- Thyroid conditions that are usually benign
- Types of thyroid cancer
- Parathyroid cancer

Where thyroid cancer starts

The **thyroid gland** is in the front part of the neck, below the thyroid cartilage (Adam's apple). In most people, the thyroid can't be seen or felt. It is shaped like a butterfly, with 2 lobes — the right lobe and the left lobe. These lobes are joined by a narrow piece of gland called the **isthmus** (see picture below).

What Is Cancer? [1]
Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer cells. Learn more here.

Anatomy Gallery: Endocrine System [2]
Explore our 3D interactive tour of the endocrine system.

The thyroid makes hormones that help regulate your metabolism, heart rate, blood pressure, and body temperature. The amount of thyroid hormone released by the thyroid is regulated by the pituitary gland at the base of your brain. This gland makes a substance called **thyroid-stimulating hormone (TSH)**.

Having too much thyroid hormone (**hyperthyroidism**) can cause a fast or irregular heartbeat, trouble sleeping, nervousness, hunger, weight loss, and a feeling of being too warm.

Having too little hormone (**hypothyroidism**) causes you to slow down, feel tired, and gain weight.

The thyroid gland has 2 main types of cells:

- **Follicular cells** use iodine from the blood to make thyroid hormones. These hormones help regulate your metabolism.
- **C cells** (also called **parafollicular cells**) make calcitonin, a hormone that helps control how your body uses calcium.

Other, less common cells in the thyroid gland include immune system cells

(lymphocytes) and supportive (stromal) cells.

Different types of thyroid cancer can develop from each kind of cell.

Many types of growths and tumors can develop in the thyroid gland. Most of these are **benign** (non-cancerous), but others are **malignant** (cancerous), which means they can spread into nearby tissues and to other parts of the body

Thyroid conditions that are usually benign

Changes in your thyroid gland's size or shape can often be felt, or even seen, by you or your doctor. Most often, these changes are benign (not cancer).

Thyroid enlargement

An enlarged thyroid gland is sometimes called a **goiter**. Some goiters are diffuse, meaning that the whole gland is large. Other goiters are nodular, meaning that the gland is large and ha td,n or sors nodulale GS95 mbumpd sur tit g ET BT 1 0 0 1 72 505.17418/F2 12 Tf 0 0

more likely to be cancer. Still, most solid nodules are not cancerous.

Some types of solid nodules (such as hyperplastic nodules and adenomas) have too many cells, but the cells are not cancer cells.

Benign thyroid nodules can sometimes just be watched closely, as long as they aren't growing or causing symptoms. Others might need some form of treatment.

Types of thyroid cancer

The main types of thyroid cancer are:

- Differentiated (including papillary, follicular, and oncocytic carcinoma)
- Medullary
- Anaplastic

Differentiated thyroid cancers

Most thyroid cancers are differentiated cancers. The cells in these cancers look a lot like normal thyroid cells when seen in the lab. These cancers develop from thyroid follicular cells.

Papillary thyroid cancer

Papillary thyroid cancer (also called **papillary carcinoma** or

to grow and spread more quickly and might need more intensive treatment.

Follicular thyroid cancer

Follicular thyroid cancer (also called **follicular carcinoma** or **follicular adenocarcinoma**) is the next most common type, making up about 1 out of 10 thyroid cancers. (It is different from the follicular variant of papillary cancer, described above.)

This type of thyroid cancer is more common in countries where people don't get enough iodine in their diet. These cancers usually do not spread to lymph nodes, but they can spread to other parts of the body, such as the lungs or bones.

The outlook (prognosis) for follicular cancer is not quite as good as that of papillary cancer, although it is still very good in most cases.

Oncocytic carcinoma of the thyroid

About 3% of thyroid cancers are oncocytic carcinoma of the thyroid (previously called **Hürthle (Hurthle) cell cancer**). This type of thyroid cancer tends to be harder to find and to treat.

Medullary thyroid cancer (MTC)

Medullary thyroid cancer (MTC, also known as **medullary thyroid carcinoma**) accounts for less than 5% of all thyroid cancers. It develops from the C cells of the thyroid gland, which normally make calcitonin. (Calcitonin is a hormone that helps control the amount of calcium in blood.)

MTC can be harder to find and treat. Sometimes it can spread to the lymph nodes, lungs, or liver before a thyroid nodule is even discovered.

There are 2 types of MTC:

Sporadic MTC

Sporadic MTC accounts for about 3 out of 4 cases of MTC. It is not inherited (meaning it does not run in families). It occurs mostly in older adults and often affects only one thyroid lobe.

Familial MTC

Familial MTC is inherited (runs in families). It accounts for about 1 in 4 cases of MTC. It often develops during childhood or early adulthood and can spread early.

People with familial MTC usually have cancer in several areas of both lobes. Familial MTC can occur by itself, or it can be part of a syndrome that includes an increased risk of other types of tumors. This is described in more detail in Thyroid Cancer Risk Factors[3].

Anaplastic (undifferentiated) thyroid cancer

Anaplastic carcinoma (also called **undifferentiated carcinoma**) is rare. It makes up about 2% of all thyroid cancers. Most often, it is thought to develop from an existing papillary or follicular cancer.

Anaplastic cancer cells do not look very much like normal thyroid cells. This cancer often spreads quickly into the neck and to other parts of the body, and it can be hard to treat.

Less common thyroid cancers

Other rare cancers found in the thyroid include:

- Thyroid lymphoma
- Thyroid sarcoma
- Squamous cell carcinoma (SCC) of the thyroid
- Other rare thyroid cancers

Parathyroid cancer

The parathyroids are 4 tiny glands behind, but attached to, the thyroid gland. Your parathyroid glands help regulate your body’s calcium levels. Cancers of the parathyroid glands are very rare.

Parathyroid cancers are often found when they cause high blood calcium levels. High blood calcium levels can make you feel tired, weak, and drowsy. They can also make you urinate (pee) a lot, causing dehydration.

Other symptoms of parathyroid cancer can include bone pain and fractures, pain from kidney stones, depression, and constipation.

The main treatment for most parathyroid cancers is surgery to remove the cancer. Sometimes, medicines are used to help control symptoms caused by high blood calcium levels. Parathyroid cancer tends to be harder to cure than thyroid cancer.

The rest of our information on thyroid cancer does not cover parathyroid cancer.

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/what-is-cancer.html
2. www.cancer.org/cancer/understanding-cancer/anatomy-gallery/endocrine-system.html
3. www.cancer.orgamericancancer.sharepoint.com/cancer/types/thyroid-cancer/causes-risks-prevention/risk-factors.html

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Key Statistics for Thyroid Cancer

The information below is an overview of the latest statistics for thyroid cancer.

How common is thyroid cancer?

The American Cancer Society's most recent estimates for thyroid cancer in the United States are for 2024:

- About 44,020 new cases of thyroid cancer (12,500 in men and 31,520 in women)
- About 2,170 deaths from thyroid cancer (990 in men and 1,180 in women)

Thyroid cancer is often diagnosed at a younger age than most other adult cancers. The average age when a person is diagnosed with thyroid cancer is 51.

This cancer is almost 3 times more common in women than in men. It is about 40% to 50% less common in Black people than in any other racial or ethnic group.

Trends in thyroid cancer statistics

Until recently, the rate of new thyroid cancers was growing faster than for any other cancer in the US.

This was largely because more thyroid tumors were being found during imaging tests such as CT or MRI scans that were done for other medical problems. These sensitive tests can sometimes detect small thyroid tumors that might not ever have been found otherwise (and many of which might never have caused any problems).

However, as doctors have started to use stricter criteria for diagnosing thyroid cancer, the incidence rate has declined by about 2% each year since 2014.

The death rate for thyroid cancer has stayed about the same since 2009.

Learn more

Genetics

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ultrasound, which can detect small thyroid nodules that might not otherwise have been found in the past.

Studies have suggested that some newly found, very small thyroid cancers (known as **microcarcinomas**) may not need to be treated right away. Instead, they can be safely watched and then treated only if they start to grow or show other concerning signs.

This might now be an option for some people with these cancers. Ongoing clinical trials are looking to better define which tumors can be safely watched this way.

Non-surgical treatments to destroy thyroid tumors

Surgery is a common treatment for thyroid cancer, and it's often very effective. But it can also lead to lifelong side effects, particularly when the entire thyroid is removed. Researchers are now looking at other ways to destroy thyroid tumors while leaving most of the healthy gland intact. This could lead to fewer long-term side effects.

Techniques that destroy (ablate) small areas of tissue are more often used to treat benign (non-cancerous) thyroid nodules. Some of these approaches are now being studied for use on small thyroid cancers as well, although they're still considered experimental at this time.

For example, researchers are studying if **microwave ablation (MWA)** or **radiofrequency ablation (RFA)** can offer similar results to surgery in the treatment of small papillary thyroid cancers. In these techniques, a thin probe is inserted through the skin into the tumor to heat and destroy it.

Radioactive iodine (RAI) therapy

Researchers are looking for ways to make RAI effective against more thyroid cancers.

For example, in some thyroid cancers, the cells have changes in the *BRAF*

respond well to chemo. But newer types of medicines have become available in recent years, and others are now being studied.

Targeted therapy drugs

In recent years, doctors have started using newer, targeted drugs[3] to treat thyroid cancer. Unlike standard chemo drugs, which work by attacking rapidly growing cells (including cancer cells), targeted drugs attack specific parts of cancer cells.

Targeted drugs for thyroid cancer attack some of the gene and protein changes inside the cancer cells. These changes are what make thyroid cancer cells different from normal cells.

Targeted drugs have become an important part of treatment for many advanced thyroid cancers, as they generally work better than chemo drugs. New targeted drugs are also being developed and tested.

Immunotherapy

Immunotherapy is the use of medicines to help the body's own immune system find and attack cancer cells. This approach has become an important part of the treatment of many types of cancer. It might also be helpful in treating some thyroid cancers.

For example, immunotherapy medicines known as checkpoint inhibitors[4] can often help boost the immune system response against cancer cells anywhere in the body. These drugs might be useful for people whose thyroid cancer cells have certain changes, such as having many gene mutations.

These and other types of immunotherapy are being studied to see how they might assist in treating other thyroid cancers.

Hyperlinks

1. www.cancer.orgamericancancer.sharepoint.com/cancer/types/thyroid-cancer/treating/surgery.html
2. www.cancer.orgamericancancer.sharepoint.com/cancer/types/thyroid-cancer/treating/radioactive-iodine.html
3. www.cancer.orgamericancancer.sharepoint.com/cancer/types/thyroid-

cancer/treating/targeted-therapy.html
4. www.cancer.orgamericancancer.sharepoint.com/cancer/managing-cancer/treatment-types/immunotherapy/immune-checkpoint-inhibitors.html

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Written by

The American Cancer Society medical and editorial content team (https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html)

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as editors and translators with extensive experience in medical writing.

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