

Testosterone is the primary male sex hormone and is important for hair growth, sexual function, muscle mass, making sperm, and bone health.

Testosterone deficiency, or hypogonadism, occurs when there is both a low testosterone level and the presence of any the following symptoms:

- Decrease in sex drive
- Poor erections (erectile dysfunction)
- Low sperm count
- Low energy or tiredness
- Poor strength
- Poor concentration, depressed mood, increased irritability
- Hot flashes or sweats
- Small testicles
- Osteoporosis (bone loss) causing loss of height, fractures
- Loss of body hair
- Muscle loss

Testosterone levels naturally decrease by 1% every year after the age of 30 years.

Testosterone levels are highest in the mornings and lowest at night. “Normal levels” will depend on age and the laboratory test used.

RISK FACTORS FOR LOW TESTOSTERONE

- Testicles not making enough testosterone
- Gland in the brain not making enough hormones or hormone disorders
- Infection, trauma, sterilization
- Exposure to chemotherapy or radiation
- Genetic causes

- Severe or chronic illnesses (diabetes, anemia, HIV infection/AIDS)
- Medications (opioids – painkillers, corticosteroids – steroid injections, anabolic steroids)
- Liver and kidney disease
- Sleep problems
- Poor nutrition
- Obesity (increased belly body fat)
- Too much exercise (temporarily lowers testosterone level)

HOW IS TESTOSTERONE DEFICIENCY DIAGNOSED?

Your primary care provider will ask for your medical history and complete a physical exam. Your healthcare provider may order blood tests and, if indicated, may order additional blood tests and radiology imaging tests. Your healthcare provider may adjust the medication dose depending on follow-up lab tests.

TESTOSTERONE REPLACEMENT THERAPY OPTIONS

The different treatment options should be discussed with your healthcare provider to determine the best option. The options are:

- Nasal gel
- Topical gels
- Topical patch
- Injections
- Pellets that are placed under skin

All forms of testosterone replacement have the possibility of increased hematocrit lab test and increased prostate specific antigen (PSA) lab test. Hematocrit is a percentage of red blood cell count in your blood. Red blood cells carry oxygen throughout your body. An increase of red blood cells may lead to blood clots. Therefore, if the hematocrit level becomes abnormally high, there is a possibility that you may need to temporarily stop therapy and/or give blood to decrease the blood volume and red blood cell count.

If your PSA level becomes abnormally high, you may be asked to stop therapy and possibly undergo a prostate biopsy to check for prostate cancer.

If you have any of the following conditions, it is important to discuss testosterone therapy risks and benefits with your healthcare provider:

- Elevated prostate specific antigen (PSA) test or prostate nodule on exam
- Prostate or breast cancer (or suspected)
- Difficulty urinating from a large prostate
- History of blood clots
- Heart attack or stroke within the past six months
- Uncontrolled heart failure
- High number of red blood cells
- Untreated sleep apnea
- Planning to have children

POSSIBLE COMPLICATIONS OF TESTOSTERONE THERAPY

Each treatment option has a different range of side effects, including but not limited to:

- Nasal therapy (headaches, runny nose, nasal irritation, nosebleed)

- Topical therapy (skin irritation, risk of transferring testosterone to others, acne, headache, diarrhea, vomiting)
- Injection therapy (pain with injection)
- Pellet therapy (pain at implant site, infection, and pellets coming out)

You should discuss with your healthcare provider if you have any of the symptoms listed above or have concerns whether testosterone therapy is appropriate for you.

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RESOURCES

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