CONDITION

Hypogonadism

Hypogonadism is reduced sex hormone production caused by underactive testes, ovaries, or hormone-control centres in the brain.

WHAT IT IS
Reduced sex hormone production from underactive testes or ovaries

BODY SYSTEM
Hormone and reproductive systems

MAIN SYMPTOMS
Low sex drive, fatigue, menstrual changes, erectile problems

WHAT CAUSES IT
Genetic conditions, organ damage, pituitary or hypothalamic disorders

HOW IT IS DIAGNOSED
Symptoms, repeated hormone blood tests, and cause-specific testing

MAIN TREATMENT
Hormone replacement and treatment of the underlying cause

CAN IT BE CURED?
Sometimes - reversible causes can be corrected

IS IT AN EMERGENCY?
Sometimes - sudden severe headache with vision loss

LONG-TERM OUTLOOK
Often manageable, with ongoing bone and fertility care

Overview

Hypogonadism means the body is not making enough sex hormones. These are mainly testosterone from the testes and estrogen from the ovaries. The condition can affect people of any sex and may begin before puberty or develop later.

Sex hormones support more than sexual function and fertility. They help regulate puberty, menstrual cycles, erections, muscle mass, red blood cell production, and bone strength. Low levels over time can affect physical health and emotional well-being.

There are two main types:

The pituitary is a small gland beneath the brain. It releases luteinising hormone, or LH, and follicle-stimulating hormone, or FSH. These hormones tell the testes or ovaries to work.

In women, primary hypogonadism before the usual age of menopause is often called primary ovarian insufficiency. Natural menopause is an expected life stage and is not usually described as hypogonadism.

- Primary hypogonadism: the testes or ovaries do not respond normally, even though the brain is sending hormone signals
- Secondary, or central, hypogonadism: the hypothalamus or pituitary gland in the brain does not send enough hormone signals

Symptoms

Symptoms depend on your age, sex hormone levels, and how quickly the condition develops. Some symptoms have many other possible causes, so they do not confirm hypogonadism by themselves.

In adult men, possible symptoms include:

In adult women, symptoms may include irregular or absent periods, difficulty becoming pregnant, vaginal dryness, pain during sex, hot flushes, night sweats, or reduced sexual interest.

When hypogonadism begins before puberty, puberty may start late, stop partway through, or not occur. A young person may have limited breast or testicular development, little body hair, no periods, or slower development of muscle and bone.

Long-standing hypogonadism may not cause obvious symptoms until a fracture or fertility assessment leads to testing.

- Reduced sexual interest or fewer spontaneous erections
- Erectile difficulties
- Low energy, reduced muscle mass, or increased body fat
- Reduced facial or body hair
- Infertility, smaller testes, or breast tissue growth
- Low mood, poor concentration, or hot flushes

Causes and risk factors

Primary hypogonadism results from a problem in the testes or ovaries. Possible causes include genetic conditions such as Klinefelter syndrome or Turner syndrome. Autoimmune conditions

can sometimes damage the ovaries, while infection, injury, testicular twisting, surgery, chemotherapy, or radiation may damage reproductive tissue.

Primary ovarian insufficiency often has no identifiable cause. Having no clear cause does not mean the symptoms are not real.

Secondary hypogonadism develops when the hypothalamus or pituitary does not provide the usual signals. Causes can include pituitary tumours, high prolactin levels, brain injury, surgery, radiation, iron overload, or genetic conditions such as Kallmann syndrome.

The hormone system may also temporarily reduce reproductive function when the body is under strain. Significant undernutrition, rapid weight change, very intense exercise, severe illness, or ongoing psychological stress can contribute. This pattern is sometimes called functional hypothalamic hypogonadism.

Some medicines can suppress hormone production. Examples include opioid pain medicines, glucocorticoids, and medicines or substances that affect androgen production. Anabolic steroid use can stop the body's own testosterone production, sometimes for an extended period after use ends. Do not stop a prescribed medicine without medical advice.

In men, obesity, type 2 diabetes, sleep disorders, and other long-term health conditions are associated with lower testosterone levels. A low laboratory result in these situations still needs to be interpreted alongside symptoms and repeat testing.

Diagnosis

Diagnosis begins with your symptoms, medical history, medicines, menstrual or sexual history, and any concerns about puberty or fertility. An examination may look for changes in body hair, breast or testicular development, muscle mass, and other signs of hormone deficiency.

For men, testosterone is usually measured on at least two separate mornings because levels change through the day and can fall temporarily during illness. A diagnosis generally requires both consistent symptoms and clearly low repeat results.

For women with absent or irregular periods, testing may include a pregnancy test, FSH, LH, and estrogen levels. The pattern helps show whether the problem is in the ovaries or in the brain's hormone-control system. Results must be interpreted in the context of age, menstrual history, and hormonal medicines.

Further tests may include:

A single hormone result is not always enough. Sleep, food intake, illness, medicines, menstrual timing, and laboratory methods can affect results.

- Prolactin, thyroid hormones, iron studies, or other blood tests
- Chromosome or genetic testing when an inherited cause is possible
- Pituitary magnetic resonance imaging, or MRI, when symptoms or results suggest a pituitary problem
- Bone-density scanning when hormone deficiency has been prolonged
- Semen analysis when fertility is a concern

Treatment and management

Treatment aims to address the cause, relieve symptoms, protect bones and other tissues, and support your reproductive goals. Not everyone needs the same approach.

A reversible cause may improve when the underlying issue is treated. This could involve treating a pituitary disorder, correcting undernutrition, adjusting excessive training, managing another illness, or reviewing a medicine. Any medicine changes should be supervised.

Testosterone replacement may be offered to men with symptoms and repeatedly confirmed low testosterone. It is available in several forms, including gels and injections. Follow-up checks assess symptom response, testosterone levels, red blood cell concentration, and other safety measures relevant to the individual.

Testosterone treatment reduces sperm production and is not a fertility treatment. Someone who wants to conceive may instead need specialist treatment that stimulates the testes with pituitary-like hormones.

Women with estrogen deficiency may be offered estrogen replacement. If the uterus is present, a progestogen is generally included to protect its lining. Treatment may help with hot flushes, vaginal symptoms, and bone protection. People with primary ovarian insufficiency are often treated until around the usual age of natural menopause, unless there is a reason hormone treatment is unsuitable.

Fertility treatment is separate from routine hormone replacement. Depending on the cause, options may include medicines that stimulate ovulation or sperm production, assisted reproduction, or donor eggs or sperm. A fertility specialist can explain which options fit the diagnosis.

Calcium and vitamin D intake, weight-bearing activity, resistance exercise, not smoking, and limiting heavy alcohol use support bone health. These measures do not replace needed hormone treatment.

Complications

Without enough sex hormone over time, bones can become less dense and more likely to fracture. The risk is influenced by how young the person was when hypogonadism began, how long it lasted, nutrition, activity, and other health conditions.

Hypogonadism can also affect fertility, sexual function, intimate relationships, mood, and self-image. Men may develop reduced muscle mass or anemia, meaning too few red blood cells. Children and teenagers may have delayed puberty or reduced peak bone mass.

The condition causing hypogonadism may have its own complications. For example, a pituitary growth can affect vision or other pituitary hormones. This is why identifying the type and cause matters, even when hormone replacement controls symptoms.

Prevention

Many causes cannot be prevented. Inherited conditions, autoimmune ovarian damage, and unexplained primary ovarian insufficiency are not caused by anything you did.

Avoiding anabolic steroids can prevent one cause of suppressed testosterone. Adequate nutrition and recovery may reduce functional hormone suppression related to under-fuelling or extreme exercise, but they cannot prevent every case.

Before chemotherapy, pelvic radiation, or treatment that may damage the testes or ovaries, ask about fertility preservation. Options may include freezing sperm, eggs, embryos, or reproductive tissue. These steps preserve possibilities but cannot guarantee a future pregnancy.

Protective equipment can reduce testicular injury during contact sports or hazardous work. Routine vaccination also reduces the risk of infections that can sometimes damage reproductive organs.

Living with it and what to expect

The course depends mainly on the cause. Hypogonadism from permanent testicular or ovarian damage usually needs long-term management. Functional or medicine-related forms may improve when the trigger is corrected, although recovery can take time.

Hormone treatment may improve hot flushes, sexual symptoms, energy, or body composition over several months. Responses differ, and symptoms such as tiredness or low mood may

have more than one cause. Treatment should be reviewed rather than assumed to explain every symptom.

Regular follow-up may include blood tests, symptom reviews, bone-health assessment, and checks for treatment effects. Young people may need support through puberty, including gradual hormone treatment and attention to growth, bone development, and emotional well-being.

Fertility may remain reduced even when other symptoms improve. In some people with primary ovarian insufficiency, ovarian activity can return unpredictably for short periods. In men, testosterone replacement does not restore sperm production and can further suppress it.

Most people can work, exercise, have relationships, and maintain an active life with appropriate care. The need for monitoring may continue for years, especially when the cause is permanent.

When to get medical help

Arrange a routine medical appointment if you have persistent loss of sexual interest, erectile problems, absent or irregular periods, hot flushes at an unexpectedly young age, fertility concerns, or signs that puberty is delayed. These symptoms are not usually emergencies, but they deserve assessment.

Seek prompt medical advice if symptoms begin after a head injury, cancer treatment, reproductive-organ surgery, or a new medicine. Also ask for review if prescribed hormone treatment is not helping or is causing unwanted effects.

Get emergency help for a sudden, severe headache with vision loss, double vision, vomiting, confusion, fainting, or weakness. Rarely, this can indicate bleeding into the pituitary gland.

Sudden severe testicular pain or swelling is also an emergency. It is not a usual symptom of hypogonadism and may be caused by testicular torsion, which needs immediate assessment.

Common questions

Is hypogonadism the same as low testosterone?

Low testosterone is one form of hypogonadism, but one low result does not establish the condition. Diagnosis in men also requires relevant symptoms and repeat testing. Hypogonadism can also involve low ovarian hormone production.

Can hypogonadism cause infertility?

Yes. Low pituitary signals or damage to the testes or ovaries can interfere with sperm production or ovulation. The effect differs by cause, and some people can still conceive. Fertility-specific treatment may be different from hormone replacement.

Does testosterone treatment cure hypogonadism?

Testosterone replaces a hormone the body is not producing adequately, but it usually does not repair permanently damaged testes or restore pituitary function. It can control symptoms while treatment continues. Reversible causes may recover after the underlying problem is corrected.

Is low testosterone just a normal part of ageing?

Testosterone may decline with age, but age alone does not confirm hypogonadism. Symptoms can also come from poor sleep, medicine effects, obesity, depression, or other illnesses. Repeat morning testing helps separate persistent hormone deficiency from temporary changes.

Can weight loss or eating more restore hormone levels?

It can in some functional cases. Hormone signals may recover after adequate nutrition, reduced excessive exercise, or improvement in obesity-related health problems. These changes do not reverse genetic conditions or permanent damage to the ovaries or testes.

Will I need hormone treatment for life?

Not always. Long-term treatment is more likely when the ovaries or testes are permanently damaged or a central cause cannot be corrected. If the cause is temporary, treatment may be reduced or stopped after reassessment. Hormones should not be changed without clinical supervision.

Sources

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