

Thyroid Cancer - Diagnosis [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 05/2014

ON THIS PAGE: You will find a list of the common tests, procedures, and scans that doctors can use to find out what's wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

Doctors use many tests to diagnose cancer and find out if it has spread to another part of the body, called metastasis. Some tests may also determine which treatments may be the most effective. For most types of cancer, a biopsy is the only way to make a definitive diagnosis of cancer. If a biopsy is not possible, the doctor may suggest other tests that will help make a diagnosis. Imaging tests may be used to find out whether the cancer has spread. This list describes options for diagnosing this type of cancer, and not all tests listed will be used for every person. Your doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of cancer suspected
- Signs and symptoms
- Previous test results

The following tests may be used to diagnose thyroid cancer:

Physical examination. The doctor will feel the neck, thyroid, throat, and lymph nodes (the tiny, bean-shaped organs that help fight infection) in the neck for unusual growths or swelling. If surgery is recommended, the larynx may be examined at the same time with a laryngoscope, which is a thin, flexible tube with a light.

Blood tests. There are several types of blood tests that may be done during diagnosis and to monitor the patient during and after treatment. This includes tests called [tumor marker tests](#) [3]. Tumor markers are substances found at higher than normal levels in the blood, urine, or body tissues of some people with cancer.

- **Thyroid hormone levels.** As explained in the [Overview](#) [4], thyroid hormones regulate a person's metabolism. The doctor will use this test to find out the current levels of the thyroid hormones triiodothyronine (T3) and thyroxine (T4) in the body.
- **TSH.** This blood test measures the level of thyroid-stimulating hormone (TSH), which is a hormone produced by the pituitary gland near the brain. If the body is in need of thyroid

hormone, the pituitary gland releases TSH to stimulate production.

- **Tg and TgAb.** Thyroglobulin (Tg) is a protein made naturally by the thyroid. After treatment, there should be very low levels of thyroglobulin in the blood since the goal of treatment is to remove all thyroid cells. A tumor marker test may be done to measure the body's Tg level before, during, and/or after treatment. There is also a test for thyroglobulin antibodies (TgAb), which are proteins produced by the body to attack thyroglobulin that occur in some patients. If TgAb is found, it is known to interfere with the results of the Tg level test.
- **Medullary type-specific tests.** If MTC is a possibility, the doctor will order tumor marker tests to check for high calcitonin and carcinoembryonic antigen (CEA) levels. The doctor may also recommend a blood test to detect the presence of *RET* proto-oncogenes (see [Risk Factors](#) [5]), particularly if there is a family history of MTC.

Ultrasound [6]. An ultrasound uses sound waves to create a picture of the internal organs. An ultrasound wand or probe is guided over the skin of the neck area. High-frequency sound waves create a pattern of echoes that show the doctor the thyroid gland size and specific information about any nodules, including whether they are solid or cysts (fluid-filled sacs).

Biopsy [7]. A biopsy is the removal of a small amount of tissue for examination under a microscope. Other tests can suggest that cancer is present, but only a biopsy can make a definite diagnosis. The way to determine whether a nodule is malignant or benign is through a biopsy. During this procedure, the doctor removes cells from the nodule that are then examined by a cytopathologist. A cytopathologist is a doctor who specializes in analyzing cells and tissue to diagnose disease.

A biopsy for thyroid nodules will be done one of two ways:

- **Fine needle aspiration.** This procedure is usually performed in a doctor's office or clinic. It is an important diagnostic step to determine if a thyroid nodule is benign or malignant. A local anesthetic may be injected into the skin to numb the area before the biopsy. The doctor inserts a thin needle into the nodule and removes cells and some fluid. The procedure may be repeated two or three times to obtain samples from different areas of the nodule. The report done by the pathologist. A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease. The test can be positive (meaning there are cancerous cells), negative (meaning there are no cancerous cells), or undetermined (meaning it is not clear whether cancer is there).
- **Surgical biopsy.** If the needle aspiration biopsy is not clear, the doctor may suggest a biopsy in which the nodule and possibly the affected lobe of the thyroid will be removed. This procedure is usually done under general anesthesia; it may require a hospital stay.

Molecular testing of the tumor. Your doctor may recommend running laboratory tests on a tumor sample to identify specific genes, proteins, and other factors unique to the tumor. Results of these tests will help decide whether your treatment options include a type of treatment called targeted therapy (see [Treatment Options](#) [8]).

Radionuclide scanning. This test may also be called a full-body scan or a radioactive iodine (also called I-131 or RAI) scan. It is used most often to learn more about a thyroid nodule. In this test, the patient swallows a very small, harmless amount of radioactive iodine, which is absorbed

by thyroid cells; this make them appear on the scan image, allowing the doctor to see differences between thyroid cells and other body structures.

X-ray. An x-ray is a way to create a picture of the structures inside of the body, using a small amount of radiation. For instance, a chest x-ray can help doctors determine if the cancer has spread to the lungs.

Positron emission tomography (PET) scan [9]. A PET scan is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance is injected into the patient's body. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body.

After diagnostic tests are done, your doctor will review all of the results with you. If the diagnosis is thyroid cancer, these results also help the doctor describe the cancer; this is called staging.

The next section helps explain the different stages for this type of cancer. Use the menu on the side of your screen to select Stages, or you can select another section, to continue reading this guide.

Links:

[1] <http://www.cancer.net/cancer-types/thyroid-cancer/diagnosis>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/24730>

[4] <http://www.cancer.net/node/19293>

[5] <http://www.cancer.net/node/19296>

[6] <http://www.cancer.net/node/24714>

[7] <http://www.cancer.net/node/24406>

[8] <http://www.cancer.net/node/19300>

[9] <http://www.cancer.net/node/24648>