



Hypothyroidism (underactive thyroid)

Overview

Hypothyroidism (underactive thyroid) is a condition in which your thyroid gland doesn't produce enough of certain crucial hormones.

Hypothyroidism may not cause noticeable symptoms in the early stages. Over time, untreated hypothyroidism can cause a number of health problems, such as obesity, joint pain, infertility and heart disease.

Accurate thyroid function tests are available to diagnose hypothyroidism. Treatment with synthetic thyroid hormone is usually simple, safe and effective once you and your doctor find the right dose for you.

Symptoms

The signs and symptoms of hypothyroidism vary, depending on the severity of the hormone deficiency. Problems tend to develop slowly, often over a number of years.

At first, you may barely notice the symptoms of hypothyroidism, such as fatigue and weight gain. Or you may simply attribute them to getting older. But as your metabolism continues to slow, you may develop more-obvious problems.

Hypothyroidism signs and symptoms may include:

- Fatigue
- Increased sensitivity to cold
- Constipation
- Dry skin
- Weight gain
- Puffy face
- Hoarseness
- Muscle weakness
- Elevated blood cholesterol level
- Muscle aches, tenderness and stiffness

- Pain, stiffness or swelling in your joints
- Heavier than normal or irregular menstrual periods
- Thinning hair
- Slowed heart rate
- Depression
- Impaired memory
- Enlarged thyroid gland (goiter)

Hypothyroidism in infants

Although hypothyroidism most often affects middle-aged and older women, anyone can develop the condition, including infants. Initially, babies born without a thyroid gland or with a gland that doesn't work properly may have few signs and symptoms. When newborns do have problems with hypothyroidism, the problems may include:

- Yellowing of the skin and whites of the eyes (jaundice). In most cases, this occurs when a baby's liver can't metabolize a substance called bilirubin, which normally forms when the body recycles old or damaged red blood cells.
- A large, protruding tongue.
- Difficulty breathing.
- Hoarse crying.
- An umbilical hernia.

As the disease progresses, infants are likely to have trouble feeding and may fail to grow and develop normally. They may also have:

- Constipation
- Poor muscle tone
- Excessive sleepiness

When hypothyroidism in infants isn't treated, even mild cases can lead to severe physical and mental retardation.

Hypothyroidism in children and teens

In general, children and teens who develop hypothyroidism have the same signs and symptoms as adults do, but they may also experience:

- Poor growth, resulting in short stature
- Delayed development of permanent teeth
- Delayed puberty
- Poor mental development

When to see a doctor

See your doctor if you're feeling tired for no reason or have any of the other signs or symptoms of hypothyroidism, such as dry skin, a pale, puffy face, constipation or a hoarse voice.

If you're receiving hormone therapy for hypothyroidism, schedule follow-up visits as often as your doctor recommends. Initially, it's important to make sure you're receiving the correct dose of medicine. And over time, the dose you need may change.

Causes

When your thyroid doesn't produce enough hormones, the balance of chemical reactions in your body can be upset. There can be a number of causes, including autoimmune disease, hyperthyroidism treatments, radiation therapy, thyroid surgery and certain medications.

Your thyroid is a small, butterfly-shaped gland situated at the base of the front of your neck, just below your Adam's apple. Hormones produced by the thyroid gland — triiodothyronine (T3) and thyroxine (T4) — have an enormous impact on your health, affecting all aspects of your metabolism. These hormones also influence the control of vital functions, such as body temperature and heart rate.

Hypothyroidism results when the thyroid gland fails to produce enough hormones. Hypothyroidism may be due to a number of factors, including:

- **Autoimmune disease.** The most common cause of hypothyroidism is an autoimmune disorder known as Hashimoto's thyroiditis. Autoimmune disorders occur when your immune system produces antibodies that attack your own tissues. Sometimes this process involves your thyroid gland.

Scientists aren't sure why this happens, but it's likely a combination of factors, such as your genes and an environmental trigger. However it happens, these antibodies affect the thyroid's ability to produce hormones.

- **Over-response to hyperthyroidism treatment.** People who produce too much thyroid hormone (hyperthyroidism) are often treated with radioactive iodine or anti-thyroid medications. The goal of these treatments is to get thyroid function back to normal. But sometimes, correcting hyperthyroidism can end up lowering thyroid hormone production too much, resulting in permanent hypothyroidism.
- **Thyroid surgery.** Removing all or a large portion of your thyroid gland can diminish or halt hormone production. In that case, you'll need to take thyroid hormone for life.
- **Radiation therapy.** Radiation used to treat cancers of the head and neck can affect your thyroid gland and may lead to hypothyroidism.
- **Medications.** A number of medications can contribute to hypothyroidism. One such medication is lithium, which is used to treat certain psychiatric disorders. If you're taking medication, ask your doctor about its effect on your thyroid gland.

Less often, hypothyroidism may result from one of the following:

- **Congenital disease.** Some babies are born with a defective thyroid gland or no thyroid gland. In most cases, the thyroid gland didn't develop normally for unknown reasons, but some children have an inherited form of the disorder. Often, infants with congenital hypothyroidism appear normal at birth. That's one reason why most states now require newborn thyroid screening.
- **Pituitary disorder.** A relatively rare cause of hypothyroidism is the failure of the pituitary gland to produce enough thyroid-stimulating hormone (TSH) — usually because of a benign tumor of the pituitary gland.
- **Pregnancy.** Some women develop hypothyroidism during or after pregnancy (postpartum hypothyroidism), often because they produce antibodies to their own thyroid gland. Left untreated, hypothyroidism increases the risk of miscarriage, premature delivery and preeclampsia — a condition that causes a significant rise in a woman's blood pressure during the last three months of pregnancy. It can also seriously affect the developing fetus.
- **Iodine deficiency.** The trace mineral iodine — found primarily in seafood, seaweed, plants grown in iodine-rich soil and iodized salt — is essential for the production of thyroid hormones. Too little iodine can lead to hypothyroidism, and too much iodine can worsen hypothyroidism in people who already have the condition. In some parts of the world, iodine deficiency is common, but the addition of iodine to table salt has virtually eliminated this problem in the United States.

Risk factors

Although anyone can develop hypothyroidism, you're at an increased risk if you:

- Are a woman
- Are older than 60
- Have a family history of thyroid disease
- Have an autoimmune disease, such as type 1 diabetes or celiac disease
- Have been treated with radioactive iodine or anti-thyroid medications
- Received radiation to your neck or upper chest
- Have had thyroid surgery (partial thyroidectomy)
- Have been pregnant or delivered a baby within the past six months

Complications

Untreated hypothyroidism can lead to a number of health problems:

- **Goiter.** Constant stimulation of your thyroid to release more hormones may cause the gland to become larger — a condition known as a goiter. Although generally not uncomfortable, a large goiter can affect your appearance and may interfere with swallowing or breathing.
- **Heart problems.** Hypothyroidism may also be associated with an increased risk of heart disease and heart failure, primarily because high levels of low-density lipoprotein (LDL)

cholesterol — the "bad" cholesterol — can occur in people with an underactive thyroid.

- **Mental health issues.** Depression may occur early in hypothyroidism and may become more severe over time. Hypothyroidism can also cause slowed mental functioning.
- **Peripheral neuropathy.** Long-term uncontrolled hypothyroidism can cause damage to your peripheral nerves. These are the nerves that carry information from your brain and spinal cord to the rest of your body — for example, your arms and legs. Peripheral neuropathy may cause pain, numbness and tingling in affected areas.
- **Myxedema.** This rare, life-threatening condition is the result of long-term, undiagnosed hypothyroidism. Its signs and symptoms include intense cold intolerance and drowsiness followed by profound lethargy and unconsciousness.

A myxedema coma may be triggered by sedatives, infection or other stress on your body. If you have signs or symptoms of myxedema, you need immediate emergency medical treatment.

- **Infertility.** Low levels of thyroid hormone can interfere with ovulation, which impairs fertility. In addition, some of the causes of hypothyroidism — such as autoimmune disorder — can also impair fertility.
- **Birth defects.** Babies born to women with untreated thyroid disease may have a higher risk of birth defects compared to babies born to healthy mothers. These children are also more prone to serious intellectual and developmental problems.

Infants with untreated hypothyroidism present at birth are at risk of serious problems with both physical and mental development. But if this condition is diagnosed within the first few months of life, the chances of normal development are excellent.

By Mayo Clinic Staff

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