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Thyroid cancer

Thyroid cancer is not a very common type of cancer. There are different types of thyroid cancer which have different treatments. The outlook for people with thyroid cancer varies depending on the type of thyroid cancer. However, in general, the outlook is good.

What is thyroid cancer?

Thyroid cancer is cancer of the thyroid gland, which is a small gland in the neck. [See the separate leaflet called Thyroid Problems \(also including Parathyroid Glands\)](#) to read more about the thyroid gland and what it does.

Note: outlook (prognosis) for thyroid cancer is dealt with later in this leaflet.

There are four main types of thyroid cancer:

- **Papillary.** This is the most common type of thyroid cancer.
- **Follicular.** This is a less common type of thyroid cancer, usually found in older people. Both papillary and follicular thyroid cancers are sometimes called differentiated thyroid cancer. They are often treated in the same way.
- **Medullary.** This is a rare type of thyroid cancer that can run in families. For this reason, family members may be checked at regular intervals to ensure they are not showing any signs of the cancer. This grows from the C cells in the thyroid gland.
- **Anaplastic.** This is also rare. It occurs more commonly in older people and grows quickly. Unlike other types of thyroid cancer, it can be difficult to treat.

The other types of cancer that can develop in the thyroid gland are lymphoma and Hürthle cell cancer. These will not be discussed in this leaflet.

Papillary and follicular thyroid cancers account for about 9 of every 10 cases of thyroid cancer. Both types begin in the follicular cells of the thyroid. Most papillary and follicular thyroid cancers tend to grow slowly. If they are detected early, most can be treated successfully.

[See the separate leaflet called Cancer for more general information about cancer.](#)

What are the symptoms of thyroid cancer?

Thyroid cancer usually develops slowly and initially does not cause any symptoms. The most common first or early sign is a small lump in the neck, which is painless. Other symptoms which may develop as the cancer grows include:

- Hoarseness or difficulty in speaking in a normal voice.
- [Swollen lymph glands](#) in the neck.
- Difficulty swallowing or breathing as the cancer presses on the gullet (oesophagus) or windpipe.
- Pain in the throat or neck.

Note: most lumps in the thyroid gland are **not** due to cancer. Only about 1 in 20 thyroid lumps are due to cancer.

What causes thyroid cancer?

A cancerous (malignant) tumour starts from one abnormal cell. The exact reason why a cell becomes cancerous is unclear. It is thought that something damages or alters certain genes in the cell. This makes the cell abnormal and multiply out of control. [See the separate leaflet called Causes of Cancer for more details.](#)

Thyroid cancer is uncommon. Around 3,400 people develop it each year in the UK. Women are more commonly affected than men. It is the 20th most common cancer in the UK, and only accounts for about 1 in every 100 cases of cancer. Although most people who develop thyroid cancer are middle-aged or older, papillary thyroid cancer can affect younger people, particularly women, most commonly between the ages of 35 and 40 years.

Many people develop thyroid cancer for no apparent reason. The cause is not known in most cases. However, certain risk factors increase the chance that thyroid cancer may develop. These include:

- Thyroid diseases. People who have some non-cancerous (benign) thyroid diseases are more likely to develop thyroid cancer. For example, [an enlarged thyroid gland \(a goitre\)](#), thyroid nodules (adenomas), or inflammation of the thyroid gland (thyroiditis). **Note:** having [an underactive thyroid gland \(hypothyroidism\)](#) or [an overactive thyroid gland \(hyperthyroidism\)](#) does **not** increase your risk of developing thyroid cancer.
- Previous radiation. Thyroid cancer is more common in people who had [radiotherapy treatment to the neck area](#) at a younger age.
- Family history. Medullary thyroid cancer can be caused by inheriting abnormal genes. Around one in four people who develop medullary thyroid cancer have an abnormal gene.
- [Being very overweight \(obese\)](#).
- Low iodine levels. However, it is very rare for people in the UK to have low iodine levels.
- Having a condition called [acromegaly](#), where the body produces too much growth hormone.

How is thyroid cancer diagnosed?

Tests to confirm the diagnosis

[An ultrasound scan is usually done first](#). This may strongly suggest a cancer and can be used to assess the size and position of the cancer. It can also have a look at nearby [lymph nodes](#) to see if a cancer has spread. An ultrasound scan is a safe and painless test which uses sound waves to create images of organs and structures inside your body.

[A small sample of tissue \(biopsy\) is usually taken to confirm the cancer](#) and also to find out the type of thyroid cancer you have. To do the biopsy, [a small needle](#) is passed gently into the swelling in your neck. Sometimes the doctor will use an ultrasound scanner to help to guide the needle to the right area. The cells obtained by the needle are examined under a microscope. The cells look different, depending on the type of cancer you have.

Dr Krishna Vakharia, 16th October 2023

The National Institute for Health and Care Excellence (NICE) has recommended that a person should receive a diagnosis or ruling out of cancer within 28 days of being referred urgently by their GP for suspected cancer.

Assessing the extent and spread

If you are found to have a thyroid cancer then other tests are likely to be advised to assess if it has spread from the thyroid. These may include one or more of a [computerised tomography \(CT\) scan](#) or a [magnetic resonance imaging \(MRI\) scan](#), [blood tests](#) and sometimes other tests.

Another test that is sometimes done is a thyroid radioisotope scan. This test involves having an injection of a small amount of a slightly radioactive liquid (technetium or iodine). A scan which detects radioactivity is then done over the thyroid gland. Cancer cells do not usually absorb the radioactive liquid as well as normal thyroid cells do. Any areas of cancer in the thyroid gland may be shown by the scan.

See the separate leaflets called [Thyroid Function Tests](#) and [Thyroid Scans and Uptake Tests](#) for more details.

Finding out the type of the cancer from the biopsy (and whether it has spread) helps doctors to advise on the best treatment options. It also gives a reasonable indication of outlook (prognosis). The type, size and the amount of spread will determine the stage of the cancer, and this will also go on to influence the predicted outlook. [See the separate leaflet called Stages of Cancer for more details.](#)

What is the outlook (prognosis)?

The overall outlook for many people with thyroid cancer is very good. People with papillary or follicular thyroid cancer have an excellent chance of cure with treatment. Your individual outlook will depend on various things including:

- The type of thyroid cancer.
- The stage of your cancer.

- Your overall health and fitness.
- Your age.

The specialist who knows your case can give more accurate information about your particular outlook, and how well your type and stage of cancer are likely to respond to treatment. The following information is therefore general and not individual to you. Some general facts about outlook are:

- For most people the outlook is good. 85 of every 100 people with thyroid cancer survive at least 10 years after their diagnosis. So most people survive thyroid cancer.
- Outlook is better in younger people who have thyroid cancer than older people.
- Anaplastic thyroid cancer has the worst outlook
- In a comparatively small number of people, thyroid cancer can be fatal. About 410 people die each year from thyroid cancer in the UK.

What are the treatment options for thyroid cancer?

Treatment options which may be considered include surgery, radioactive iodine and radiotherapy. More than one type of treatment may be given. Most types of thyroid cancer can usually be treated successfully and many people with thyroid cancer are cured.

You should have a full discussion with a specialist who knows your case. They will be able to give the pros and cons, likely success rate, possible side-effects, and other details about the various possible treatment options for your type of cancer.

You should also discuss with your specialist the aims of treatment. For example:

- In some cases, the treatment aims to cure the cancer. Some thyroid cancers can be cured, particularly if they are treated in the early stages of the disease. (Doctors tend to say 'in remission' rather than 'cured'. Remission means there is no evidence of cancer following treatment. If you are in remission, you may be cured. However, in some cases a cancer returns months or years later. This is why doctors are sometimes reluctant to use the word cured.)
- In some cases, the treatment aims to control the cancer. If a cure is not realistic, with treatment it is often possible to limit the growth or spread of the cancer so that it progresses less rapidly. This may keep you free of symptoms for some time.
- In some cases, treatment aims to ease symptoms. For example, if a cancer is advanced then you may require treatments such as painkillers or other treatments to help to keep you free of pain or other symptoms. Some treatments may be used to reduce the size of a cancer, which may ease symptoms such as pain.

Surgery

An operation to remove all (or sometimes part) of the thyroid gland is the most common treatment. Sometimes the surgeon also removes some, or all, of the lymph nodes close to the thyroid gland, to see whether the cancer has spread into them. This can help to reduce the risk of the cancer coming back after surgery.

If the cancer is at an early stage and has not spread then surgery alone may be curative.

After your operation, it is likely you will need to take thyroid hormones to replace those normally produced by the thyroid gland.

Radioactive iodine treatment

Many people are given radioactive iodine treatment after their thyroid surgery. Radioactive iodine treatment uses radioactive iodine (I-131) to destroy thyroid cancer cells anywhere in the body. This treatment is usually given as liquid or capsules. The thyroid cancer cells absorb the iodine and receive a very high dose of radiation, which will help to destroy them. As other cells in the body do not absorb iodine, they are not affected by the radioactive iodine. Most radiation is gone from your body in a few days.

If you have medullary thyroid cancer or anaplastic thyroid cancer then it is unlikely you will receive radioactive iodine treatment, as these types of thyroid cancer rarely respond to it.

Radiotherapy

Radiotherapy is a treatment which uses high-energy beams of radiation which are focused on cancerous (malignant) tissue. This kills cancer cells, or stops cancer cells from multiplying. Radiotherapy may be advised if you have thyroid cancer that does not respond to radioactive iodine treatment.

Chemotherapy

Chemotherapy is a treatment of cancer by using anti-cancer medicines which kill cancer cells, or stop them from multiplying. Chemotherapy is rarely used to treat cancer of the thyroid but may be used if the cancer returns or has spread to other parts of the body.

Follow-up after treatment

After your treatment for thyroid cancer, you will be followed up by your specialist and have regular check-ups and tests.

Follow-up may include ultrasound scans and blood tests for thyroglobulin and thyroglobulin antibodies at intervals. Thyroglobulin is a protein that is usually only made by the healthy thyroid gland but it can also be produced by papillary or follicular thyroid cancer cells. Measuring thyroglobulin levels is a way of detecting any remaining papillary or follicular cancer cells.

Further reading

- [Thyroid cancer statistics - UK](#); Cancer Research UK
- [Suspected cancer: recognition and referral](#); NICE guideline (2015 - last updated October 2023)
- [Thyroid Cancer Treatment \(PDQ\(R\)\): Health Professional Version](#)
- [Lee K, Cassaro S; Cancer, Thyroid. StatPearls, 2022.](#)
- [Thyroid cancer: assessment and management](#); NICE guidance (December 2022)

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