

Hypothyroid patients should not stop taking thyroid hormone. Thyroid hormone treatment must be continued even when the patient develops other illnesses, although the dosage may have to be altered.

### **Treatment of Pituitary or Hypothalamic Hypothyroidism**

The treatment of hypothyroidism caused by failure of the pituitary or the hypothalamus is also thyroxine. Pituitary or hypothalamic failure are both very rare compared to failure of the thyroid gland. In these cases, other hormone deficiencies may exist which must be identified and treated as well.

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Production of these Health Guides was made possible through partial financial assistance from Health Canada. The views expressed herein are solely those of the authors and do not necessarily represent the official policy of Health Canada.

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Charity Bus. No. 11926 4422 RR0001  
Revised 02/01

Reviewed 08/01

# HYPOTHYROIDISM

HEALTH GUIDES ON  
THYROID DISEASE



Thyroid Foundation of Canada

La Fondation canadienne de la Thyroïde

Hypothyroidism, or underactive thyroid, occurs when the thyroid gland fails to produce sufficient amounts of the thyroid hormones T4 and T3. There are four main causes:

1. Treatment of Graves' hyperthyroidism with radioactive iodine or by thyroidectomy;
2. End result of Hashimoto's thyroiditis, an inflammatory process of the thyroid gland; this may occur spontaneously during the course of Graves' disease;
3. Birth of a baby, born without a thyroid gland (congenital hypothyroidism);
4. Surgical removal of the thyroid gland as a treatment for thyroid cancer.

Hypothyroidism can also be caused by disease of either the pituitary gland or the hypothalamus. This is because normal function of the thyroid gland depends on carefully regulated secretion of thyroid stimulating hormone (TSH) from the pituitary gland and thyrotropin releasing hormone (TRH) from the hypothalamus. Another important, but transient form of hypothyroidism occurs with postpartum thyroiditis or subacute thyroiditis.

## **Clinical Features**

Hypothyroidism affects approximately 2 persons in 100. The signs and symptoms of overt hypothyroidism are opposite to those in hyperthyroidism since there is a deficiency of thyroid hormone secretion and all metabolic processes "slow down". The patient has poor appetite, intolerance to cold, dry, coarse skin, brittle hair, tiredness, a croaky, hoarse voice, constipation, and muscle weakness. Examination may reveal an absence of the thyroid gland, dry scaly, cold, pale skin, a thickening of the skin and underlying tissues (called myxedema), very slow reflexes and a slow heart rate. The patient can have poor memory retention. The diagnosis of hypothyroidism is confirmed by finding very low levels of thyroid hormones (T4 and T3) in the blood.

## **Neonatal Hypothyroidism**

Newborn babies are tested using a "heelpad bloodspot test". Neonatal hypothyroidism is caused, for unknown reasons, by an absence of the baby's thyroid gland at birth. Thyroid hormones are essential for brain development and growth. Newborn infants with hypothyroidism that is not treated, are called cretins and have severe body and mental defects. These include mental retardation, poor vision, thick, dry skin, protrudent tongue, muscle weakness, severe lethargy and tiredness. If diagnosed and treated soon after birth, growth and mental development can proceed relatively normally.

Much of the research work in making an early diagnosis of Neonatal Hypothyroidism was carried out in Canada by Dr. J.H. Dussault at Laval University.

## **Borderline Hypothyroidism (Compensated Hypothyroidism)**

Borderline Hypothyroidism (Compensated Hypothyroidism) is quite common, and almost impossible to diagnose clinically. The hallmark is that of an elevated TSH concentration, with normal or only slightly reduced thyroid hormone levels. There may be no symptoms, or very vague symptoms, associated with this condition.

It is important to make the correct diagnosis because once treatment is started it usually continues for life as it becomes very difficult to stop treatment to determine whether the original diagnosis was correct. The measurement of TSH in the blood helps to define even minor degrees of hypothyroidism.

## **Treatment**

Treatment of hypothyroidism is to take thyroid hormone replacement in the form of a small pill, daily, for life. This is now given in the form of thyroxine ("eltroxin" or "synthroid"), a synthetic hormone which has few impurities, very few side effects and produces almost no allergic reaction. The dose of thyroxine in

adults ranges from 0.1 to 0.2 mg per day. Most patients require between 0.125-0.15 mg but a few require less and a few require more. There is no need to add T3, since T4 breaks down to T3, and the dosage is set to provide a normal T3 level. Once the dose has been established, it is usually stable for life and patients treated with thyroxine need only have blood tests once a year. Major stress or illness can sometimes increase the need for thyroid hormone. Infants and children require smaller doses. Adult doses are given for teenage patients. Too much thyroxine causes symptoms of hyperthyroidism whereas symptoms of hypothyroidism persist with too little. The correct dose is determined from blood tests of thyroid hormone levels, particularly the total serum triiodothyronine and TSH tests, and from clinical examination.

## **Other Forms of Thyroid Hormone**

There are many other forms of thyroid hormone but it is very unusual to prescribe any of these. Impure preparations such as thyroid extract, thyroglobulin, and crude thyroid preparations contain variable amounts of thyroid hormones. They produce variable effects and an unpredictable response to treatment. Triiodothyronine (T3), which is much more potent than thyroxine is also given on occasion. This drug has a short life span in the blood and causes irregular stimulation of the heart. Therefore, T3 ("cytomeI") should not be given to patients with heart disease or to older patients.

## **Duration of Treatment**

Assuming that the diagnosis of hypothyroidism was correct, treatment for thyroid hormone should almost always be continued for life. The cause of thyroid failure is likely to be progressive and permanent.

Many patients are given thyroxine for the wrong reasons (such as obesity or tiredness). Therefore, it is essential that blood tests be carried out and that thyroid hormone levels are clearly shown to be below the normal range. Additionally, patients must have symptoms and signs of hypothyroidism.