

# ▶ diseases and disorders

## ▶ Hypothyroidism

Vivienne, a 22-year-old journalist, consulted a doctor because she was suffering from mood swings and near-constant fatigue and feelings of sluggishness. She also was experiencing memory problems and confused thinking. When she wrote articles, she had trouble organizing her thoughts, and could not remember how to spell words that had once been easy for her. She thought that she could not do her job properly and became depressed about her mysterious illness.

Vivienne's doctor suspected a problem with her thyroid function and confirmed it with a blood test that measured the presence of thyroid-stimulating hormone (TSH). He diagnosed her condition as

hypothyroidism, the most common form of thyroid disease, and prescribed a daily dosage of synthetic thyroid hormone. Within a

few months, Vivienne's energy and mental acuity returned. Although she will need to take medication for the rest of her life, she feels this is a minor trade-off for the relief from her severe symptoms.

Hypothyroidism is a condition in which the body lacks sufficient thyroid hormone. More than 5 million Americans have this common ailment, and as many as 10% of women may have some degree of thyroid hormone deficiency. Although it can be caused by a variety of diseases that affect the hypothalamus and pituitary gland, hypothyroidism is due primarily to disorders of the thyroid gland itself. This small organ, located in the front of the neck (see diagram), is made up of two halves, or lobes, that lie along the trachea. The lobes are joined by a narrow band of thyroid tissue known as the isthmus.

As food enters the body, the thyroid gland takes iodine, found in many foods, and converts it into the hormones thyroxine ( $T_4$ ) and triiodothyronine ( $T_3$ ). Thyroid cells are the only cells in the body that can absorb iodine. These cells combine iodine and the amino acid tyrosine to make  $T_3$  and  $T_4$ .  $T_3$  and  $T_4$  are then released into the bloodstream and transported throughout the body, where they control metabolism—the conversion of oxygen and calories to energy. Every cell in the body depends on thyroid hormones for regulating its metabolism. The normal thyroid gland produces about 80%  $T_4$  and 20%  $T_3$ .

When the thyroid does not produce enough thyroid hormone, the body uses energy more

slowly than it should. Symptoms may include feeling cold, sluggish, depressed, or forgetful; dry hair and skin; constipation; and increased menstrual flow.

The thyroid gland is controlled by the pituitary gland. Because the body expects a certain amount of thyroid hormone, when the level of hormone drops too low, the pituitary makes additional TSH, which signals the thyroid to manufacture and secrete  $T_3$  and  $T_4$ , raising their levels in the blood. The pituitary senses this and responds by decreasing its TSH production.

Hypothyroidism can often be diagnosed with a simple blood test. The diagnosis is based almost exclusively on measuring the amount of thyroid hormone in the blood. Normal ranges have been established; however, a patient's symptoms and their severity must also be taken into account. If a person's hormone levels fall below the normal range, it indicates hypothyroidism. According to Julia Pineda, a physician in Washington, DC, even a 0.5% fluctuation can be significant and cause noticeable symptoms. Women tend to be more sensitive to fluctuations, but few physicians take a patient's baseline reading. "Hypothyroidism is a very undiagnosed illness," she says.

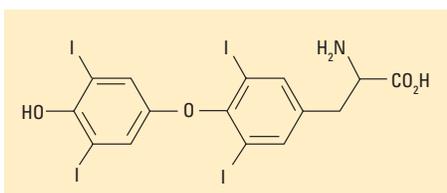
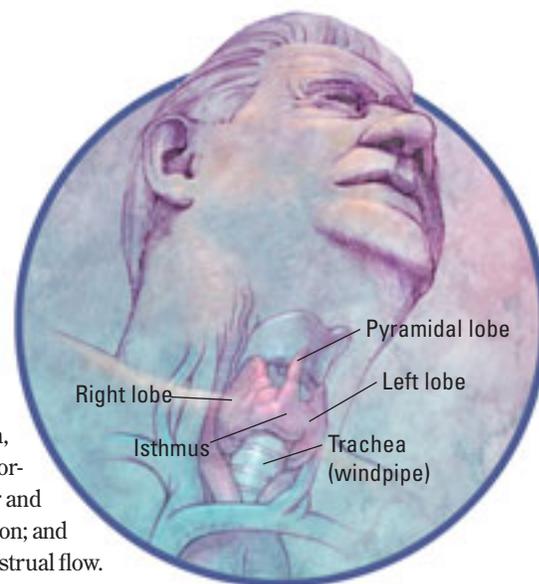
Left untreated, the symptoms of hypothyroidism will usually progress. Rarely, complications can result in severe, life-threatening

depression, heart failure, or coma. Various thyroid hormone preparations are available for replacement therapy, including synthetic preparations of  $T_4$  (L-thyroxine), triiodothyronine (liothyronine), combinations of the two synthetic hormones, and desiccated animal thyroid. L-Thyroxine is preferred, with the average maintenance dosage being 75–125  $\mu\text{g}$  daily. Initial doses must be much lower, especially in older people, those with heart disease, and patients with long-standing or severe hypothyroidism (except for myxedema coma). Although treatment of hypothyroidism is easy in some individuals, others have a difficult time finding the right type and amount of replacement thyroid hormone.

—JULIA BELCHER

### For more information

EndocrineWeb.com; [www.endocrineweb.com/hypo1.html](http://www.endocrineweb.com/hypo1.html).  
*Merck Manual of Diagnosis and Therapy*; [www.merck.com](http://www.merck.com).



Thyroxine.

### Symptoms of hypothyroidism

- Fatigue
- Weakness
- Weight gain or increased difficulty losing weight
- Coarse, dry hair
- Dry, rough, pale skin
- Hair loss
- Inability to tolerate cold temperature
- Muscle cramps and frequent muscle aches
- Constipation
- Depression
- Irritability
- Memory loss
- Abnormal menstrual cycles
- Decreased libido