



## Low Testosterone (Low T) & Testosterone Replacement Therapy (TRT)

Testosterone (T) is the male sex hormone and is made by the testicles. T levels are important to normal male sexual development in the adolescent and are essential for a variety of functions in the adult male. T levels generally decrease with age and having low levels of Testosterone is called Hypogonadism or Low Testosterone (Low T). The symptoms of Low T include low sex drive, low energy/fatigue, reduced muscle mass, irritability, depression, and mental fog.

The American Urology Association (AUA) recommends that Testosterone be prescribed only to men who meet the clinical and laboratory definition of Low T (Total Testosterone level less than 300 ng/dL). If your total testosterone levels return to normal and you still have above symptoms, there may be other reasons for your symptoms, and you should talk to your primary care doctor. While Low T levels *may* be involved with erectile dysfunction (ED), it's not typically the sole cause of ED. Contrary to commercials or ads you've seen, achieving a normal or high T level does not guarantee resolution of ED. As such, TRT is NOT an approved treatment for the correction of ED.

**What are the ways to take Testosterone?** There are few different ways to take Testosterone and no method is "the best".

- **Transdermal.** These are topical gels, creams, and patches that you apply daily.
- **Injections (Testosterone Cypionate).** IM (intramuscular) injection into a muscle (typically the buttocks, *not the shoulder/thigh*). Injections are done either once a week or every two weeks by the patient themselves (we teach you how to do this).
- **Pellets.** Testosterone pellets are placed under the skin of upper hip or buttocks and they release Testosterone over 3-6 months. *We do not prefer this method because of cost, challenges with insurance approval, and difficulty adjusting the Testosterone levels.*
- **Subcutaneous Injections (Testosterone Enanthate, "Xyosted").** Comes in a prefilled auto-injector that is self-injected into the belly skin.
- **Oral Testosterone Pills.** Jatenzo & Tlando. Insurance approval and cost is an issue because they are new and not generic.
- **Clomiphene (Clomid).** This is an infertility medication that causes the body to send signals to the testicles to produce more Testosterone on its own. While it's being used more and more to treat Low T, it is still not FDA approved for this indication. This is a good option for younger men who want to preserve their fertility. T levels do not typically go as high with this method.
- There is no "Testosterone Booster" or over the counter supplements to help raise Testosterone; these are merely gimmicks.
- **How can you naturally maximize your T levels?** lose weight, prioritize protein (0.8 – 1.0 g / lb of body weight), strength/resistance training, get adequate sleep, limit alcohol, and manage stress to decrease cortisol levels that lower Testosterone.

### Possible Side Effects of TRT

- Erythrocytosis (elevated blood hemoglobin & hematocrit). This opposite of anemia. There is controversy whether this raises the risk of blood clots, heart attacks, strokes. Some patients may need to donate their blood to if their blood counts get too high while on TRT.
- Interrupt normal sperm production. You should not be on TRT if you plan on having children soon.
- Topical testosterone (gels, creams) may transfer to others. Women & children are at risk of harmful effects from skin contact.
- TRT *does not cause* prostate cancer, but someone with prostate cancer (or recently treated for prostate cancer) *should not go* on TRT.
- TRT may worsen urinary symptoms related to an enlarged prostate.
- Being on TRT may decrease your body's ability to make Testosterone on its own.

**Standard IM Injection Protocols of Testosterone Cypionate:** Into the upper outer region of the gluteus maximus muscle (buttocks).

- 1ml (200mg) IM (intramuscular) injection every 2 weeks.
- 0.5ml (100mg) IM (intramuscular) injection once a week.

### Lab Work for Injection Patients:

- We require routine lab work every 3-6 months to check for side effects and to ensure your T levels stay in the correct range.
- Some patients may have an elevated Estradiol (estrogen) level while on TRT; this is because excess T in the body can be converted into Estradiol by an enzyme called aromatase. High Estradiol levels cause water retention, breast tenderness, decreased libido, and emotional changes. Some patients may need to take the aromatase inhibitor Anastrozole (Arimidex) 0.5mg twice a week to block this.
- You do **NOT** need to fast for labs, but the timing of your lab work in relation to when the T shots are done is **extremely** important:
  - If injecting every 2 weeks: Blood work should be done 1 week after an injection (*typically 1 week after the 5<sup>th</sup> shot*).
  - If injecting every 1 week: Blood work should be done 5-6 days after an injection (*typically 5-6 days after the 10<sup>th</sup> shot*).
  - This is because you cannot check labs too soon after a T shot; the T levels in your blood will be measured as very high.
  - Also, the T level can take 7 days to be reported by the lab, so check your labs at least 1 week before your office appointment!