

## Patient Information Set 1

The thyroid gland and  
thyroid cancer

## Your tests and treatment

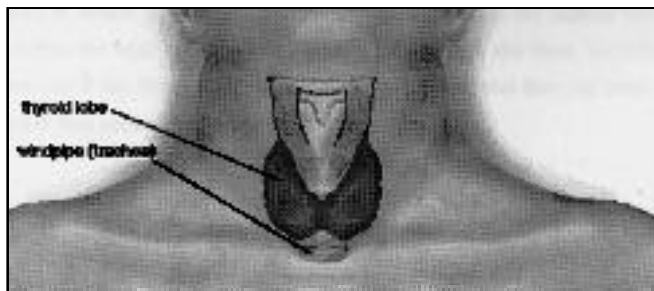
## The thyroid gland

*What is the thyroid gland:*

The thyroid gland is an endocrine gland; this means that it manufactures hormones which are secreted into the bloodstream and then act as messengers to affect cells and tissues in other parts of the body.

*Where is the thyroid gland:*

The thyroid gland is made up of two lobes (each about the size of half a plum) which are joined together by a ridge of thyroid tissue called the isthmus. The two lobes lie on either side of your windpipe, with the gland as a whole lying just below your Adam's Apple.

*What does the thyroid gland do:*

- The thyroid gland produces three hormones which it secretes into the bloodstream. The first is called 'thyroxine', which contains four atoms of iodine and is often called T4. If little or no thyroxine is produced it can easily be replaced with medication.
- The second is called 'triiodothyronine', which contains three atoms of iodine and is often called T3. In the cells and tissues of the body

the T4 is converted into T3, and it is the T3 (either derived from T4 or secreted as T3 from the thyroid gland) that is active and influences the activity of all the cells and tissues of the body. If little or no T3 is produced it can easily be replaced with medication.

- The third is called 'calcitonin', which is produced in response to increased levels of calcium in the blood. Calcitonin helps to lower calcium and phosphate levels in the blood by promoting their excretion. This hormone is produced in excess when medullary thyroid cancer is present. If little or no calcitonin is produced, the body can manage to balance quite well without it having to be replaced.

*What do the thyroid hormones do:*

Thyroid hormones affect the metabolism of your body cells; that is, they regulate the speed at which your body cells work. If too much of the thyroid hormones are secreted the body cells work faster than normal, and you have 'hyperthyroidism'. However, if too little of the thyroid hormones are secreted then the body cells work slower than normal, and you have 'hypothyroidism'.

*How is the thyroid gland controlled:*

Most glands work in conjunction with other glands, and the thyroid gland works with the pituitary gland. The thyroid is controlled by the pituitary, which lies underneath your brain in your skull and senses the levels of thyroid hormones in your bloodstream. If the levels drop below normal, the pituitary reacts by secreting a hormone called the 'thyroid stimulating hormone' which is often called TSH. TSH stimulates the thyroid gland to secrete more T3 and T4. Should the thyroid hormone levels rise above normal levels the pituitary senses this and stops secreting TSH, and so the thyroid gland slows down its secretion of T3 and T4. If you need thyroxine medication this does not cause any problems to TSH.

*How is thyroid activity measured:*

Your doctor will be able to get a good assessment of your thyroid gland activity by taking a history of your symptoms, and by a physical examination. However, to gain an exact level of thyroid hormone

it is necessary to take a small sample of blood and measure the level of TSH in the laboratory to show how much T4 and T3 is being secreted and how active your pituitary is. These tests are sometimes called thyroid function tests or TFTs.

*What are the parathyroid glands and how do they affect calcium levels:*

Another set of glands, that work in conjunction with the thyroid gland, are the parathyroid glands. The parathyroids are attached just behind the thyroid and there are normally four of them, although this can sometimes vary. The parathyroids produce parathyroid hormone (PTH) and this regulates the concentration of calcium in the blood. Normal calcium levels in the blood are essential for healthy bones, blood clotting, cardiac rhythm and function of the cells, as well as for general well-being.

## Thyroid cancer

Cancer of the thyroid gland is very slow growing and it may be many years before the symptoms present themselves.

*Are all differentiated thyroid cancers the same?*

No, there are different types:

- **Papillary cell carcinoma** – this is the most common thyroid cancer. It is more common in younger people, particularly women.
- **Follicular cell carcinoma** – this is less common, and tends to occur in slightly older people than those with papillary cancer.
- **Medullary cell carcinoma** – this is a rare cancer which is sometimes, but not always, hereditary. Ask your specialist about genetic counselling and he/she will arrange it.

**Most thyroid cancers are very treatable and curable** but there is the possibility of recurrence, especially in the very young and in elderly people. This can occur at any stage, but recurrences **can** be treated successfully so lifelong follow-up is most important.

*What is the cause of thyroid cancer?*

The cause of thyroid cancer is unknown; however, a recognised risk factor is radiation exposure, and it has been found in people who have had external radiotherapy to the neck 10 or 20 years previously, as well as in 'Chernobyl children'. Research into the causes of thyroid cancer is ongoing. Very occasionally papillary cancer is hereditary, and medullary cancer is quite often hereditary.

*What are the symptoms of thyroid cancer?*

- A painless lump in the neck which gradually increases in size.
- Difficulty in swallowing (dysphagia) – due to the anatomical position of the thyroid gland and the oesophagus (gullet).
- Difficulty in breathing (dyspnoea) – due to the anatomical position of the thyroid gland and the trachea (windpipe).
- Hoarseness of the voice.
- Often there are no symptoms and it is found 'by chance'.
- Hyperthyroidism (overactive thyroid) and hypothyroidism (underactive thyroid) are rare, as cancer cells do not generally affect hormone production from the thyroid.

*What tests will I need?*

Following presentation to your GP with one of the above symptoms, you will need to have some special investigations to confirm the diagnosis.

**Fine needle aspiration** – This is done in the outpatient department. A sample of cells is extracted by means of a very small needle passed into any swelling you may have in your neck. These cells are then analysed under a microscope to reveal any abnormalities and what type of growth or cancer it may be. This will be one of the main tests that will help confirm your diagnosis.

**Blood test** – This is to see if the thyroid hormone levels are within normal limits. While this does not in itself diagnose a cancer, it does help with the overall diagnosis and safety when planning treatment.

**Ultrasound scan** – In this test a picture of the thyroid gland is obtained by use of sound waves to show any solid lumps or cysts. Again, this in itself

cannot confirm cancer but it can help with the overall diagnosis and in planning treatment.

**Radioisotope scan** – Radioactive iodine is given as an injection, then after a short time a gamma camera is placed over the neck. The camera measures the amount of radioactive substance taken up by the thyroid gland. Cancer cells do not absorb radioactive substances as well as normal thyroid cells, so a small cancer may show on the scan as a ‘cold’ nodule. However, it is not a very good diagnostic test, and many so-called ‘cold’ nodules are benign. The test is mainly used after treatment has been given, to see if any cancer tissue remains.

### What treatment will I be offered?

*You may be offered surgery (thyroidectomy)*

Surgery is most often the first line of treatment for thyroid cancer. Usually the whole thyroid gland (total thyroidectomy) will need to be removed, though sometimes it will be adequate to remove only one lobe; it depends on various factors such as your age, size of the lump and results of the tests mentioned above. The parathyroid glands may or may not be removed. After a thyroidectomy, thyroxine tablets will need to be taken as prescribed for the rest of your life; regular blood tests will be needed to check that the thyroid hormone levels are within normal limits and that the TSH level is suppressed. Eventually you should only need a blood test once or twice a year.

*Following surgery you will need to have your hormone levels monitored.*

Following your thyroid surgery you will be monitored by your General Practitioner (GP) regarding your thyroid medication, and check up blood tests will be done. When you go home please contact your GP or treatment centre: if you feel extremely tired; have feelings of pins and needles in hands/feet/face; if you have palpitations or feel shaky; become very over-active, or generally feel very unwell. This may mean you need to have your thyroxine or calcium levels checked, and your medication dose increased or decreased as the case may be. Once your body has settled you will be able to lead a normal life, but you will need to continue to take the thyroxine tablets for the rest of your life and to have your thyroid tests checked regularly. It will be

particularly important to have your thyroid tests checked if you become pregnant, as you then need to increase your dose of thyroxine (T4).

*You will probably also need to have radioactive iodine therapy*

Most people need to have radioactive iodine treatment following surgery. Your doctor will tell you if this is the case. Radioactive iodine therapy is painless – it means taking either one or two capsule-type tablets, or a liquid, in a single dose. You should not feel sick or lose any hair, or have any other side-effects with the usual dose required. It is a very low dose of radiation but, for the safety of others, a person needs to reduce their social contact and to come into hospital for the first two to four days. If you need this treatment you will be informed by your specialist consultant and given an information booklet before you start treatment.

**Most thyroid cancers are very treatable and curable**

**Please contact your specialist treatment centre staff or your GP if you have any questions or concerns after reading this information book. Together we can help you through your investigations, treatment and recovery.**

### Useful contacts

#### The British Thyroid Foundation

PO Box 97, Clifford, Wetherby, West Yorkshire LS23 6XD

Macmillan Information Line 0845 601 6161

#### Cancerlink Freephone Information Helpline

0800 132905

Asian language line 0171 713 786

#### Cancer BACUP 0800 800 1234

[www.cancerbacup.org.uk](http://www.cancerbacup.org.uk)

#### CancerHelp UK

<http://medweb.bham.ac.uk/cancerhelp>

#### Thyroid Cancer Survivors' Association [www.thyca.org](http://www.thyca.org)

Other useful sites can be found on the **BTA links page** [www.british-thyroid-association.org](http://www.british-thyroid-association.org)