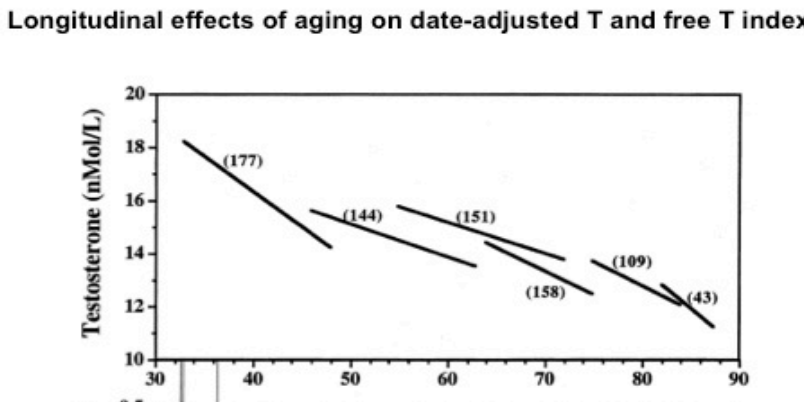
Doc: Do I Have A Testosterone Level Of An 80 Year Old?: Dr. Friedman's Guide To Diagnosing Male Hypogonadism

Male hypogonadism, or in other words, low testosterone in men is one of the most common complaints I see from my male patients. Testosterone is a very important hormone in men and controls libido, erections, muscle strength, and overall well-being. The case is pretty clear when somebody has an extremely low testosterone in the presence of hypopituitarism or has low testosterone with testicular problems. In these cases, if both the free and total testosterone are quite low, and the patient has a pituitary problem, the LH and FSH are low. If the patient has a testicular problem, the LH and especially the FSH are high and the testosterone is quite low. The most common reasons for hypopituitarism causing hypogonadism are prior pituitary surgery, and a pituitary tumor. I have recently shown that a microadenoma that used to be considered an incidentaloma can also give hypogonadism. Patients with radiation or other extensive types of damage to the pituitary can also get central hypogonadism. In contrast, patients can have a testicular cause of hypogonadism from a testicular injury such as mumps or trauma to the testes and also Klinefelter's syndrome where there are 2 X and 1 Y chromosomes. Testicular causes of hypogonadism are usually manifested by an elevated FSH and the testosterone can be lower than normal.



The problem comes when patients do not have a clear-cut pituitary or testicular problem and have a low-normal testosterone. Most societies recommend testosterone treatment for men with a total testosterone less than 250 ng/dL and to not treat with testosterone if the level is greater than 350 ng/dL. The problem comes when the testosterone level is between 250 and 350 ng/dL. Testosterone does decline slightly with age, but I have many patients who have been to either anti-aging doctors or urologists who told them they have a testosterone level of an 80 year old when it is really in the normal range. I therefore looked up the values of testosterone with age (see figure, you need to multiply the values in the figure by 28.8 to get ng/dL). Testosterone does decline with age, so an 80-year-old will have an average value of around 13 nmol/L (350 to 400 ng/dL), but its drop with age is not as dramatic. For a 40-year-old, the average value is 16 nmol/L (450--500 ng/dL). Therefore the drop with age is relatively mild and less than the wide variance of the normal range. Thus, a 40-year-old with a value of around 350 ng/dL does not necessarily have a testosterone value of an 80-year-old; however, he has a low-normal testosterone value for a 40-year-old.

The time of day measuring testosterone is also important. Testosterone is highest in the morning and drops throughout the day so it is lower in the afternoon. Publications looking at testosterone

levels measured at different times of the day show it is about 35% lower in the afternoon than in the morning; however, in some patients, the drop is more pronounced. Therefore, I recommend that the testosterone be checked first thing in the morning. If you check it in the afternoon and get a low value, you do not know if it is a low value because it is drawn in the afternoon or if it is truly low.

It is also noteworthy that average testosterone levels have declined about 100 ng/dL over the last 20 years, even when assayed in a similar manner. The reason for this decline is unknown.

I also strongly recommend getting a free testosterone with the total testosterone. Total testosterone is determined by the sex hormone binding globulin (SHBG) that varies widely in different men. For example, men with insulin resistance or obesity have a low SHBG and as you age, SHBG usually risess. Therefore, the total testosterone may appear to be low, but if the SHBG is low, than the free testosterone can be relatively normal. Before starting treatment on a patient, I also repeat the morning testosterone because sometimes there are lab errors and variation in blood draws. To summarize, I usually diagnose hypogonadism in men with symptoms of hypogonadism as well as with two morning free and total testosterone levels below or near the bottom of the range for their age.

Properly diagnosing and replacing a male with hypogonadism is important and the problem comes in with those men with a total testosterone level between 250 and 350 ng/dL. Just as you do not want to miss cases with hypogonadism that are truly deficient and would benefit from testosterone replacement, you do not want to treat somebody who does not have hypogonadism. The treatment for hypogonadism is usually testosterone replacement which suppresses the body's own testosterone so once you start taking testosterone by endogenous sources, you suppress your own ability to make testosterone and it is very hard to get off of. Therefore, the decision to start testosterone should not be made lightly, but should be looked at with the whole picture of the patient (free and total testosterone levels, time of day labs drawn, symptoms, change in testosterone levels with time) as well as other hormone defects. In addition, issues such as erection and libido are governed not only by testosterone level but by other factors including emotional factors. In a patient that has a testosterone level in low normal range, and is has erectile dysfunction, I may give testosterone to some patients, but in others, I may give a phosphodiesterase inhibitor like Viagra or Cialis. Both are much more easy to stop and to just use as needed than giving testosterone.

Besides erectile dysfunction and low libido, low testosterone levels are associated with increased incidents of strokes, heart disease and diabetes. Replacing testosterone, if done properly, can reverse the predilection for these disease states.

There are various different ways to replace testosterone. In general, testosterone itself is used and I usually give testosterone as a gel form applied to the skin. AndroGel, Testim or Fortesta are all different brands of testosterone that work equally well. After starting treatment, it is important to get the free and total testosterone level in the upper-normal range and the dose of testosterone may need to be adjusted based on this. In other patients, I give testosterone injections and I

usually give them 0.5 mL, which is 50 mcg, twice a week by IM injection. Traditionally, we started off by giving people testosterone IM injection every 2 weeks, then went down to 1 week; however, these both give you high testosterone levels following the injection and low levels before the next injection; therefore, giving injections twice a week may be more optimal and does not seem to be too difficult for most patients.

One of the main side effects of testosterone is testicular shrinkage. To get around this in some patients, I give hCG which stimulates the testes. For example, sometimes I give testosterone for 3 weeks a month and hCG for one week a month. There are other medicines to use for hypogonadism such as Clomid which is an estrogen antagonist, or anastrozole which blocks aromatase the enzyme that converts testosterone to estradiol. By feedback, both of these drugs increase testosterone levels. However, these are not as well studied as giving testosterone and usually do not work quite as well but can often be used in conjunction with giving testosterone. Additionally, you can try to decrease the SHBG to get more free testosterone by lowering the estradiol level; this can be done by using an aromatase inhibitor such as anastrozole.

In summary, the diagnosis of hypogonadism can be quite difficult and is very important to make it correctly in male patients. Patients often need a full endocrine evaluation by an endocrinologist, and Dr. Friedman is happy to see you to evaluate whether you truly have the testosterone levels of an 80 year old and should be on testosterone replacement. For more information about hormonal conditions or to schedule an appointment, go to www.goodhormonehealth.com.