

The Hidden Problem

For all of you men reading this (or the wives/girlfriends of them)...how have you been feeling over the past year? Are you easily tired? Do you find your strength is declining? Is your sex drive, *i.e.*, libido, lower than what you want it to be? Do you feel like you are older than what you actually are? If so, you may be suffering from a condition known as *male hypogonadism*. Unlike the more severe forms of overall low testosterone production, a more common form is “relative” male hypogonadism. What does this actually mean?

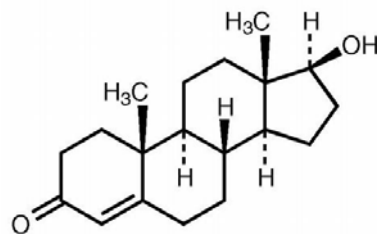
Testosterone is the male sex hormone and it is the hormone that “drives” a man’s body. People tend to think of it only in relation to sexual performance and bodybuilders/athletes who abuse it. However, what many people do not realize is that testosterone is *vital* to the overall functioning of a man’s body. If a man does not have enough of it in its “free” form, then he begins to suffer from a relative deficiency and he begins to have the above noted symptoms. In addition, he may have problems controlling his blood glucose values and his cholesterol levels.

What are the effects of low testosterone in a male? Many...and it isn’t just about sex:

- “silent”

inflammation¹

- heart disease and myocardial infarction²



$C_{19}H_{28}O_2$

MW 288.42

- metabolic syndrome and cardiovascular disease³
- prostate cancer
- senile dementia
- osteoporosis and hip fracture

Who Needs Testosterone?

That’s simple...everyone! But different people require different amounts. There is no “one size fits all” situation. Women require testosterone for proper functioning of the body but they require a lot less testosterone than what a healthy man requires. There are numerous chronic diseases and conditions that may require testosterone for comprehensive treatment. Some of them are:

- Diabetes mellitus, Type I and II (no matter the age)
- Male chronic pain patients on chronic opioid therapy (no matter the age)
- Chronic stress conditions, e.g., stressful occupation (police, attorney, physician), stressful marriage/divorce
- Late-onset of depression in men
- History of a severe illness or accident when younger, e.g., Valley Fever, severe injuries incurred from a motor vehicle accident that requires a long time to recuperate from
- Men over 50 years of age

How Is It Diagnosed?

All it takes are simple blood tests. We look not only at the total testosterone, but we also measure another protein called “sex hormone binding globulin,” (SHBG). SHBG binds to testosterone in the bloodstream and inactivates it. So only the “free testosterone” is active and works the way it should. In many cases, the total testosterone is within the normal range but the SHBG is

¹ Maggio, Basaria, et al. Correlation between Testosterone and the Inflammatory Marker Soluble Interleukin-6 Receptor in Older Men. *J Clin Endocrinol Metab* 2006 91:345-347.

² Norata, Tibolla, Seccomandi, et al. Dihydrotestosterone Decreases Tumor Necrosis Factor- α and Lipopolysaccharide-Induced Inflammatory Response in Human Endothelial Cells. *J Clin Endocrinol Metab* 2006 91:546-554.

³ Kupelian, Page, Araujo, et al. Low Sex Hormone-Binding Globulin, Total Testosterone, and Symptomatic Androgen Deficiency Are Associated with Development of the Metabolic Syndrome in Nonobese Men. *J Clin Endocrinol Metab* 2006 91:843-850.

relatively too high. If that is the case, then there is a *relative* lack of free testosterone available for the man to use. Dr. Work calculates the “Free Androgen Index” using the total testosterone and the SHBG. In addition, he calculates the “Bioavailable Testosterone”, which is the actual amount of testosterone in the blood that is available to the cells for optimal functioning. If the resulting numbers are too low, then testosterone replacement is indicated. He also checks the estradiol and estrone levels in the blood. These are estrogens that may be produced in excess at times in a man’s body and need to be monitored. Finally, he checks the amount of 1,17-dihydrotestosterone (DHT) and 3-androstenediol glucuronide. While many of these tests sound unfamiliar to you, knowledgeable physicians would recognize that Dr. Work is checking all of the metabolic pathways of testosterone and the enzyme activity of the pathways. This is important when you are trying to control the metabolism of testosterone. So you can see that just getting a “total testosterone” and a “free testosterone” are not enough to get the entire picture.

So, will you be like the infamous bodybuilders, who abuse steroids, i.e., testosterone? No way! These guys have *normal* levels of free testosterone and are *injecting* relatively large amounts of synthetic, non-bio-identical testosterone to reach *super-physiologic* levels – which can cause some nasty side effects, *e.g.*, breast development and testicular atrophy. Nevertheless, what will you feel? In approximately one week after starting the therapy, you will find that your libido begins to rise (*pardon the pun*), your feelings of fatigue will begin to fade, your mood will improve, and your quality of sleep will improve.

How Is Testosterone Replaced?

So how do you get testosterone replaced? There are four ways for testosterone to be replaced in a man: 1. oral therapy; 2. *weekly* intramuscular injection therapy; 3. transdermal therapy; and 4. pellet implant therapy. Of the four, we recommend and routinely do the last. This is done in our office

with a small amount of local anesthetic and it is done in your hip. Two major advantages for this type of therapy: 1. ease of use, *i.e.*, no medications to remember to take; and 2. consistent blood levels of testosterone from the slow dissolving of the subcutaneously implanted pellets. This procedure will need to be repeated between every 2 to 3 months, depending on how your body reacts to the testosterone replacement.

There have been some problems with reimbursement from the insurance companies concerning the cost of the pellets themselves. We have found a solution for some of you that have a mail-in pharmacy with your insurance. We will write you a prescription for the pellets with a 6 month refill (restricted by law to only six months). Once you have received your pellets in the mail, you call us for an appointment to have them implanted and you bring them with you to get them implanted. Order a refill for the next three months and come in at that time for the next series of pellets. Another option is for you to pay for the *cost* of the pellets. The cost is \$20/pellet and we normally start you with eight to ten pellets (\$160-\$200). We ask that you pay at the front desk the day of the procedure after it has been done.

Another possibility is the use of bio-identical transdermal testosterone therapy. This would be compounded at a special compounding pharmacy and the strength of the dose would be adjusted according to your response. The cream is applied every morning.

A similar option is to use the standard transdermal testosterone available in local pharmacies. The two available forms are Androgel® and Androderm®. Androgel® is a liquid gel that must be rubbed into the body every morning. Androderm® does not involve rubbing gels into the skin but does involve the use of a patch you place on your skin at night and remove the following night. You need to rotate sites of application. The latter causes some major skin problems and require that you put on a steroid cream, thus I don’t use Androderm®. There is another transdermal gel called Testim®, but it has one significant drawback, it

has a fragrance that remains present for the entire 24 hours until you apply your next dose.

Injection therapy is commonly done in other physicians' offices and, while commonly taught in residencies, is a less effective way of replacing testosterone than by pellet or transdermal gel/cream. The primary drawback is the "peaks and troughs" of serum levels of the testosterone. Over time, these can cause problems by suppressing the endogenous production of testosterone and, because it is not replaced continuously (pellet) or daily (cream/gel), you will crash before it is time for another injection. The only way around this is to reduce the amount given and increase the number of times given so that the "peaks and troughs" are flattened out as much as possible. For example, rather than an injection every two weeks, the person should receive $\frac{1}{2}$ the dose every week or even $\frac{1}{4}$ the dose twice a week. While this sounds cumbersome, it is effective. However, compliance is poor, which is why the pellet implant or the transdermal routes are more superior. In addition to that, injections tend to cause more aromatization of the testosterone to estradiol so you will find the injections, over time, become less effective. This can be compensated for but most physicians were not trained in how to do it.

You will need to have a blood test one month after the implant or transdermal testosterone is done to note the response and rise in your Free Androgen Index and Bioavailable Testosterone. We will also again check the estrogens in your blood to ensure that your body is not misdirecting the supplemental testosterone to the wrong pathway. Once we know that your body is using the testosterone correctly, then blood tests are done on the day of the pellet implant OR are done about every 6 months if you are getting it transdermally.

The only other test that must be done is your Prostate Specific Antigen (PSA) test. Because of the increase in testosterone, this will sometimes cause an enlargement in your prostate. This is not the same as cancer, only that the prostate becomes enlarged

and you may have a difficult time urinating. Taking Saw Palmetto 160 mg, walnut oil and stinging nettle root extract twice a day easily solves this problem. You can buy that here through Pure Encapsulations, which will provide you with pharmaceutical-grade supplements. If you need more help than what Saw Palmetto, walnut oil and stinging nettle root extract can do for you, there are excellent prescription medications that help tremendously with the prostate. They are Flomax[®] and Uroxatrol[®] and they will keep the prostate small.

Why Must I Have A PSA Done?

Testosterone replacement therapy has not been linked to prostate cancer, but prostate cancer does "feed" on testosterone. Therefore, if you had a few cells of prostate cancer inside you, the testosterone can cause it to grow. Interestingly, there is some research to show that a chronic, low testosterone *increases* the incidence rate of prostate cancer. Either way, with testosterone replacement therapy in any form, you *must* have your PSA checked every 6 months. If it rises above 4.0, then you will have another blood test done to ascertain if this is an enlarged prostate or cancer. If it appears to be cancer-like, then we will refer you to an urologist. The likelihood of cancer that will shorten your life span is slim, but always present.

If you are interested in finding out if you need replacement therapy, please call and make an appointment to see Dr. Work. He would be able to diagnose the condition, counsel you and do the implant procedure.

Is It Right For You?

Only you can answer that question. While there are risks in anything that you do, we know that there ***are risks in not doing anything at all***. You must weigh the benefits and the apparent risks and decide for yourself. Many physicians are not aware, because they were never trained properly, of the reported health benefits from testosterone replacement therapy and many reject it out of hand without a review of the research done within the past ten

years that show a definite overall benefit to testosterone replacement patients.

If you qualify, Dr. Work will prescribe it for you in the appropriate fashion at the appropriate dose at the appropriate time. You decide...

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