



PATIENT RESOURCES

Hypogonadism in Men

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Hypogonadism is a common condition in the male population, with a higher prevalence in older men, obese men, and men with type 2 **diabetes**. It is estimated that approximately 35% of men older than 45 years of age and 30-50% of men with **obesity** or type 2 diabetes have hypogonadism.

Endocrine Connection

Testosterone is an important sex hormone in men. It is secreted by the testes and is responsible for the typical male characteristics, such as facial, pubic, and body hair as well as muscle. This hormone also helps maintain sex drive, sperm production, and bone health. The brain and pituitary gland (a small gland at the base of the brain) control the production of testosterone by the testes.

► **Diagnosis and Prevention**

Be open with your doctor about your medical history, all prescription and nonprescription drugs you are now taking, sexual problems, and any major changes in your life. Your doctor will take a thorough history of your symptoms and then complete a physical exam, including your body hair, breast tissue, and the size and consistency of the testes and scrotum.

Your doctor will also use blood tests to see if your total testosterone level is low. The normal range depends on the lab that conducts the test. To get a diagnosis of hypogonadism, you need at least two early morning (7–10 AM) blood tests that reveal low testosterone in addition to signs and symptoms typical of low testosterone. The cause of hypogonadism can be investigated further by your doctor. This might include additional blood tests, and sometimes imaging such as a pituitary MRI.

Testosterone Facts For Men

- › Low testosterone comes with age — Testosterone or "T" levels naturally decrease by 1% each year after age 30, though don't severely deplete,

even in advanced age

- › T production may be disrupted by disorders of the testicles, pituitary gland, or brain
- › T levels change from hour to hour — highest in the morning; lowest at night
- › T levels can temporarily lower due to too much exercise, poor nutrition, severe illness, and with certain medications
- › Normal T levels in adult men should be between 300–1,000 ng/dL (nanograms per deciliter), depending on age and lab used
- › Testosterone must be measured more than once for accurate assessment

› Symptoms and Risk Factors

Male hypogonadism is a combination of low testosterone levels and the presence of any of these symptoms:

- › Drop in sex drive (libido)
- › Erectile dysfunction (ED — inability to get or keep an erection) and loss of spontaneous erections
- › Lowered sperm count and infertility (inability to have children)
- › Breast enlargement or tenderness
- › Reduced energy
- › Reduced muscle mass
- › Shrinkage of testes
- › Increased irritability, inability to concentrate, and depressed mood
- › Hot flashes (when testosterone levels are very low)

Over time, low testosterone may cause a man to lose body hair, muscle bulk, cause weak bones (osteoporosis), low red blood cells and smaller

testes. Signs and symptoms (what you see and feel) vary from person to person.

There are many causes of hypogonadism. They may involve a problem with the testes or with the signal from the brain that controls testosterone secretion. Low testosterone can result from:

- › Testicular injury (trauma, castration) or infection
- › Radiation or chemotherapy treatment for cancer
- › Some medications, such as opiate painkillers and corticosteroids (e.g., steroid injections)
- › Hormone disorders (pituitary tumors or diseases, high levels of prolactin)
- › Chronic diseases, such as liver and kidney disease, obesity, sleep disorders, type 2 diabetes, and HIV/AIDS
- › A genetic condition (Klinefelter syndrome, hemochromatosis, Kallmann syndrome)
- › Anabolic Steroid use

► **Treatment and Therapies**

Improvement of testosterone levels can improve sexual concerns, bone health, muscle and anemia (low red cells in the blood). Hypogonadism can be treated with the use of doctor-prescribed testosterone replacement therapy. This treatment is safe and can be effective for men who are diagnosed with consistently abnormal low testosterone production and symptoms that are associated with this type of androgen (hormone) deficiency.

Although testosterone replacement therapy is the primary treatment option, some conditions that cause hypogonadism, such as obesity, can be reversible without testosterone therapy. These should be addressed before testosterone therapy is contemplated. If testosterone therapy is needed, goals of treatment are to improve symptoms associated with testosterone deficiency and maintain sex characteristics.

There are many different types of testosterone therapy. Method of treatment depends on the cause of low testosterone, the patient's preferences, cost, tolerance, and concern about fertility. You should discuss the different options with your physician "your partner in care" to find out which therapy is right for you.

Injections: Self or doctor administered in a muscle every 1–2 weeks; administered at a clinic every 10 weeks for longer-acting. Side effects: uncomfortable, fluctuating symptoms.

Gels/Solutions: Applied to upper arm, shoulder, inner thigh, armpit. Side effects: may transfer to others via skin contact — must wait to absorb completely into skin.

Patches: Adhere to skin every day to back, abdomen, upper arm, thigh; rotate locations to lessen skin reaction. Side effects: skin redness and rashes.

Buccal Tablets: Sticky pill applied to gums twice a day, absorbs quickly into bloodstream through gums. Side effects: gum irritation.

Pellets: Implanted under skin surgically every 3–6 months for consistent

and long-term dosages. Side effects: pellet coming out through skin, site infection/ bleeding (rare), dose decreasing over time and hypogonadism symptoms possibly returning towards the end of dose period.

Nasal Gel: Applied by pump into each nostril 3x a day. Side effects: nasal irritation or congestion.

Sometimes a medication called clomiphene citrate is used to treat hypogonadism, but this is not FDA approved for this indication. A thorough discussion is needed with your doctor.

► **Treatment Risks**

You should discuss with your physician how to monitor for prostate cancer and other risks to your prostate. Men with known or suspected prostate or breast cancer should not receive testosterone therapy. You should also talk to your doctor about the risks of testosterone therapy if you have, or are at risk for, heart disease or stroke. In addition, if you are planning fertility, you should not use testosterone therapy.

You should not receive testosterone therapy if you have:

- › Prostate or breast cancer (or suspected)
- › Enlarged prostate causing difficulty with urination
- › Elevated prostate specific antigen (PSA) levels
- › High number of red blood cells
- › Untreated sleep apnea (obstructed breathing during sleep)
- › Planning to have children
- › Heart attack or stroke within the last 6 months

- › Blood clots

Possible risks of testosterone treatment include:

- › Decreased sperm production
- › A high red blood cell count
- › Acne
- › An increase in prostate size
- › Sleep apnea—the occasional stopping of breathing during sleep (rarely)

If you are treated with testosterone, your doctor will need to see you regularly, along with blood tests. Testosterone therapy is only recommended for hypogonadism patients. Boosting testosterone is NOT approved by the US Food and Drug Administration (FDA) to help improve your strength, athletic performance, physical appearance, or to treat or prevent problems associated with aging. Using testosterone for these purposes may be harmful to your health.

There is no firm scientific evidence that long-term testosterone replacement is associated with either prostate cancer or cardiovascular events. The FDA requires that you are made aware that the possibility of cardiovascular events may exist during treatment. Prostate cells are stimulated by testosterone, so be extra vigilant about cancer screenings. African American men over age 45 — especially those with family history of cancer — are already at risk for prostate cancer.

› **Questions to Ask Your Healthcare Provider**

- › What is the cause of my low testosterone?

- › Is testosterone replacement an option for me?
- › When should I get my testosterone level retested?
- › Should I see an endocrinologist or urologist?
- › Do I have hypogonadism?
- › Is the problem with my testes?
- › Is there anything I can do to improve my testosterone levels without taking testosterone therapy?
- › What are the risks and benefits of testosterone therapy?
- › What are the different types of testosterone therapy?
- › What follow up screenings will I need?

AN ENDOCRINE SOCIETY PATIENT RESOURCE

THE TRUTH ABOUT TESTOSTERONE TREATMENTS

You've seen the ads. You've heard the hype. But testosterone supplements aren't the anti-aging cure-alls that they're marketed as. The use of doctor-prescribed testosterone replacement therapy, however, is safe and can be effective for men who are diagnosed with consistently abnormal low testosterone production and symptoms that are associated with this type of androgen deficiency.

TESTOSTERONE FACTS FOR MEN

- Low testosterone levels with age—T levels naturally decrease by 1% each year after age 30, though some men may decline more than others.
- T production may be disrupted by diabetes, the kidneys, pituitary gland, or brain.
- T levels change from hour to hour—highest in the am, lowest at night.
- T levels can temporarily lower due to too much exercise, poor nutrition, severe illness, or certain medications.
- Normal T levels should be between 300–1,000 ng/dL (nanograms per deciliter), depending on age and lab used.
- Testosterone must be measured more than once for accurate assessment.

TESTOSTERONE THERAPY IS ONLY RECOMMENDED FOR HYPOGONADISM PATIENTS

Testosterone is NOT approved by the US Food and Drug Administration (FDA) to help improve your strength, athletic performance, physical appearance, or to treat or prevent problems associated with aging. Using testosterone in these purposes may be harmful to your health.

MALE HYPOGONADISM = A COMBINATION OF LOW TESTOSTERONE LEVELS AND THE PRESENCE OF ANY OF THESE SYMPTOMS:

- Drop in sex drive (libido)
- Reduced energy
- Sexual dysfunction (ED)—inability to get or keep an erection and loss of orgasmic response
- Increased irritability, inability to concentrate, and depressed mood
- Loss of muscle mass and increasing body fat (lose chest hair)
- Hot flashes (when testosterone levels are very low)

YOU SHOULD NOT RECEIVE TESTOSTERONE THERAPY IF YOU HAVE:

- Heart disease
- Heart attack or stroke within the last six months
- Prostate or breast cancer (or suspected)
- High number of red blood cells
- Diabetes (or prediabetes) despite (PDA) levels
- Planning to have children
- Unexplained sleep apnea (disrupted breathing during sleep)

Visit endocrine.org for more information.
 Editor: Alan M. Matsumoto, MD
 Development: Patricia Babbitt, Endocrine Therapy in Men with Hypogonadism, an Endocrine Society Clinical Practice Guideline.

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HORMONES AND ERECTILE DYSFUNCTION

WHAT YOU NEED TO KNOW

The endocrine system is a network of glands and organs that produce, store, and secrete hormones, which are used to control and coordinate a variety of body functions. Hormones play a big role in men's health, affecting energy, weight, mood, sex, health, and metabolism. One of the endocrine glands that secretes testosterone is the testes. A low level of testosterone can lead to erectile dysfunction. This is a condition in which a man may have trouble getting or keeping an erection.

WHAT IS ERECTILE DYSFUNCTION

Erectile dysfunction (ED), or impotence, is the inability to consistently get or keep an erection (partially) long enough to have satisfactory sex.

While it's generally believed to relate to a gradual decrease in testosterone over age, the degree of decline varies. Men generally maintain some testosterone as well into their 80s, 70s, and beyond. If you're concerned about loss of sex drive, especially if it happens suddenly, you should consult your doctor. He or she can do a physical exam and request lab tests to determine the cause.

COMMON CAUSES

The most common cause of ED are underlying health problems that affect blood vessels and blood flow to the penis. These include: high cholesterol, diabetes, obesity, smoking, high blood pressure, and high cholesterol.

Other common causes of ED may include:

- Depression or stress
- Anxiety or fear of sexual failure
- Decrease in blood testosterone due to an endocrine disorder
- Medications (antidepressants, sleeping pills, and drugs to treat high blood pressure, pain, or cancer)
- Alcohol and drug use

Even if ED has a physical cause, emotional factors may make the condition worse.

Don't be discouraged. It's worth it to have an open and honest discussion with your doctor about your loss of sex drive and erectile dysfunction. A healthy sex life is part of a healthy life in general.

Visit endocrine.org for more information.
 Editor: Bradley Q. Alexand, MD

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Developed for patients based on **Testosterone Therapy in Men with Hypogonadism, An Endocrine Society Clinical Practice Guideline.**

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