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## Patient information: Hyperthyroidism (overactive thyroid) (Beyond the Basics)

**Author**

Douglas S Ross, MD

**Section Editor**

David S Cooper, MD

**Deputy Editor**

Jean E Mulder, MD

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### HYPERTHYROIDISM OVERVIEW

Hyperthyroidism is the medical term for an overactive thyroid (hyper = excessive). In people with hyperthyroidism, the thyroid gland produces too much thyroid hormone. When this occurs, the body's metabolism is increased, which can cause a variety of symptoms.

This topic discusses the symptoms, diagnostic tests, and treatment options for HYPERthyroidism. HYPOthyroidism is discussed in a separate topic. (See "[Patient information: Hypothyroidism \(underactive thyroid\) \(Beyond the Basics\)](#)".)

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### 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 produces two hormones, triiodothyronine (T3) and thyroxine (T4), that regulate how the body uses and stores energy (also known as the body's metabolism).

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

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### HYPERTHYROIDISM CAUSES

**Graves' disease** — Graves' disease is the most common cause of hyperthyroidism. It is not clear why Graves' disease develops in most people, although it more common in certain families.

In people with Graves' disease, the immune system produces an antibody that stimulates the thyroid gland to produce too much thyroid hormone. This is most common in women between the ages of 20 and 40, but can occur at any age in men or women. The thyroid gland enlarges (called a goiter) ([figure 2](#)) and makes excessive amounts of thyroid hormone, causing symptoms of hyperthyroidism (see '[Hyperthyroidism symptoms](#)' below).

Some people develop eye problems (called Graves' ophthalmopathy or orbitopathy), which causes dry, irritated or red eyes, and in severe cases may cause double vision. Others develop swelling behind or around the eyes that causes the eyes to bulge out, or inflammation of muscle in the eyelids that can cause excessive lid opening ([figure 2](#)). The more severe manifestations of Graves' eye disease are

uncommon, except in smokers. In its most severe form, people with Graves' ophthalmopathy can develop inflammation of the optic nerves, which can result in loss of vision.

### Other causes

- One or more thyroid nodules (small growths or lumps in the thyroid gland) can produce too much thyroid hormone. The nodule is then called a hot nodule, toxic nodule, or when there is more than one, a toxic nodular goiter. (See "[Patient information: Thyroid nodules \(Beyond the Basics\)](#)".)
- Painless ("silent or lymphocytic") thyroiditis and postpartum thyroiditis are disorders in which the thyroid becomes temporarily inflamed and releases thyroid hormone into the bloodstream, causing hyperthyroidism.

Postpartum thyroiditis can occur several months after delivery. The hyperthyroid symptoms may last for several months, often followed by several months of hypothyroid symptoms, such as fatigue, muscle cramps, bloating, and weight gain.

- Subacute (granulomatous) thyroiditis is thought to be caused by a virus. It causes a painful, tender, enlarged thyroid gland. The thyroid becomes inflamed and releases thyroid hormone into the blood stream; the hyperthyroidism resolves when the viral infection improves, and may also be followed by several months of hypothyroid symptoms.
- Taking too much thyroid hormone medication for hypothyroidism.

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## HYPERTHYROIDISM SYMPTOMS

Most people with hyperthyroidism have symptoms, including one or more of the following:

- Anxiety, irritability, trouble sleeping
- Weakness (in particular of the upper arms and thighs, making it difficult to lift heavy items or climb stairs or get up from a chair)
- Tremors (of the hands)
- Perspiring more than normal, difficulty tolerating hot weather
- Rapid, forceful, or irregular heartbeats
- Fatigue
- Weight loss in spite of a normal or increased appetite
- Frequent bowel movements

In addition, some women have irregular menstrual periods or stop having their periods altogether. This can be associated with infertility. Men may develop enlarged or tender breasts, or erectile dysfunction, which resolves when hyperthyroidism is treated.

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## HYPERTHYROIDISM DIAGNOSIS

Hyperthyroidism can be diagnosed with blood tests that measure the amount of thyroid hormone and thyroid-stimulating hormone (TSH). Typically, the thyroid hormone level is high and the TSH level is low. A thyroid scan may also be recommended to help determine the cause of hyperthyroidism (Graves' disease, toxic nodular goiter, or thyroiditis).

