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Testosterone

Testosterone is a male sex hormone that is important for sexual and reproductive development. The National Institutes of Health regards testosterone as the most important male hormone. Women also produce testosterone, but at lower levels than men.

Testosterone belongs to a class of male hormones called androgens, which are sometimes called steroids or anabolic steroids. In men, testosterone is produced mainly in the testes, with a small amount made in the adrenal glands.

The brain's hypothalamus and pituitary gland control testosterone production. The hypothalamus instructs the pituitary gland on how much testosterone to produce, and the pituitary gland passes the message on to the testes. These communications happen through chemicals and hormones in the bloodstream.

Testosterone is involved in the development of male sex organs before birth, and the development of secondary sex characteristics at puberty, such as voice deepening, increased penis and testes size, and growth of facial and body hair.

The hormone also plays a role in sex drive, sperm production, fat distribution, red cell production, and maintenance of muscle strength and mass, according to the Mayo Clinic. For these reasons, testosterone is associated with overall health and well-being in men. In women, the ovaries and adrenal glands produce testosterone. Women's total testosterone levels are about a tenth to a twentieth of men's levels.

Low testosterone

Levels of testosterone naturally decrease with age. Testosterone levels vary wildly, and can even differ depending on the time of day they're measured (levels tend to be lower in the evenings). The following includes the following as possible symptoms of low testosterone:

* Reduced sex drive
* Erectile dysfunction or impotence
* Increased breast size
* Lowered sperm count
* Hot flashes
* Depression, irritability and inability to concentrate
* Shrunken and softened testes
* Loss of muscle mass or hair
* Bones becoming prone to fracture

It is important to note, however, that conditions other than low T can cause erectile dysfunction, such as diseases in the nerves or blood.

Doctors typically to treat men for hypogonadism if they have symptoms of low testosterone and their testosterone levels are below 300 nanograms per deciliter.

High testosterone

* High testosterone levels can cause problems in women, including irregular menstrual cycles, increases in body hair and acne, and a deepening of the voice. Women have high levels of male hormones, including testosterone, which can be a cause of infertility.

MALE INFERTILITY

Male infertility is any health issue in a man that lowers the chances of his female partner getting pregnant.

About 13 out of 100 couples can't get pregnant with unprotected sex. There are many causes for infertility in men and women. In over a third of infertility cases, the problem is with the man. This is most often due to problems with his sperm production or with sperm.

WHAT HAPPENS UNDER NORMAL CONDITIONS?

The man's body makes tiny cells called sperm. During sex, ejaculation normally delivers the sperm into the woman's body. The male reproductive system makes, stores, and transports sperm. Chemicals in your body called hormones control this. Sperm and male sex hormone (testosterone) are made in the 2 testicles. The testicles are in the scrotum, a sac of skin below the penis. When the sperm leave the testicles, they go into a tube behind each testicle. This tube is called the epididymis.

Just before ejaculation, the sperm go from the epididymis into another set of tubes. These tubes are called the vas deferens. Each vas deferens leads from the epididymis to behind your bladder in the pelvis. There each vas deferens joins the ejaculatory duct from the seminal vesicle. When you ejaculate, the sperm mix with fluid from the prostate and seminal vesicles. This forms semen. Semen then travels through the urethra and out of the penis. Male fertility depends on your body making normal sperm and delivering them. The sperm go into the female partner's vagina. The sperm travel through her cervix into her uterus to her fallopian tubes. There, if a sperm and egg meet, fertilization happens.

The system only works when genes, hormone levels and environmental conditions are right.

CAUSES

Making mature, healthy sperm that can travel depends on many things. Problems can stop cells from growing into sperm. Problems can keep the sperm from reaching the egg. Even the temperature of the scrotum may affect fertility. These are the main causes of male infertility:

1). Sperm Disorder

The most common problems are with making and growing sperm. Sperm may:

* not grow fully
* be oddly shaped
* not move the right way
* be made in very low numbers (oligospermia)
* not be made at all (azoospermia)

Sperm problems can be from traits you're born with. Lifestyle choices can lower sperm numbers. Smoking, drinking alcohol, and taking certain medications can lower sperm numbers. Other causes

of low sperm numbers include long-term sickness (such as kidney failure), childhood infections (such as mumps), and chromosome or hormone problems (such as low testosterone).

Damage to the reproductive system can cause low or no sperm. About 4 out of every 10 men with total lack of sperm (azoospermia) have an obstruction (blockage). A birth defect or a problem such as an infection can cause a blockage.

2). Varicoceles

Varicoceles are swollen veins in the scrotum. They're found in 16 out of 100 of all men. They are more common in infertile men (40 out of 100). They harm sperm growth by blocking proper blood drainage. It may be that varicoceles cause blood to flow back into your scrotum from your belly. The testicles are then too warm for making sperm. This can cause low sperm numbers.

3). Retrograde Ejaculation

Retrograde ejaculation is when semen goes backwards in the body. They go into your bladder instead of out the penis. This happens when nerves and muscles in your bladder don't close during orgasm (climax). Semen may have normal sperm, but the semen cannot reach the vagina.

Retrograde ejaculation can be caused by surgery, medications or health problems of the nervous system. Signs are cloudy urine after ejaculation and less fluid or "dry" ejaculation.

4). Immunologic Infertility

Sometimes a man's body makes antibodies that attack his own sperm. Antibodies are most often made because of injury, surgery or infection. They keep sperm from moving and working normally. We don't know yet exactly how antibodies lower fertility. We do know they can make it hard for sperm to swim to the fallopian tube and enter an egg. This is not a common cause of male infertility.

5). Obstruction

Sometimes sperm can be blocked. Repeated infections, surgery (such as vasectomy), swelling or developmental defects can cause blockage. Any part of the male reproductive tract can be blocked. With a blockage, sperm from the testicles can't leave the body during ejaculation.

6). Hormones

Hormones made by the pituitary gland tell the testicles to make sperm. Very low hormone levels cause poor sperm growth.

7). Chromosomes

Sperm carry half of the DNA to the egg. Changes in the number and structure of chromosomes can affect fertility. For example, the male Y chromosome may be missing parts.

8). Medication

Certain medications can change sperm production, function and delivery. These medications are most often given to treat health problems like:

* arthritis
* depression
* digestive problems
* infections
* high blood pressure
* cancer

Diagnosis

Causes of male fertility can be hard to diagnose. The problems are most often with sperm production or delivery. Diagnosis starts with a full history and physical exam. Your health care provider may also want to do blood work and semen tests.

* History and Physical Exam
* Semen Analysis
* Transrectal Ultrasound
* Testicular Biopsy
* Hormonal Profile

Treatment

Treatment depends on what's causing infertility. Many problems can be fixed with drugs or surgery. This would allow conception through normal sex. The treatments below are broken into 3 categories:

1. Non-surgical therapy for Male Infertility
2. Surgical Therapy for Male Infertility
3. Treatment for Unknown Causes of Male Infertility