Nebraska Urology

# Low Testosterone (Hypogonadism)

Testosterone is an anabolic-androgenic steroid hormone which is made in the testes in males (a minimal amount is also made in the adrenal glands). Testosterone has two major functions in the human body.
Testosterone production is regulated by hormones released from the brain. The brain and testes work together to keep testosterone in the normal range (between 199 ng/dL and 1586 ng/dL)

- Testosterone is needed to form and maintain the male sex organs, regulate sex drive (libido) and promote secondary male sex characteristics such as voice deepening and development of facial and body hair.
- Testosterone facilitates muscle growth as well as bone development and maintenance.

Low testosterone levels in the blood are seen in males with a medical condition known as Hypogonadism. This may be due to a signaling problem between the brain and testes that can cause production to slow or stop. Hypogonadism can also be caused by a problem with production in the testes themselves.

## Causes

- Primary**:** This type of hypogonadism — also known as primary testicular failure — originates from a problem in the testicles.
- Secondary**:** This type of hypogonadism indicates a problem in the hypothalamus or the pituitary gland — parts of the brain that signal the testicles to produce testosterone. The hypothalamus produces gonadotropin-releasing hormone, which signals the pituitary gland to make follicle-stimulating hormone (FSH) and luteinizing hormone. Luteinizing hormone then signals the testes to produce testosterone.
- Either type of hypogonadism may be caused by an inherited (congenital) trait or something that happens later in life (acquired), such as an injury or an infection.

Low testosterone can occur due to congenital conditions. It may occur due to injuries to the testicles, hypothalamus or pituitary gland. Other diseases such as kidney failure, diabetes, cirrhosis of the liver, hypertension (high blood pressure), AIDS, Sarcoidosis, syphilis, meningitis and mumps may also cause low testosterone.

After age 25, a man's natural production of testosterone begins to decline and by age 80, his natural production of testosterone may only amount to 20 percent of peak testosterone levels. Additionally, some medications, chemotherapy and radiation treatments can cause testosterone levels to drop. Alcoholism and chronic stress can cause the body to stop producing normal levels of testosterone.

## Symptoms

The symptoms of low testosterone usually develop gradually. Symptoms may include:

- Reduced sex drive (libido)
- Sexual dysfunction (weak erections, fewer erections)
- Depression
- Mental fogginess/fuzziness
- Difficulty concentrating
- Anxiety
- Reduced muscle and strength
- Weight gain
- Decreased facial hair &/or pubic hair
- Fatigue or decreased energy
- Hot flashes/sweats

- Poor sleep quality (leading to sleep deprivation)

Diagnosis

Your provider may conduct a physical exam during which he or she will note whether your sexual development, such as your pubic hair, muscle mass and size of your testes, is consistent with your age. Your doctor may test your blood level of testosterone if you have any of the signs or symptoms of hypogonadism.

If tests confirm low testosterone, further testing may performed to determine if a testicular disorder or a pituitary abnormality is the cause. Based on specific signs and symptoms, additional studies can pinpoint the cause. These studies may include: Hormone testing, Semen analysis, Genetic studies &/or testicular biopsy

Treatment

Treatment usually consists of placing patient on Testosterone replacement therapy. Therapy can take the form of gels, injections, transdermal patches, and tablets that dissolve under your lip. Each type of testosterone replacement is effective, and each also has advantages, disadvantages, and side effects. The choice of medication may also be regulated by your insurance medication formulary.

You may need additional blood tests after you have started on treatment as this helps your provider make sure that you are on the correct dose of the medication and that your testosterone levels are maintained over time.

Common Side Effects from Testosterone:

- Contribute to sleep apnea — a potentially serious sleep disorder in which breathing repeatedly stops and starts
- Cause your body to make too many red blood cells (polycythemia), which can increase the risk of heart disease
- Cause acne or other skin reactions
- Stimulate noncancerous growth of the prostate (benign prostatic hyperplasia)
- Limit sperm production or cause testicle shrinkage
- Breast Enlargement

In most cases testosterone replacement for low testosterone is safe and effective. Some patient's with certain medical conditions should not be on testosterone supplements. There is currently no evidence that testosterone replacement therapy causes prostate cancer, but it can cause existing prostate cancer to grow more quickly. You shouldn't take testosterone replacement if you have been diagnosed with prostate cancer, male breast cancer, or if your prostate has been diagnosed as being abnormal through a rectal exam or by a blood test. If you have a medical condition that causes you to produce an excess of red blood cells or if you have untreated sleep apnea, you may not be able to take testosterone replacement.