



Official reprint from UpToDate®
www.uptodate.com
©2013 UpToDate®

Patient information: Hypothyroidism (underactive thyroid) (Beyond the Basics)

Author

Douglas S Ross, MD

Section Editor

David S Cooper, MD

Deputy Editor

Jean E Mulder, MD

HYPOTHYROIDISM OVERVIEW

Hypothyroidism is a condition in which the thyroid gland does not produce enough thyroid hormone. It is the most common thyroid disorder.

This topic discusses HYPOTHYroidism. HYPERthyroidism is discussed separately. (See "[Patient information: Hyperthyroidism \(overactive thyroid\) \(Beyond the Basics\)](#)".)

WHAT IS THE THYROID?

The thyroid is a butterfly-shaped gland in the middle of the neck, located below the larynx (voice box) and above the clavicles (collarbones) ([figure 1](#)). The thyroid produce two hormones, triiodothyronine (T3) and thyroxine (T4), which regulate how the body uses and stores energy (also known as the body's metabolism).

Thyroid function is controlled by a gland in the brain, known as the pituitary ([figure 2](#)). The pituitary produces thyroid stimulating hormone (TSH), which stimulates the thyroid to produce T3 and T4.

HYPOTHYROIDISM CAUSES

In about 95 percent of cases, hypothyroidism is due to a problem in the thyroid gland itself and is called primary hypothyroidism. However, certain medications and diseases can also decrease thyroid function. As an example, HYPOTHYroidism can also develop after medical treatments for HYPERthyroidism, such as thyroidectomy (surgical removal of the thyroid) or radioactive iodine treatment (to destroy thyroid tissue). In some cases, hypothyroidism is a result of decreased production of thyroid-stimulating hormone (TSH) by the pituitary gland. (See "[Patient information: Hyperthyroidism \(overactive thyroid\) \(Beyond the Basics\)](#)".)

Thyroid problems are more common in women, increase with age, and are more common in whites and Mexican Americans than in blacks.

HYPOTHYROIDISM SYMPTOMS

The symptoms of hypothyroidism vary widely; some people have no symptoms while others have dramatic symptoms or, rarely, life-threatening symptoms. The symptoms of hypothyroidism are notorious

for being nonspecific and for mimicking many of the normal changes of aging. Usually, symptoms are milder when hypothyroidism develops gradually.

General symptoms — Thyroid hormone normally stimulates the metabolism, and most of the symptoms of hypothyroidism reflect slowing of metabolic processes. General symptoms may include fatigue, sluggishness, weight gain, and intolerance of cold temperatures.

Skin — Hypothyroidism can decrease sweating. The skin may become dry and thick. The hair may become coarse or thin, eyebrows may disappear, and nails may become brittle.

Eyes — Hypothyroidism can lead to mild swelling around the eyes. People who develop hypothyroidism after treatment for Graves' disease may retain some of the eye symptoms of Graves' disease, including protrusion of the eyes, the appearance of staring, and impaired movement of the eyes. (See "[Patient information: Hyperthyroidism \(overactive thyroid\) \(Beyond the Basics\)](#)".)

Cardiovascular system — Hypothyroidism slows the heart rate and weakens the heart's contractions, decreasing its overall function. Related symptoms may include fatigue and shortness of breath with exercise. These symptoms may be more severe in people who also have heart disease. In addition, hypothyroidism can cause mild high blood pressure and raise blood levels of cholesterol.

Respiratory system — Hypothyroidism weakens the respiratory muscles and decreases lung function. Symptoms can include fatigue, shortness of breath with exercise, and decreased ability to exercise. Hypothyroidism can also lead to swelling of the tongue, hoarse voice, and sleep apnea. Sleep apnea is a condition in which there is intermittent blockage of the airway while sleeping, causing fitful sleep and daytime sleepiness. (See "[Patient information: Sleep apnea in adults \(Beyond the Basics\)](#)".)

Gastrointestinal system — Hypothyroidism slows the actions of the digestive tract, causing constipation. Rarely, the digestive tract may stop moving entirely. (See "[Patient information: Constipation in adults \(Beyond the Basics\)](#)".)

Reproductive system — Women with hypothyroidism often have menstrual cycle irregularities, ranging from absent or infrequent periods to very frequent and heavy periods. The menstrual irregularities can make it difficult to become pregnant, and pregnant women with hypothyroidism have an increased risk for miscarriage during early pregnancy. Treatment of hypothyroidism can decrease these risks. (See "[Patient information: Absent or irregular periods \(Beyond the Basics\)](#)" and "[Patient information: Menorrhagia \(excessive menstrual bleeding\) \(Beyond the Basics\)](#)".)

Myxedema coma — In people with severe hypothyroidism, trauma, infection, exposure to the cold, and certain medications can rarely trigger a life-threatening condition called myxedema coma, which causes a loss of consciousness and hypothermia (low body temperature).

HYPOTHYROIDISM DIAGNOSIS

In the past, hypothyroidism was not diagnosed until symptoms had been present for a long time. However, simple blood tests can now detect hypothyroidism at an early stage. A person may be tested for hypothyroidism if there are signs and symptoms, such as those discussed above, or as a screening test.

Blood tests — Blood tests can confirm the diagnosis and pinpoint the underlying cause of the thyroid hormone deficiency. The most common blood test for hypothyroidism is TSH (thyroid stimulating hormone). TSH is the most sensitive test because it can be elevated even with small decreases in thyroid function. Thyroxine (T4), the main product of the thyroid gland, may also be measured to confirm and assess the degree of hypothyroidism.

