ENGLISH

Hormone Disorders

Hyperthyroidism
(an overactive thyroid)

Patient's Guide

Average readability

ESPE
European Society for Paediatric Endocrinology

Child Growth Foundation
Supporting children & adults with rare growth conditions

BSPED

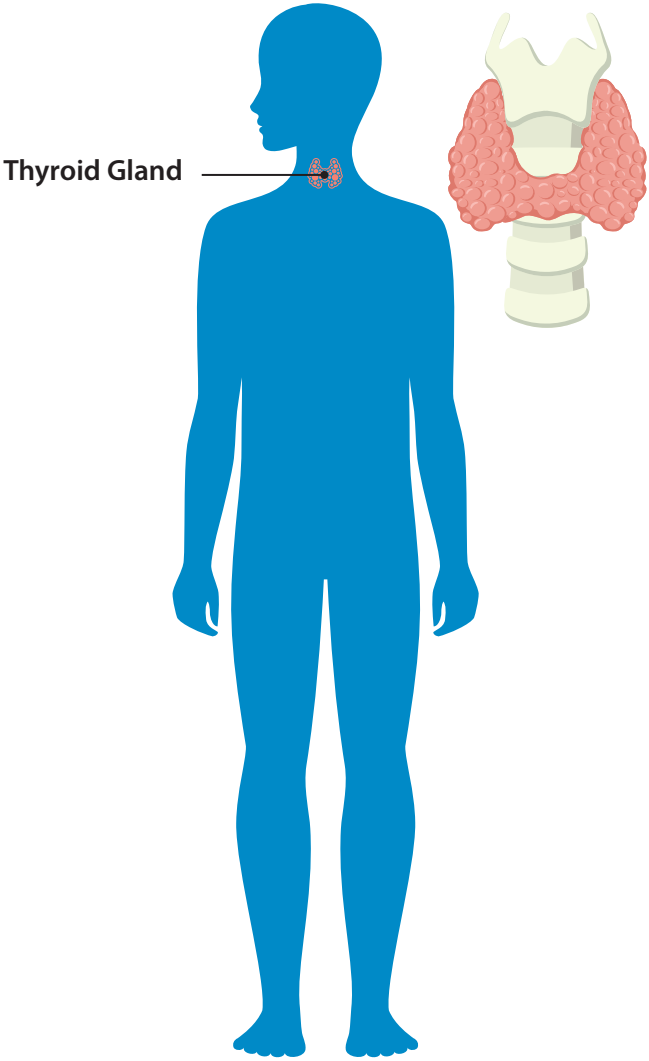
Introduction

The aim of this leaflet is to provide general information about Hyperthyroidism. It will discuss information on how it is diagnosed, treated and some of the problems it may cause.

It has been written in general terms and not all of the information provided will apply to you. Hopefully, this leaflet will help you to understand this condition and give you a basis for discussions with your family doctor or specialist team.

What is the thyroid gland?

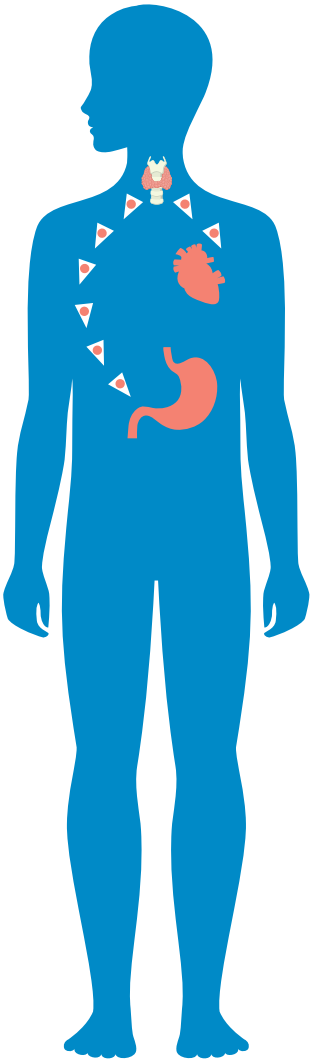
The thyroid gland is a small gland found in the neck below the larynx (Adam's apple). It makes and releases thyroid hormones to help regulate body growth and metabolism.



What do the thyroid hormones do?

Hormones are messengers used around the body to produce important effects. The main hormone produced by the thyroid gland is **thyroxine**. This hormone controls the amount of energy used by the body to maintain vital processes such as breathing, circulation and digestion.

Too much thyroxine makes the body work too fast, whereas too little allows the body to slow down. The thyroid hormones also affect brain growth and metabolism in babies in the womb and up to the age of about two years.



What is hyperthyroidism?

Hyperthyroidism occurs when the thyroid gland becomes overactive and produces excess thyroid hormones. Hyperthyroidism is different from hypothyroidism and should not be confused. **HYPER** means over active whereas **HYPO** means under active.

What is the cause of Hyperthyroidism?

The most common form of hyperthyroidism is a condition called Graves' disease. In this disease, the body's immune system begins to attack the very organs and tissues that it is supposed to protect. This leads to excessive production of thyroid hormone by the thyroid gland. Additional symptoms include swelling of the neck due to enlargement of the gland, and protrusion of the eyes.

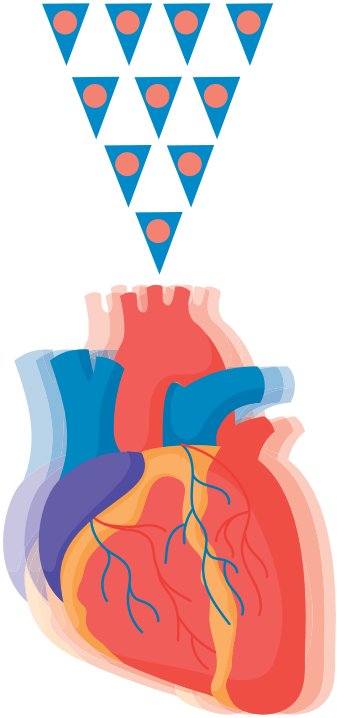
Hyperthyroidism can also be caused by hormone producing tumours in the pituitary gland. However, this cause is far less frequent.

There is also a rare form of hyperthyroidism that develops soon after birth. The mother will have or have had hyperthyroidism too. This is a temporary condition that resolves within 3 to 6 months. Some treatment may be required but there are no long-term problems.

What are the Symptoms of Hyperthyroidism?

The most common symptoms include:

- **Effects on the circulation:** High thyroid hormone levels usually lead to a high heart rate. In extreme cases, this can lead to heart strain.
- **Growth, weight and appetite:** Children who develop hyperthyroidism often start growing at a much faster rate than is normal for their age. Increased appetite may also be present, although there is often weight loss that may be extreme.
- **Anxiety and behaviour problems:** A child may be restless, fidgety and have poor concentration. They are often moody and may be unable to sleep well.
- **Other symptoms:** Children often have mild diarrhoea, poor tolerance of heat and cold, and tiredness.



Frequently, the thyroid gland becomes enlarged, and this may be the first noticeable physical sign. This can result in swallowing difficulties and a feeling of having "a lump in the throat". The eyes may appear large and bulge outwards leading to a rather startled expression. Difficulty with eye movements may also be present.

These problems should be referred to an eye specialist.
The longer the eye changes are left untreated, the less likely they are to be curable.

How is hyperthyroidism diagnosed?

Diagnosis is done by taking a single blood test to check for thyroid hormone levels. Thyroxine levels above normal range suggest a diagnosis of hyperthyroidism.

How is hyperthyroidism treated?

Hyperthyroidism treatment has two goals: to control symptoms and to treat the underlying cause. Symptoms can be treated with a therapy known as beta-blockers. In addition, thyroid hormone blocking drugs must be used. These drugs will treat the symptoms but not the underlying cause.

An important side effect of thyroid hormone blocking drugs is that it weakens the body's immune system. This may lead to an inability to fight infection. Other side effects include rashes and rarely, liver problems.

Thyroid hormone blocking drugs are started at a high dose that is then reduced as the hyperthyroidism comes under control. Alternatively, the dose can be kept high until the thyroid gland action is completely blocked. Once this happens, **hypothyroidism** (under-activity of the thyroid gland) will occur and hormone replacement therapy is given.

Unfortunately, in 40% of children a return of the hyperthyroid symptoms is seen once drug treatment stops. In teenagers this may be because they do not like taking the tablets. For these young people a curative treatment is needed and this is either radioiodine treatment or surgery.

What is permanent treatment for hyperthyroidism?

Two permanent treatments are available:

- **Surgery:** Sometimes the surgeon will often aim to leave just enough of the thyroid gland behind to cure the hyperthyroidism. However, it may be necessary for the whole gland to be removed. There is also a possibility of damage to the other important structures near or in the thyroid gland such as the nerves to the larynx. The risk of this type of complication is small but must still be considered carefully.
- **Radioiodine Treatment:** Radioactive iodine is given by mouth and this is trapped by the thyroid gland. The radioiodine works by destroying the cells in the thyroid gland through local irradiation. Very occasionally, side effects include flu-like symptoms. Because of unknown side effects, this treatment is not usually recommended in children younger than 10 years of age.

Unfortunately, following either surgery or radioiodine treatment, **hypothyroidism** is likely to result because the thyroid gland ceases to function. This means that thyroid replacement treatment will be needed for life. At present, there is no clear difference between surgery and radioiodine treatment in terms of this outcome.

Are lumps in the neck risky?

Lumps in the neck are very common in children. Most of them have no relationship with the thyroid gland. However, a lump at the front of the neck may be in the thyroid. Any child with a lump that can be seen or felt in the neck should be carefully examined and may need investigating with an ultrasound scan or removing a small sample of the gland with a syringe.

What are other sources of useful information?

The goal of this leaflet was to provide a basic overview of Hyperthyroidism.

Educational material can also be found by contacting the following organisations:

- **European Society for Paediatric Endocrinology**
  Starling House
  1600 Bristol Parkway North
  Bristol
  BS34 8YU
  espe@eurospe.org
  Telephone +44 (0) 1454 642246
  www.eurospe.org

- **British Society of Paediatric Endocrinology and Diabetes**
  bsped@endocrinology.org
  https://www.bsped.org.uk/

- **Child Growth Foundation**
  info@childgrowthfoundation.org
  Telephone +44 (0) 208 995 0257
  www.childgrowthfoundation.org

- **The Endocrine Society**
  www.endo-society.org

You can also consult your specialist team for additional information in your local area.

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This leaflet is part of the **Hormone Disorders Series**

The following are also available:

- Growth Hormone Deficiency
- Puberty and the Growth Hormone Deficient Child
- Precocious Puberty
- Emergency Information for Children with Cortisol and GH Deficiencies and those Experiencing Recurrent Hypoglycaemia
- Congenital Adrenal Hyperplasia
- Growth Hormone Deficiency in Young Adults
- Constitutional Delay of Growth and Puberty
- Multiple Pituitary Hormone Deficiency
- Diabetes Insipidus
- Craniopharyngioma
- Intrauterine Growth Retardation or Small for Gestational Age
- Hypothyroidism
- Type 2 Diabetes and Obesity

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