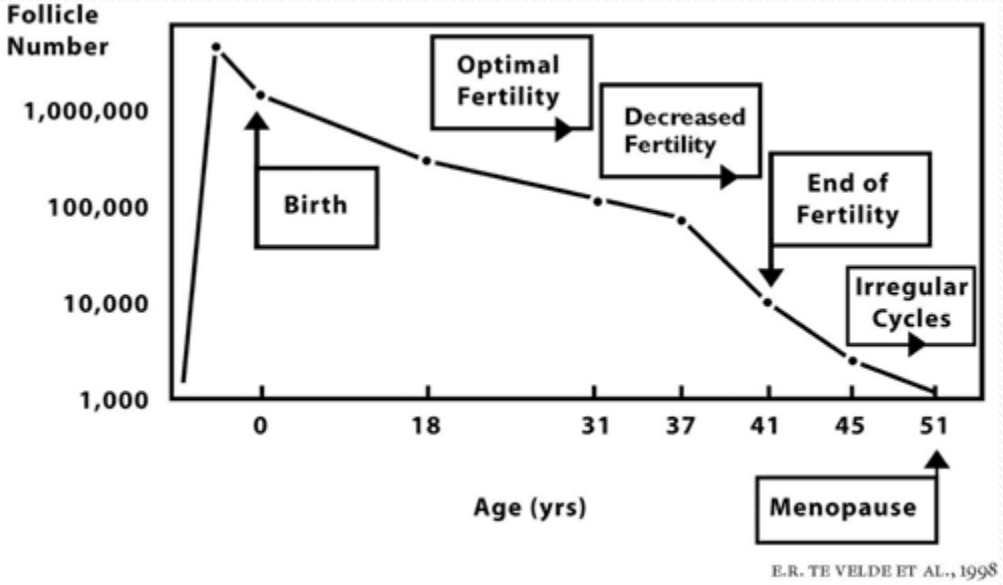
Levels are not necessarily ideal. SM



www.medscape.com

Loss of Female Ovarian Function

(loss of estradiol production, progesterone production, and fertility)



Benefits of Bio-identical Hormone Replacement in Men & Women – Improved or maintenance of the following:

1. Sexual thoughts and sexual performance
2. Mood, motivation and vitality
3. Muscle mass and strength
4. Bone mass and strength
5. Body fat loss
6. Sleep
7. Mental alertness
8. Energy
9. Quality of life

Benefits of Bio-identical Hormone Replacement in Men & Women – May reduce risk of the following:

1. Obesity
2. Diabetes
3. Heart Disease/Stroke
4. Hypertension
5. Depression/Anxiety
6. Osteoporosis
7. Death

Int J Clin Pract. 2010 May;64(6):682-96.

A practical guide to male hypogonadism in the primary care setting.

Dandona P, Rosenberg MT.

Division of Endocrinology, Diabetes and Metabolism, State University of New York at Buffalo and Kaleida Health, Buffalo, NY, USA.

Comment in:

Int J Clin Pract. 2010 May;64(6):663-4.

Abstract

There is a high prevalence of hypogonadism in the older adult male population and the proportion of older men in the population is projected to rise in the future. As hypogonadism increases with age and is significantly associated with various comorbidities such as obesity, type 2 diabetes, hypertension, osteoporosis and metabolic syndrome, the physician is increasingly likely to have to treat hypogonadism in the clinic. The main symptoms of hypogonadism are reduced libido/erectile dysfunction, reduced muscle mass and strength, increased adiposity, osteoporosis/low bone mass, depressed mood and fatigue. Diagnosis of the condition requires the presence of low serum testosterone levels and the presence of hypogonadal symptoms. There are a number of formulations available for testosterone therapy including intramuscular injections, transdermal patches, transdermal gels, buccal patches and subcutaneous pellets. These are efficacious in establishing eugonadal testosterone levels in the blood and relieving symptoms. Restoration of testosterone levels to the normal range improves libido, sexual function, and mood; reduces fat body mass; increases lean body mass; and improves bone mineral density. Testosterone treatment is contraindicated in subjects with prostate cancer or benign prostate hyperplasia and risks of treatment are perceived to be high by many physicians. These risks, however, are often exaggerated and should not outweigh the benefits of testosterone treatment.

PMID: 20518947 [PubMed - in process]

Performing your original search, ***low serum testosterone and mortality in older men***, in PubMed will retrieve ***9*** records.

J Clin Endocrinol Metab. 2008 Jan;93(1):68-75. Epub 2007 Oct 2.

Low serum testosterone and mortality in older men.

Laughlin GA, Barrett-Connor E, Bergstrom J.

Department of Family and Preventive Medicine, School of Medicine, University of California, San Diego, 9500 Gilman Drive, MC 0631C, La Jolla, California 92093, USA.
glaughlin@ucsd.edu

Comment in:

J Clin Endocrinol Metab. 2008 Jan;93(1):32-3.
Clin Chem. 2008 Jul;54(7):1110-2.

Abstract

CONTEXT: Declining testosterone levels in elderly men are thought to underlie many of the symptoms and diseases of aging; however, studies demonstrating associations of low testosterone with clinical outcomes are few.

OBJECTIVE: The objective of the study was to examine the association of endogenous testosterone levels with mortality in older community-dwelling men.

DESIGN, SETTING, AND PARTICIPANTS: This was a prospective, population-based study of 794 men, aged 50-91 (median 73.6) yr who had serum testosterone measurements at baseline (1984-1987) and were followed for mortality through July 2004.

MAIN OUTCOME MEASURE: All-cause mortality by serum testosterone level was measured.

RESULTS: During an average 11.8-yr follow-up, 538 deaths occurred. Men whose total testosterone levels were in the lowest quartile (<241 ng/dl) were 40% [hazards ratio (HR) 1.40; 95% confidence interval (CI) 1.14-1.71] more likely to die than those with higher levels, independent of age, adiposity, and lifestyle. Additional adjustment for health status markers, lipids, lipoproteins, blood pressure, glycemia, adipocytokines, and estradiol levels had minimal effect on results. The low testosterone-mortality association was also independent of the metabolic syndrome, diabetes, and prevalent cardiovascular disease but was attenuated by adjustment for IL-6 and C-reactive protein. In cause-specific analyses, low testosterone predicted increased risk of cardiovascular (HR 1.38; 95% CI 1.02-1.85) and respiratory disease (HR 2.29; 95% CI 1.25-4.20) mortality but was not significantly related to cancer death (HR 1.34; 95% CI 0.89-2.00). Results were similar for bioavailable testosterone.

CONCLUSIONS: Testosterone insufficiency in older men is associated with increased risk of death over the following 20 yr, independent of multiple risk factors and several preexisting health conditions.

PMID: 17911176 [PubMed - indexed for MEDLINE] PMCID: PMC2190742 Free PMC Article

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Menopause Int. 2010 Mar;16(1):44-6.

Ten reasons to be happy about hormone replacement therapy: a guide for patients.

Studd J.

London PMS and Menopause Clinic, 46 Wimpole Street, London W1G8SD, UK. harley@studd.co.uk

Abstract

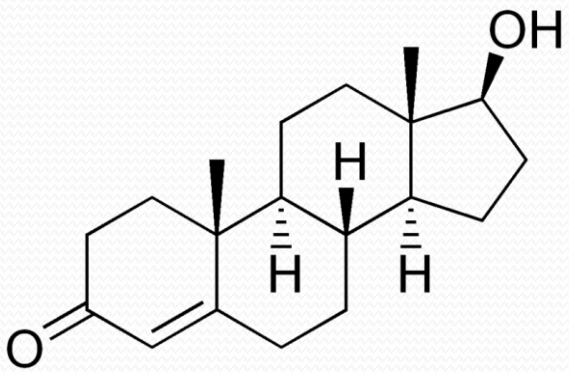
In spite of the negative press reports following the 2002 Women's Health Initiative (WHI) publication, women can be reassured that in the correct circumstances, hormone replacement therapy (HRT) is beneficial and safe, particularly if treatment is started below the age of 60. Transdermal estradiol is probably safer than oral estrogens as coagulation factors are not induced in the liver and HRT is safer if a minimal duration and dose of progestogen is used. HRT is effective for the treatment of estrogen-deficiency symptoms of flushes, sweats and vaginal dryness. Estrogens prevent osteoporotic fractures and should be first-choice therapy, rather than bisphosphonates. Similarly, HRT protects the intervertebral discs in a way that non-hormonal preparations do not. Estrogens perhaps with the addition of testosterone help certain sorts of reproductive depression, as well as improving energy and libido. There is new evidence to support the previous observational studies that HRT reduces the incidence of heart attacks. Estrogen therapy has a beneficial effect upon collagen, thus improving the texture of the skin, the nails, the intervertebral discs and bone matrix. Discussion of side-effects should not be avoided, particularly the 1% extra lifetime risk of breast cancer. This should be balanced against the fewer heart attacks, fewer deaths and less osteoporotic fractures in those who start HRT below the age of 60.

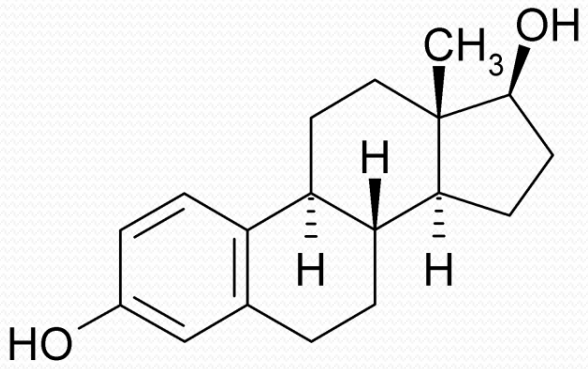
PMID: 20424287 [PubMed - indexed for MEDLINE]

Pop Quiz

Do you know what these molecules are?

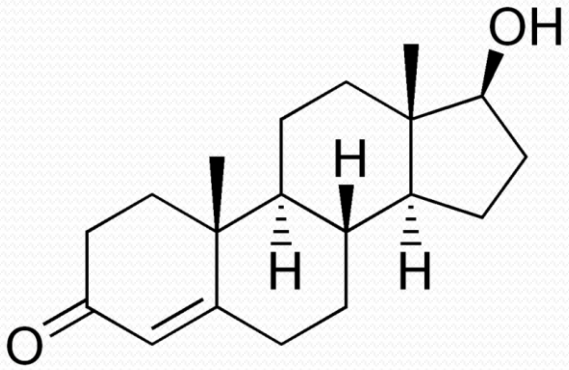
Even if you don't, identify the similarities and differences between them.



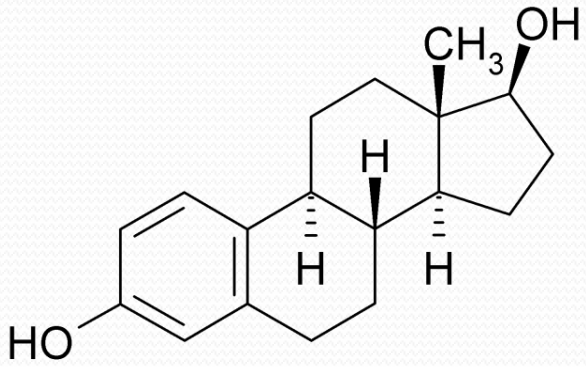


Answers

Testosterone



Estradiol



Did you notice?

- The small differences between estradiol and testosterone.

Lesson

1. The human body is very picky. One little change in a molecule here and there, and you get a man instead of a woman, or vice versa.
2. When you need hormone therapy, the best hormones to use are those which are exactly identical to what your body would have produced: bio-identical hormones.

Hormone Treatment Options Differ in:

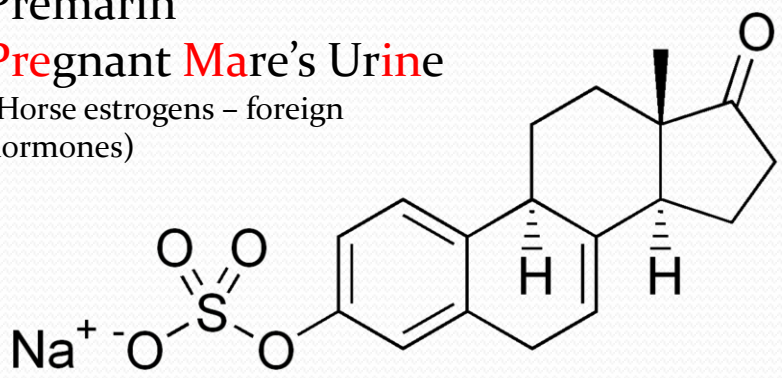
- Molecular Structure: bio-identical vs. foreign/alien
- Route of administration: oral vs. topical (cream, gel, patch) vs. pellets vs. injection
- Dose: low, high, rhythmic
- Frequency: continuous, cyclic, rhythmic (follows natural daily or monthly rhythm of hormones found in healthy adults)

Conventional Hormone Treatment Options for Women in Menopause

Premarin

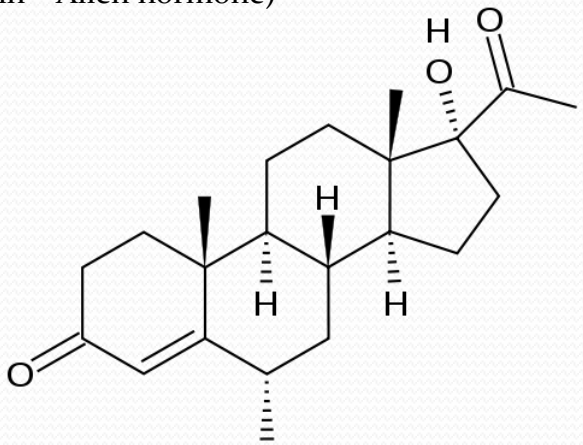
Pregnant Mare's Urine

(Horse estrogens – foreign hormones)

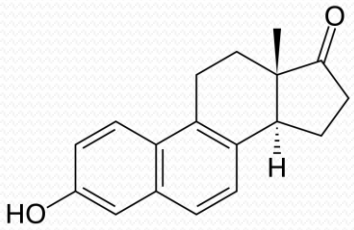


Provera – medroxyprogesterone

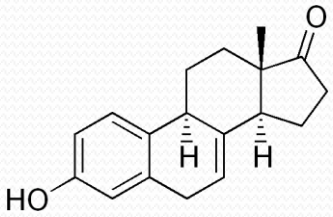
(Progestin – Alien hormone)



Equilenin



Equilin



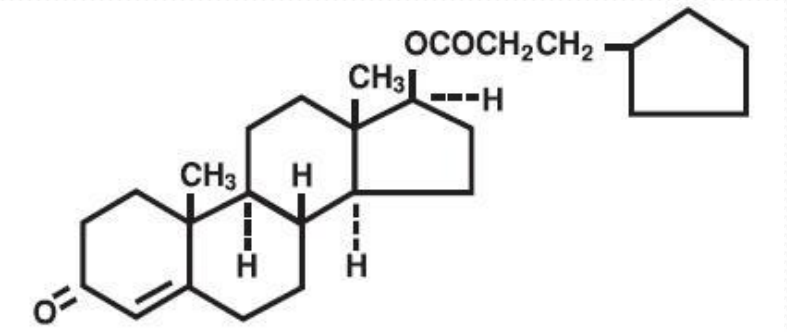
Prempro [combo of Premarin +Provera] – oral foreign and alien hormones used in WHI

Estradiol patch (bio-identical, very low dose, continuous)

Birth Control Pill (alien hormones)

Conventional Treatments for Hypogonadal Men

Testosterone gels, patches, pellets, injections



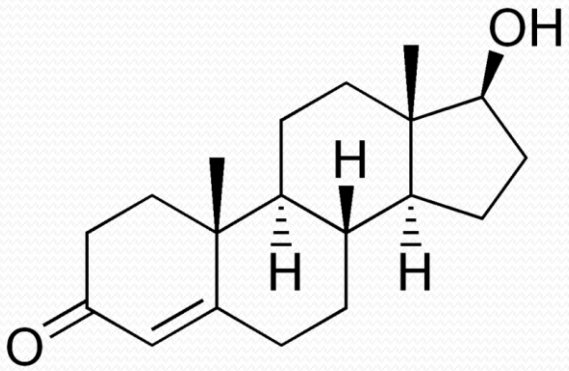
Testosterone Cypionate - injection

“Alternative” Hormone Treatments use: Bio-identical Hormones

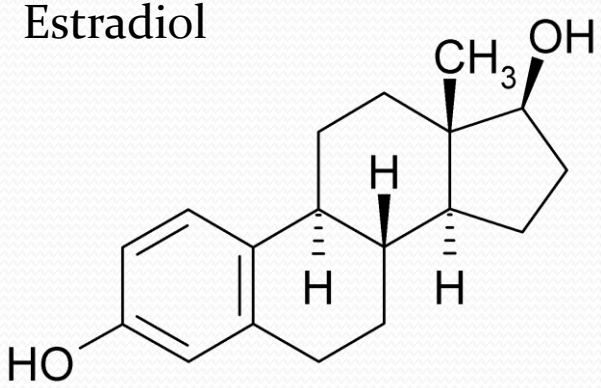
- Bio-identical hormones are hormones which are the exact molecular structure of hormones which are normally produced in the human body. The exact same molecular structure.

Bio-identical Hormones

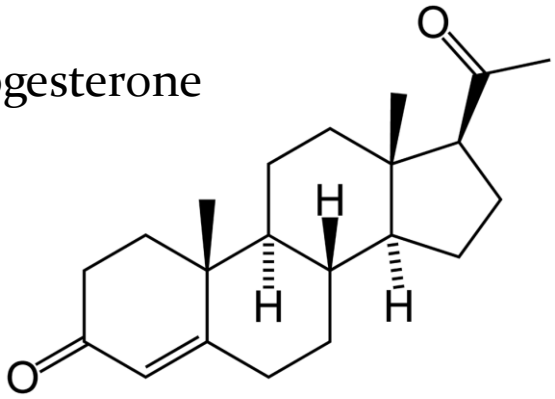
Testosterone



Estradiol



Progesterone



Do you notice the difference between these hormones and the foreign and alien hormones found on slide 25?

Go back and check.

Bio-identical Options for Reproductive Hormone Deficiencies in Men & Women

Men – bioidentical testosterone in a compounded cream, gel, patch or pellet

Women – bioidentical estradiol, testosterone, and progesterone in a compounded cream, gel, troche, capsule, patch, drop, vaginal suppository, or pellet

Risks of Reproductive Hormone Therapy – Depend on:

- Molecular Structure: bio-identical vs. foreign/alien
- Route of administration: oral vs. topical (cream, gel, patch) vs. injection
- Dose: low, high, rhythmic
- Frequency: continuous, cyclic, rhythmic
- Individual predisposition

Risks in Women

- Abnormal uterine bleeding (underlying uterine cancer, imbalanced estrogen)
- Breast discomfort/enlargement (adjustment, imbalance, overdosing)
- Fibroid enlargement (predisposition, imbalance)
- Uterine cancer (unopposed estrogens)
- Blood clots (oral estrogens, predisposition)
- ? Heart disease/stroke (only oral foreign and alien estrogens/progestins in WHI)
- ? Breast cancer (oral progestins, no evidence)

Most side-effects are treatable and/or reversible.

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Climacteric. 2002 Dec;5(4):332-40.

Combined hormone replacement therapy and risk of breast cancer in a French cohort study of 3175 women.

de Lignières B, de Vathaire F, Fournier S, Urbinelli R, Allaert F, Le MG, Kuttenn F.

Service d'Endocrinologie et Médecine de la Reproduction, Hôpital Necker, Paris, France.

Abstract

The largest-to-date randomized trial (Women's Health Initiative) comparing the effects of hormone replacement therapy (HRT) and a placebo concluded that the continuous use of an oral combination of conjugated equine estrogens (CEE) and medroxy-progesterone acetate (MPA) increases the risk of breast cancer. This conclusion may not apply to women taking other estrogen and progestin formulations, as suggested by discrepancies in the findings of in vitro studies, epidemiological surveys and, mostly, in vivo studies of human breast epithelial cell proliferation showing opposite effects of HRT combining CEE plus MPA or estradiol plus progesterone. To evaluate the risk of breast cancer associated with the use of the latter combination, commonly prescribed in France, a cohort including 3175 postmenopausal women was followed for a mean of 8.9 years (28 367 woman-years). In total, 1739 (55%) of these women were users of one type of estrogen replacement with systemic effect during at least 12 months, any time after the menopause, and were classified as HRT users. Among them, 83% were receiving exclusively or mostly a combination of a transdermal estradiol gel and a progestin other than MPA. Some 105 cases of breast cancer occurred during the follow-up period, corresponding to a mean of 37 new cases per 10 000 women/year. Using multivariate analysis adjusted for the calendar period of treatment, date of birth and age at menopause, we were unable to detect an increase in the relative risk (RR) of breast cancer (RR 0.98, 95% confidence interval (CI): 0.65-1.5) in the HRT users. The RR of breast cancer per year of use of HRT was 1.005 (95% CI 0.97-1.05). These results do not justify early interruption of such a type of HRT, which is beneficial for quality of life, prevention of bone loss and cardiovascular risk profile, without the activation of coagulation and inflammatory protein synthesis measured in users of oral estrogens.

PMID: 12626212 [PubMed - indexed for MEDLINE]

Risks in Men

- Acne (overdosing)
- Increased hemoglobin (testosterone injections)
- Sleep apnea (young men)
- Decreased sperm count (young men, overdosing, alternatives exist for young men)
- Prostate enlargement (to normal size, obstructive BPH, evidence lacking)
- Breast enlargement (obesity, predisposition, overdosing)
- ? Prostate cancer (no evidence)

Most side-effects are treatable and/or reversible.

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Can J Urol. 2006 Feb;13 Suppl 1:40-3.

Testosterone replacement therapy and prostate risks: where's the beef?

Morgentaler A.

Division of Urology, Harvard Medical School, Beth Israel Deaconess Medical Center, Boston, Massachusetts, USA.

Abstract

It has been part of the conventional medical wisdom for six decades that higher testosterone in some way increases the risk of prostate cancer. This belief is derived largely from the well-documented regression of prostate cancer in the face of surgical or pharmacological castration. However, there is an absence of scientific data supporting the concept that higher testosterone levels are associated with an increased risk of prostate cancer. Specifically, no increased risk of prostate cancer was noted in 1) clinical trials of testosterone supplementation, 2) longitudinal population-based studies, or 3) in a high-risk population of hypogonadal men receiving testosterone treatment. Moreover, hypogonadal men have a substantial rate of biopsy-detectable prostate cancer, suggesting that low testosterone has no protective effect against development of prostate cancer. These results argue against an increased risk of prostate cancer with testosterone replacement therapy.

PMID: 16526980 [PubMed - indexed for MEDLINE]

I prefer to use:

- Bio-identical hormones
- Compounded into a cream
- Applied topically or submucosally
- Administered rhythmically
- Dosed to achieve youthful levels
- Ask me about The Wiley Protocol in Q & A

However, each patient is different and treatment is designed to meet his or her specific goals as long as it does not cause any harm.

28 Day Menstrual Cycle in Women

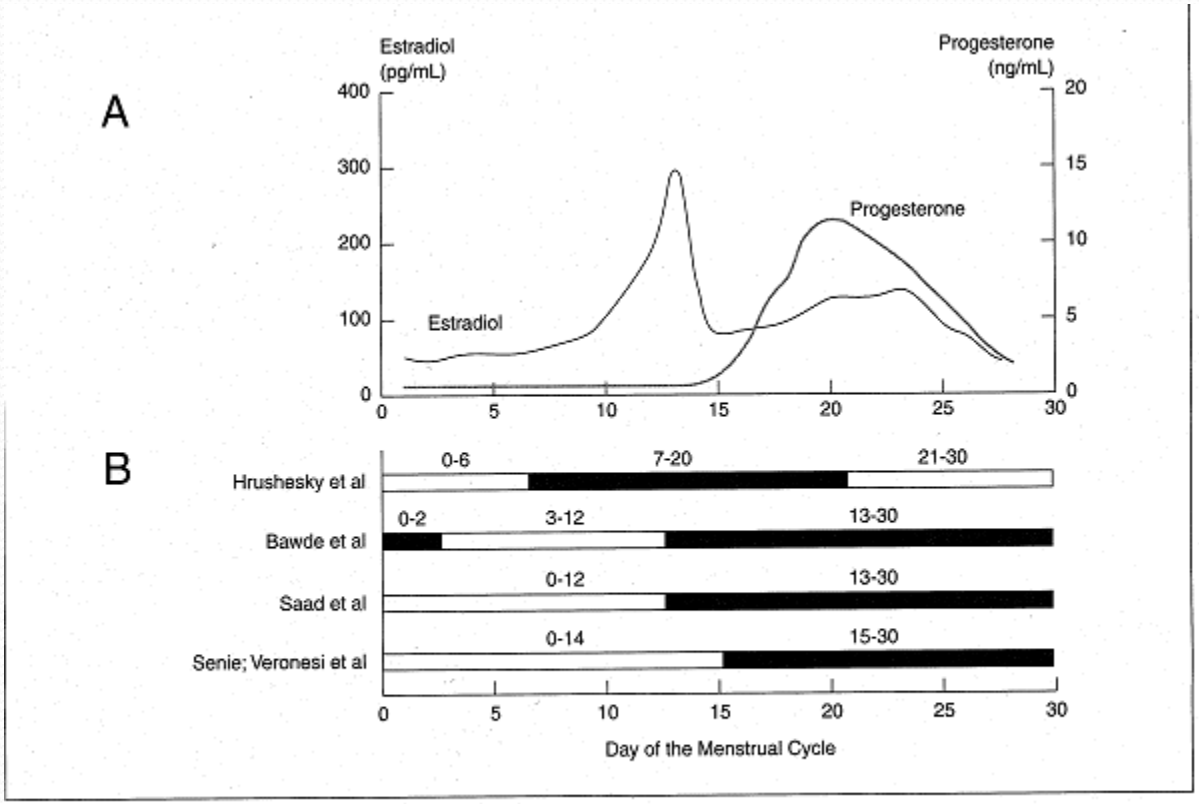
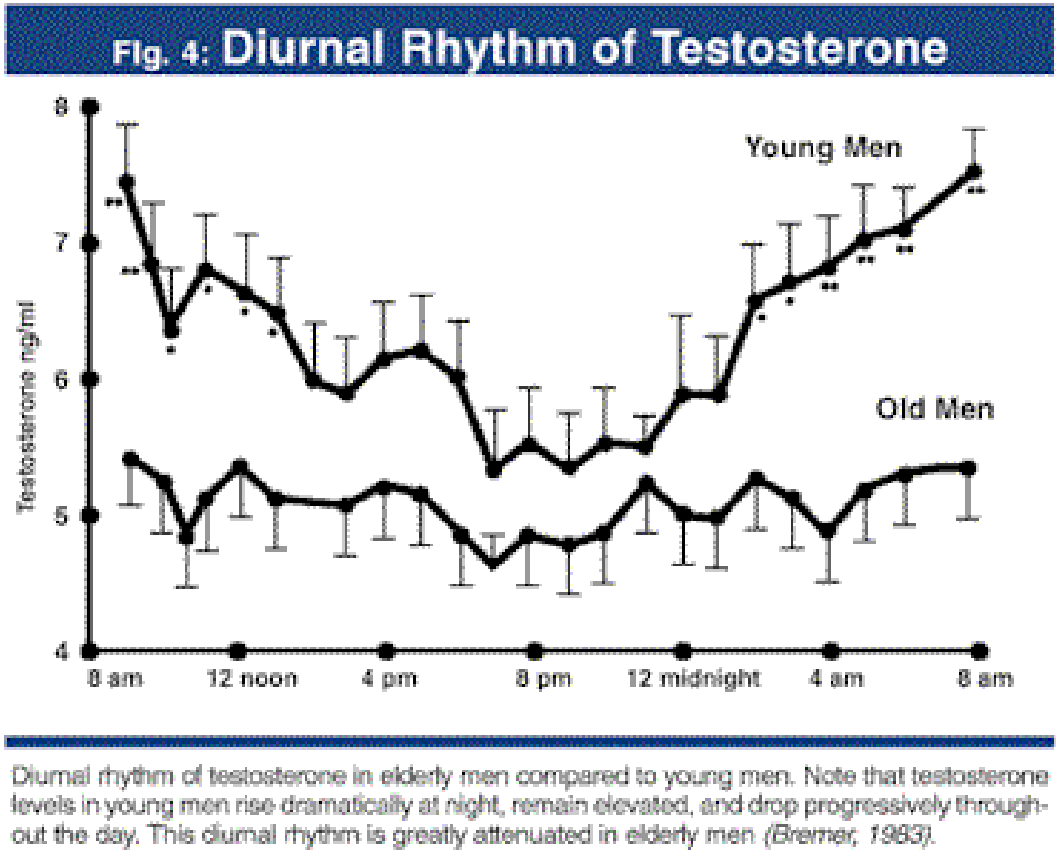


Figure 1: Hormone Levels and the Menstrual Cycle—(A) Mean estradiol and progesterone levels during the menstrual cycle.[3,4] **(B)** The four menstrual cycle divisions in menstrual timing studies.

Daily Testosterone Rhythm in Men



Bremer, 1983 , Journal of Clinical Endocrinology & Metabolism ; Vol. 56, No. 6 1278-1281

Hormone Level Testing – Accuracy depends on:

1. Whether correct hormones tested (testosterone vs. free testosterone vs. bioavailable testosterone)
2. Time of day blood is drawn (Men)
3. Time of month blood is drawn (Menstruating women)
4. Interpretation of results. Optimal youthful levels should be the standard, not just "normal" or "within normal limits."

Integrative medicine physicians usually know which hormone blood test to order, when to test for it, and how to interpret the results.

Conclusion:

- Bio-identical hormone replacement therapy, dosed rhythmically to youthful levels, may be the single most important medical therapy for healthy aging men and women.
- For most men and women, the benefits highly outweigh the risks.
- Most of the risks portrayed by the media and conventional doctors have been due to using alien or foreign hormones, oral administration, or intentional overdosing, and thus are inaccurate and exaggerated for patients considering the responsible use of bio-identical hormones.

Questions?

Please feel free to ask any questions you may have on my blog.

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Thank you!

Have a wonderful day.

I look forward to helping you.

Shira Miller, M.D.
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