

# Thyrotoxicosis

## Introduction

Thyrotoxicosis means that your thyroid gland is producing too much of the thyroid hormones, T<sub>4</sub> (thyroxine) & T<sub>3</sub>, causing high levels of these hormones in your blood.

Thyroid hormones are normally responsible for keeping many processes within the body 'ticking over' at the right rate. If too much thyroid hormone is produced then everything goes 'too fast'. Common symptoms which you may have noticed include: weight loss in spite of a big appetite, palpitations or fast or irregular heart-beat, tremor or shakiness, excessive anxiety, tiredness or weakness, sweating, intolerance of hot weather, sore eyes, itching, thirst and diarrhoea. You may also have noticed a slight swelling in the throat due to a large thyroid gland (also known as a *goitre*), and in some cases may have some soreness, swelling, staring or prominence of the eyes (thyroid eye disease).

Thyrotoxicosis most commonly occurs when the body begins to make *antibodies* against the thyroid gland. Antibodies are usually made by the body to fight off infections, and are responsible for immunity after recovery. When such antibodies are

made against tissues of your own body, this is called an *autoimmune* disease.

In this case the antibodies attack a particular part of the thyroid gland, the TSH receptor. This 'receptor' is normally responsible for switching on production of thyroid hormones in response to a message (TSH, or Thyroid Stimulating Hormone) from the pituitary gland which normally controls the activity of many hormones in the body. The thyroid therefore receives a continuous message to 'switch on' from the antibody, and constantly produces thyroid hormones even though levels in the blood are already high.

Thyrotoxicosis can also be caused by:

- Benign nodules in the thyroid which make too much thyroid hormone – nodules can be single or multiple (a '*multinodular goitre*'). If this cause is suspected we will organise a thyroid scan, and may recommend a more permanent treatment.
- An acute inflammation in the thyroid or '*thyroiditis*' – sometimes caused by a virus.

Thyrotoxicosis is sometimes also known as *Hyperthyroidism* or *Graves' Disease* (named after Dr Robert Graves, a Dublin physician who first described it over 200yr ago).

## Medical Treatment of Thyrotoxicosis

Patients are usually treated medically at first, to return levels of thyroid hormone to normal and therefore to control the symptoms. Four types of drug are commonly used:

**Beta-blockers** (such as propranolol) do not effect the levels of thyroid hormones, but block many of their effects on the body, making you feel better rapidly. *If you have ever had asthma, or suffer from wheezing or bronchitis, then you should not normally take these drugs.*

**Carbimazole** stops the thyroid producing so much thyroid hormone, and therefore lowers the levels in the blood. This takes several weeks to work, which is why a beta-blocker is often needed at first. To produce a rapid effect we usually start with a larger dose, which is reduced after a few weeks. It is usual to continue with the lower dose for 18 months, and then stop if possible. About half the patients who have such a course never have any further trouble, but the other half relapse at some stage. There is no real reason why you should not have several courses of carbimazole, and even continue it indefinitely if necessary. However, a nodular gland will not normally go into remission after a course of treatment.

**Propyl-thiouracil, PTU**, is similar to carbimazole and used in patients who are allergic to the other drug. It is probably safer than carbimazole in pregnancy – and we use it if pregnancy is present or planned

**Levothyroxine (Thyroxine)** is a tablet of the natural thyroid hormone. It is needed when thyroid levels become too low usually after treatments or sometimes spontaneously. Sometimes we advise a 'block and replace' regime when we completely block thyroid hormone production with carbimazole (1-2 x 20mg tablets/day) and add back a small dose of thyroxine (50-100micrograms/day).

## SHARED-CARE OF MEDICAL TREATMENT (Carbimazole / Levothyroxine)

In the 'thyrotoxicosis shared-care' scheme we ask you to have thyroid blood tests performed by your GP (initially about every 2 months) and then advise you & your GP about your thyroid without you having to attend the outpatients clinic repeatedly. If we have included you in the shared-care scheme then our letters will advise you on drug doses and send a form for the next blood test.

### OTHER TREATMENTS

There are 2 other ways of treating thyrotoxicosis which we may recommend if your thyroid has become overactive repeatedly when tablets are stopped, if you are allergic or unhappy taking the tablets, if a nodular gland means remission is unlikely, or if you would prefer it for some other reason.

#### Thyroidectomy:

This is removal of most of the thyroid gland at an operation. To minimise the risk of the overactivity coming back in the long-term we now normally recommend a 'near-total thyroidectomy' and you will usually require life-long replacement treatment with levothyroxine after the operation.

All operations carry a slight risk, and in particular the nerves to the vocal cords run very close to the thyroid gland and can rarely be damaged and the blood calcium may fall too low due to damage to the nearby parathyroid glands. However, in the hands of a good surgeon both these risks are very small (temporary in 5%, permanent in 1%),. If your gland is particularly large, this may be a good reason for an operation.

#### Radioactive Iodine: (Often the most convenient - unless you have young children)

This is given as a simple capsule, or as a drink, as a single dose. The iodine is taken up by the thyroid gland and the radioactivity stops it working. This means that sooner or later in all patients the thyroid becomes underactive, and replacement treatment with thyroxine is then required. *We try to give a*

*dose of iodine which will make the thyroid underactive within a few months. You would then continue to need levothyroxine tablet treatment for the rest of your life, but the tablet would be a natural hormone and once stable you would not need to come to the clinic. There are no other significant risks after this treatment.*

Radioactive iodine should not be used if you are planning a pregnancy. There are also very strict radiation safety rules which mean that you should not have very close contact with young children for a couple of weeks after the dose (please ask for our detailed information sheet about this).

#### Your Treatment Doses

##### Take Carbimazole...

- 2 tablets (40mg), once a day for 4 weeks .. *then* ..
- 1 tablet (20mg), once a day to continue
- \_\_\_ tablet ( \_\_\_ mg), once a day to continue

##### Take Levothyroxine...

- 1 tablet (50/100mcg), once a day to continue

##### Take Propranolol...

- 1 tablet (40 / 80mg) 3 times/day for \_\_\_ weeks

## Side Effects of Carbimazole and PTU

Both these thyroid drugs are very safe and cause no side effects in the vast majority of people.

Very rarely (perhaps 1 in 1000 cases) in sensitive patients these drugs **stop the production of white blood cells**. This recovers if the tablets are stopped quickly. If this occurred, you would become very susceptible to serious infections, and the first thing you would notice would be a very sore throat.

More commonly (1-2% of cases) patients are allergic to the tablets, and develop skin rashes. This is not serious, but does require a change of tablets, and sometimes occurs at the same time as a low white blood cell count.

Because of this small risk, if you develop a skin rash or a sore throat on this treatment (especially in the first few weeks) you should stop taking the tablets immediately, and go to your GP (or come to the hospital) the same day for a blood test (a 'full blood count'), bringing this information sheet with you. The test will usually be normal and you may well be able to restart the tablets within a few hours

If in doubt, ring the hospital [(0116) 258 6140]. Ask to speak to Dr Howlett / Dr Levy or their team.

More Information: Thyroid Foundation, PO Box 97, Clifford, Wetherby, West Yorkshire, LS23 6XD

Internet: [www.btf-thyroid.org](http://www.btf-thyroid.org) [www.endocrineweb.com/hyper1.html](http://www.endocrineweb.com/hyper1.html) [www.LNRMed.org.uk/Endocrinology/index.htm](http://www.LNRMed.org.uk/Endocrinology/index.htm)