



Thyroid Cancer Overview

The information that follows is an overview of this type of cancer. It is based on the more detailed information in our document, *Thyroid Cancer*. This document and other information can be obtained by calling 1-800-227-2345 or visiting our website at www.cancer.org.

What is cancer?

The body is made up of trillions of living cells. Normal body cells grow, divide to make new cells, and die in an orderly way. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out, damaged, or dying cells.

Cancer begins when cells in a part of the body start to grow out of control. There are many kinds of cancer, but they all start because of this out-of-control growth of abnormal cells.

Cancer cell growth is different from normal cell growth. Instead of dying, cancer cells keep on growing and form new cancer cells. These cancer cells can grow into (invade) other tissues, something that normal cells cannot do. Being able to grow out of control and invade other tissues is what makes a cell a cancer cell.

In most cases the cancer cells form a tumor. But some cancers, like leukemia, rarely form tumors. Instead, these cancer cells are in the blood and bone marrow.

When cancer cells get into the bloodstream or lymph vessels, they can travel to other parts of the body. There they begin to grow and form new tumors that replace normal tissue. This process is called *metastasis*.

No matter where a cancer may spread, it is always named and treated based on the place where it started. For instance, breast cancer that has spread to the liver is still breast cancer, not liver cancer. Likewise, prostate cancer that has spread to the bone is still prostate cancer, not bone cancer.

Different types of cancer can behave very differently. For example, lung cancer and breast cancer are very different diseases. They grow at different rates and respond to different treatments. That is why people with cancer need treatment that is aimed at their own kind of cancer.

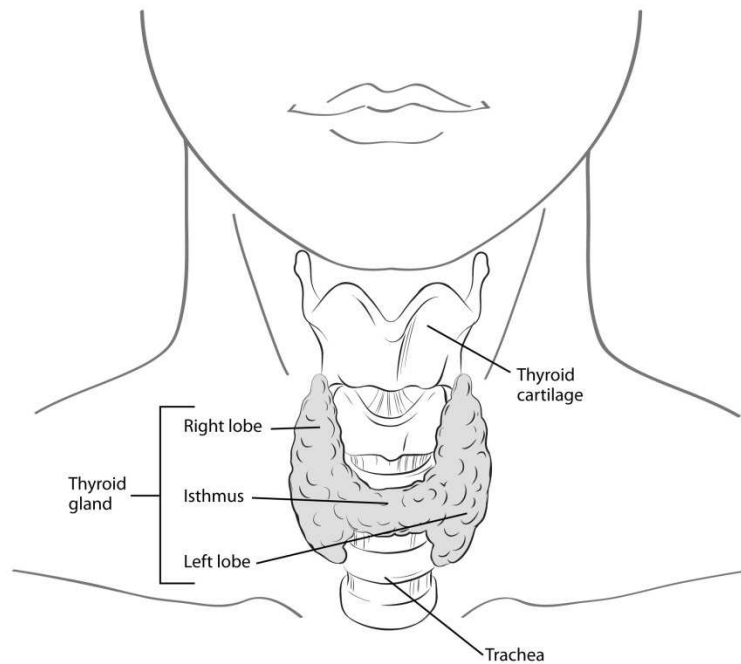
Not all tumors are cancerous. Tumors that aren't cancer are called *benign*. Benign tumors can cause problems – they can grow very large and press on healthy organs and tissues. But they cannot grow into other tissues. Because of this, they also can't spread to other parts of the body (metastasize). These tumors are almost never life threatening.

What is thyroid cancer?

Thyroid cancer is a cancer that starts in the thyroid gland. To understand thyroid cancer, it helps to know about the normal structure and function of the thyroid gland.

The thyroid gland

The thyroid gland is below the Adam's apple in the front part of the neck. It is butterfly shaped, with 2 lobes — the right lobe and the left lobe — joined by a narrow structure called the *isthmus* (see picture below).



The thyroid gland has 2 main types of cells:

- *Follicular cells* use iodine from the blood to make thyroid hormone, which helps control how the body uses energy.
- *C cells* (also called *parafollicular cells*) make calcitonin, a hormone that helps control how the body uses calcium.

Other, less common cells in the thyroid gland include immune system cells (lymphocytes) and supportive (stromal) cells.

Different cancers can start from each kind of cell. The type of cell where the cancer starts is important because it affects how serious the cancer is and what type of treatment is needed.

Many types of growths and tumors can start in the thyroid gland. Most are benign (non-cancerous) but some are malignant (cancerous), which means they can spread into nearby tissues and to other parts of the body. **The information here covers only cancerous tumors of the thyroid.**

Malignant (cancerous) thyroid tumors

There are several types of thyroid cancer.

Differentiated thyroid cancers

Most thyroid cancers are differentiated cancers. These cancers start in thyroid follicular cells. In these cancers, the cells look a lot like normal thyroid tissue when seen under a microscope.

Papillary thyroid cancer: About 8 of 10 thyroid cancers are papillary cancers. Most often they grow very slowly. Often they grow in only one lobe of the thyroid gland. Even though they grow slowly, they often spread to the lymph nodes in the neck. But most of the time, these cancers can be cured and are rarely fatal.

Follicular thyroid cancer: This is the next most common type of thyroid cancer. It is much less common than papillary thyroid cancer, making up about 1 out of 10 thyroid cancers. Follicular cancers usually stay in the thyroid gland. They usually don't spread to lymph nodes, but some can spread to other parts of the body, such as the lungs or bones. The outlook for follicular cancer may not be quite as good as that of papillary cancer, but it is still very good in most cases.

Hürthle cell cancer is a kind of follicular cancer. It accounts for a very small number of thyroid cancers. The outlook may not be as good as that of typical follicular cancer because this type is harder to find and treat.

Rarer types of thyroid cancers

These cancers occur less often than differentiated thyroid cancers.

Medullary thyroid cancer (MTC): This accounts for about 4% of thyroid cancers. It starts in the C cells of the thyroid gland. In some cases MTC can run in families. Sometimes these cancers can spread to other parts of the body even before a lump is found in the thyroid. The outlook for these cancers is not quite as good as that for differentiated thyroid cancers.

Anaplastic thyroid cancer: This is a rare type of thyroid cancer, making up about 2% of all thyroid cancers. This cancer is also called *undifferentiated* because the cancer cells do not look very much like normal thyroid cells under the microscope. It is a fast-growing cancer that often spreads quickly into the neck and to other parts of the body and is very hard to treat.

There are also other types of thyroid cancers that occur even more rarely. To learn more about rare types of thyroid cancers, see our more detailed document *Thyroid Cancer*.

The rest of this document only covers differentiated thyroid cancer.

How many people get thyroid cancer?

The American Cancer Society's estimates for thyroid cancer in the United States for 2015 are:

- About 62,450 new cases of thyroid cancer (47,230 in women, and 15,220 in men)
- About 1,950 deaths from thyroid cancer (1,080 women and 870 men)

Thyroid cancer is more often found in people at a younger age than most other adult cancers. Nearly 2 out of 3 cases are found in people younger than 55. About 2% of thyroid cancers occur in children and teens.

The death rate from thyroid cancer has been fairly stable for many years and remains very low compared with most other cancers. Statistics on survival rates for thyroid cancer are discussed in the section "Survival rates for thyroid cancer."

What are the risk factors for thyroid cancer?

While the exact cause of most thyroid cancers is not known, several risk factors have been linked to the disease. A risk factor is anything that affects a person's chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

But risk factors don't tell us everything. Having a risk factor, or even several risk factors, does not mean that you will get the disease. And many people who get the disease may have few or no known risk factors. Even if a person with thyroid cancer has a risk factor, it is very hard to know what part that risk factor might have played in the cancer.

Some of the risk factors that make a person more likely to develop thyroid cancer include:

- Gender - thyroid cancers are more common in women.

- Age - women are most likely to get it in their 40s or 50s, while men are more likely to get it in their 60s or 70s
- A diet low in iodine (this is rare in the United States)
- Radiation exposure – the risk is highest if exposure occurs in childhood
- Family history - having a parent, brother, sister, or child with thyroid cancer increases your risk of thyroid cancer.
- Certain genetic conditions

To learn more about these risk factors, please see our document *Thyroid Cancer*.

Can thyroid cancer be prevented?

Most people with thyroid cancer have no known risk factors that they can change, so there is no sure way to prevent most cases of this disease.

Radiation exposure, especially in childhood, is a known risk factor for thyroid cancer. Because of this, doctors no longer use radiation treatment for minor diseases. Imaging tests such as x-rays and CT scans also expose children to radiation, but at much lower doses. If there is an increased risk of thyroid cancer from these tests is likely to be small, but to be safe, children should not have these tests unless they are clearly needed..

Signs and symptoms of thyroid cancer

Thyroid cancer can cause any of these signs or symptoms:

- A lump in the neck, sometimes growing quickly
- Swelling in the neck
- Pain in the front of the neck, sometimes going up to the ears
- Hoarseness or other voice changes that do not go away
- Trouble swallowing
- Trouble breathing
- A constant cough that is not due to a cold
- A tumor in the thyroid seen on an imaging test

If you have any of these signs or symptoms, talk to your doctor right away. Many of these symptoms can be caused by other things. Thyroid lumps (nodules) are common and

are usually benign. Still, if you have any of these problems, see your doctor right away so the cause can be found and treated, if needed.

How is thyroid cancer found?

Many thyroid cancers can be found early. Some early thyroid cancers are found when patients see their doctors because of neck lumps or bumps they have noticed. If you have symptoms such as a lump or swelling in your neck, you should see your doctor right away.

Many thyroid cancers are found by the doctor during a routine checkup or when people have imaging tests (such as ultrasound or CT scans of the neck) for other health problems.

If you have any signs or symptoms that suggest you might have thyroid cancer, your doctor will take your history, examine you, and then order more tests.

Medical history and physical exam

Your doctor will take a medical history. You will be asked questions about your possible risk factors, symptoms, and any other health problems or concerns. If someone in your family has had thyroid cancer, tell your doctor, as you might be at high risk for this disease.

During the physical exam, your doctor will pay special attention to the size and firmness of your thyroid and any enlarged lymph nodes in your neck.

Imaging tests to look at the thyroid

If you have a lump in your thyroid, your doctor may order one or more of these tests

Ultrasound

Ultrasound uses sound waves to create pictures of parts of your body. For this test, a small wand is placed on the skin in front of your thyroid gland. It gives off sound waves and picks up the echoes as they bounce off the thyroid. The echoes are seen as a black and white image on a computer screen. No radiation is used in this test.

This test can help show if thyroid nodules are solid or filled with fluid. (Solid ones are more likely to be cancer.) It can also be used to help guide a biopsy needle into a nodule to take a sample. Ultrasound can also help show whether any nearby lymph nodes are enlarged because the thyroid cancer has spread.

Radioiodine scan

Radioiodine scans can be used to help find out if someone with a lump in the neck might have thyroid cancer. They are also often used in patients with differentiated thyroid cancer to help show if it has spread. (Medullary thyroid cancer cells do not take up iodine, so radioiodine scans are not used for this cancer.)

For this test, a small amount of radioactive iodine is swallowed as a pill or put into a vein. Over time, the iodine is absorbed by the thyroid cells. A special camera is used several hours later to see the radioactivity.

For a *thyroid scan*, the camera is placed in front of your neck to measure the amount of radiation in the gland. Abnormal areas of the thyroid that have less radioactivity than the surrounding tissue are called *cold nodules*, and areas that take up more radiation are called *hot nodules*. Hot nodules usually are not cancer, but cold nodules can be either benign or cancer. So this test by itself can't diagnose thyroid cancer.

After surgery for thyroid cancer, *whole-body radioiodine scans* are useful in looking to see if cancer has spread throughout the body.

Radioactive iodine can also be used to treat differentiated thyroid cancer, but it is given in much higher doses. This type of treatment is described in the section "Radioactive iodine treatment."

Biopsy

If imaging tests such as ultrasound and a radioiodine scan suggest that you could have thyroid cancer, you will need a biopsy to know for certain. For a biopsy, a sample of cells from the area of concern are removed and looked at under a microscope.

The most common type of biopsy to look for thyroid cancer is called a *fine needle aspiration* (FNA) biopsy. For this, the doctor puts a thin, hollow needle into the lump to draw out cells and a few drops of fluid. This type of biopsy can usually be done in your doctor's office or clinic. Before the biopsy, medicine may be used to numb the skin over the nodule. Sometimes ultrasound is used to help the doctor find the right place to put the needle.

Sometimes an FNA biopsy will need to be repeated because the samples didn't contain enough cells. Most FNA biopsies will show that the thyroid nodule is benign. Only about 1 out of every 20 biopsies will clearly show cancer.

Sometimes the doctor can't tell for certain that the cells are cancer just by how they look under the microscope and will need to do special tests to look for certain genes.

In some cases, another biopsy may be needed to get a better sample. This might include a biopsy using a larger needle or a surgical "open" biopsy to remove the nodule or a larger

part of the thyroid gland. This kind of biopsy is done in the hospital while you are in a deep sleep.

Imaging tests to look for spread of thyroid cancer

Imaging tests make pictures of the inside of your body. They may be done for a number of reasons:

- To find suspicious areas that might be cancer
- To learn how far cancer may have spread
- To help find out if treatment has been working

Chest x-ray

If you have thyroid cancer, your chest may be x-rayed to see if cancer has spread to your lungs.

Computed tomography (CT) scan

The CT scan is an x-ray test that gives detailed pictures of your body. The CT scan can help show the place and size of thyroid cancers and whether they have spread to nearby areas. A CT scan can also be used to look for spread into distant organs like the lungs.

A CT scanner has been described as a large donut, with a narrow table in the middle opening. You will need to lie still on the table while the scan is being done. CT scans take longer than regular x-rays, and you might feel a bit confined by the ring while the pictures are being taken.

Instead of taking one picture, like a regular x-ray, a CT scanner takes many pictures as it rotates around you while you lie on a table. A computer then combines these pictures.

Before the test, you may be asked to drink a contrast solution or receive an IV (intravenous) line through which a different contrast dye is put in. This helps better outline structures in your body. You might feel some flushing (a feeling of warmth). Some people are allergic and get hives. Rarely, more serious problems like trouble breathing or low blood pressure can happen. Be sure to tell the doctor if you have any allergies or have ever had any problems from contrast dye used for x-rays.

In some cases, a CT scan can be used to guide a biopsy needle right into a suspected area of cancer spread.

Because the CT contrast dye contains iodine, (which can cause problems with radioiodine scans described above), many doctors prefer MRI scans instead of CT scans.

Magnetic resonance imaging (MRI) scan

Like CT scans, MRI scans can be used to look for cancer in the thyroid or cancer that has spread to other parts of the body. But ultrasound is usually the first choice for looking at the thyroid. MRI scans are helpful in looking at the brain and spinal cord.

MRI scans use radio waves and strong magnets instead of x-rays. A contrast material is often put into a vein before the scan to better show the details.

MRI scans take longer than CT scans — often up to an hour. And you might have to lie inside a narrow tube, which can upset people who don't like enclosed spaces. Newer, more open MRI machines can sometimes be used instead. The machine also makes buzzing and clicking noises, so some centers provide earplugs to block it out.

PET (positron emission tomography) scan

For a PET scan, a kind of radioactive sugar is put into the blood. The amount used is very low. Because cancer cells in the body are growing quickly, they absorb more of the sugar than normal cells. After waiting about an hour, you lie on a table in the PET scanner for about 30 minutes while a special camera creates a picture of areas of radioactivity in the body.

This test can be very useful if your thyroid cancer is one that doesn't take up radioactive iodine. In this case, the PET scan may be able to tell whether the cancer has spread.

Some machines are able to do both a PET and CT scan at the same time. This lets the doctor see areas that "light up" on the PET scan in more detail.

Blood tests

Blood tests alone can't tell if a person has thyroid cancer. But they can help show if the thyroid is working as it should, which may help the doctor decide what other tests may be needed.

Thyroid tests

Your blood may be tested for levels of thyroid hormones (T3 and T4), thyroid-stimulating hormone (TSH), and thyroglobulin to see if the thyroid is working normally.

These tests can't tell if you have thyroid cancer, but they may be done during and after cancer treatment to check thyroid function or to help find out if the cancer may have returned.

Other blood tests

You may have other blood tests as well. If you are scheduled for surgery, tests will be done to check your blood cell counts, to look for bleeding problems, and to check your liver and kidney function.

Vocal cord exam

Thyroid tumors can sometimes affect the vocal cords. If you are going to have surgery to treat thyroid cancer, a vocal cord exam probably will be done ahead of time to see if the vocal cords are moving the way they should. For this exam, the doctor looks down the throat at the voice box with special mirrors or with a thin tube with a light and a lens on the end (a laryngoscope).

Staging of thyroid cancer

Staging is the process of finding out if and how far a cancer has spread. The stage of a cancer is important in choosing the best treatment. The stage can also help predict the patient's outlook (prognosis) and chance for a cure.

Staging is based on the results of the physical exam, biopsy, and imaging tests (ultrasound, radioiodine scan, CT scan, MRI, chest x-ray, and/or PET scan), which are described in the section "How is thyroid cancer found?"

The most common system used to describe the stages of thyroid cancer is the American Joint Committee on Cancer (AJCC) TNM system. The stages of thyroid cancer are usually labeled using Roman numerals I through IV (1-4). For most cancers, the lower the number, the less the cancer has spread. Unlike most other cancers, though, thyroid cancer staging also takes into account the patient's age. This means that a thyroid cancer can have a different stage depending on the age of the patient.

More information about the staging of thyroid cancer can be found in our more detailed document *Thyroid Cancer*.

Recurrent cancer

Cancer that comes back after treatment is called *recurrent* (or *relapsed*). If thyroid cancer returns it is usually in the neck, but it might come back in a different part of the body (for instance, lymph nodes, lungs, or bones). The stage assigned stays the same even if the disease recurs.

If you have any questions about the stage of your cancer or how it affects your treatment options, be sure to ask your doctor.

Survival rates for thyroid cancer

Some people with cancer may want to know the survival rates for their type of cancer. Others may not find the numbers helpful, or may even not want to know them. Whether or not you want to read about survival rates is up to you. If you do not want to read about the survival rates for thyroid cancer, skip to the next section.

The 5-year survival rate refers to the percentage of patients who live at least 5 years after their cancer is found. Of course, many people live much longer than 5 years (and many are cured).

Five-year *relative* survival rates compare the 5-year survival rate to what would be expected for people without cancer. This helps take into account deaths from causes other than cancer. This is a better way to see the impact that cancer can have on survival.

To get 5-year survival rates, doctors have to look at people who were treated at least 5 years ago. Improved treatments may result in a better outlook for people now being diagnosed with thyroid cancer.

The numbers were published in 2010 in the 7th edition of the AJCC Cancer Staging Manual. They are based on the stage of the cancer when the person is first diagnosed.

Papillary thyroid cancer*

Stage	5-Year Relative Survival Rate
I	Near 100%
II	Near 100%
III	93%
IV	51%

*Based on patients diagnosed 1998 to 1999

Follicular thyroid cancer*

Stage	5-Year Relative Survival Rate
I	Near 100%
II	Near 100%
III	71%
IV	50%

*Based on patients diagnosed 1998 to 1999

Numbers provide an overall picture, but keep in mind that every person is unique and that statistics can't predict exactly what will happen in your case. Talk with your cancer care team if you have questions about your own chances of a cure, or how long you might survive your cancer. They know your case best.

How is thyroid cancer treated?

This information represents the views of the doctors and nurses serving on the American Cancer Society's Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.

The treatment information in this document is not official policy of the Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor.

Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

About treatment

Depending on the type and stage of your thyroid cancer, you might need more than one type of treatment. Doctors on your cancer treatment team may include:

- A surgeon: a doctor who uses surgery to treat cancers or other problems

- An endocrinologist: a doctor who treats diseases in glands that secrete hormones
- A radiation oncologist: a doctor who uses radiation to treat cancer
- A medical oncologist: a doctor who uses chemotherapy and other medicines to treat cancer

Many other people may be part of your team as well, including physician assistants, nurse practitioners, nurses, psychologists, and social workers.

After thyroid cancer is found, your doctors will discuss your treatment options with you. It is a good idea to take time to think about each of them. In choosing a treatment plan, things to take into account include the type and stage of the cancer and your overall health. The treatment options for thyroid cancer might include:

- Surgery
- Radioactive iodine treatment
- Thyroid hormone treatment
- External beam radiation treatment
- Chemotherapy

The best approach often uses 2 or more of these methods.

Most thyroid cancers can be cured, especially if they have not spread to distant parts of the body. If a cure is not likely, the goal of treatment may be to remove or destroy as much of the cancer as possible and to keep it from growing, spreading, or coming back for as long as possible. Sometimes treatment is aimed at relieving symptoms such as pain or problems with breathing and swallowing. This treatment is called *palliative care*.

The next few sections describe the types of treatment used for thyroid cancers.

Surgery for thyroid cancer

Surgery is the main treatment for nearly every case of thyroid cancer, except for some anaplastic thyroid cancers. If thyroid cancer is found by a biopsy (fine needle aspiration), surgery to remove the tumor and all or part of the rest of the thyroid gland is most often done.

Lobectomy

In this operation, the lobe with the cancer is then removed, usually along with the small piece of the gland that acts as a bridge between the left and right lobes (the isthmus).

Lobectomy is sometimes used to treat thyroid cancers that are small and that show no signs of spreading beyond the thyroid gland. It is also sometimes used to diagnose thyroid cancer if a needle biopsy result doesn't provide a clear diagnosis.

Thyroidectomy

In this operation, the entire thyroid gland is removed. This is the most common surgery for thyroid cancer.

Lymph node removal

If the doctor suspects spread of the cancer to nearby lymph nodes in the neck, these will be removed at the same time surgery is done on the thyroid. Sometimes only one or two lymph nodes are enlarged and need to be removed, but more often, several lymph nodes near the thyroid are removed.

Risks and side effects of surgery

Patients who have thyroid surgery are often ready to leave the hospital the next day. Possible problems from thyroid surgery include:

- Hoarseness or loss of voice that may be short term or permanent.
- Damage to the parathyroid glands (small glands near the thyroid that help control blood calcium levels). This can lead to low blood calcium levels, causing muscle spasms and numbness and tingling feelings.
- A lot of bleeding or a major blood clot in the neck
- Wound infection

You will have a small scar across the front of your neck after surgery. This should become less visible over time as it heals.

Problems are less likely to happen when you have an experienced thyroid surgeon. Most doctors recommend that the operation be done by a surgeon experienced in treating thyroid cancer.

If most or all of your thyroid gland is removed, you will need to take daily thyroid hormone replacement pills.

For more about cancer surgery in general, see our document *A Guide to Cancer Surgery*.

Radioactive iodine treatment for thyroid cancer

The thyroid gland absorbs nearly all of the iodine in your body. When radioactive iodine (RAI), also known as radioiodine or I-131, is taken into the body as a liquid or capsules, it collects in thyroid cells (including cells from differentiated thyroid cancer) and kills them. RAI is a way to kill these cells, with little effect on the rest of the body.

This treatment can be used to destroy any thyroid tissue not removed by surgery or to treat some types of thyroid cancer that have spread to lymph nodes and other parts of the body.

Risks and side effects

Your body will give off radiation for some time after you have RAI treatment. How much will depend on the dose used. You might need to be in the hospital for a few days after treatment, staying in a special room to keep others from being exposed to radiation. Some people might not need to stay in the hospital. Once you are allowed to go home after treatment, you will be told how to protect others from radiation and how long you need to do this. These instructions may vary slightly by treatment center. Be sure you know what to do before you leave the hospital.

Short-term side effects of RAI treatment may include:

- Neck soreness and swelling
- Nausea and vomiting
- Salivary glands being tender and swollen
- Dry mouth
- Taste changes

Chewing gum or sucking on hard candy may help with salivary gland problems.

Longer term side effects can include

- Dry eyes because tear production is affected
- Lower sperm counts in men, or even being unable to father a child
- Irregular periods in women for up to a year after treatment
- Slightly higher risk of getting leukemia in the future.

Talk to your health care team if you have any questions about the possible risks and benefits of your treatment.

Thyroid hormone treatment

Taking daily pills of thyroid hormone can do 2 things:

- It can help maintain normal metabolism (use of energy).
- It can help stop any left behind cancer cells from growing.

After the thyroid has been removed, the body can no longer make the thyroid hormone it needs, so patients must take thyroid hormone pills to replace the loss of the natural hormone. Taking thyroid hormone may also help prevent some thyroid cancers from coming back.

Possible side effects

Taking higher than normal levels of thyroid hormone seems to have few short-term side effects, but some doctors have concerns about patients taking them for long periods of time. High levels of thyroid hormone can lead to heart rhythm problems. Over the long run, high doses of thyroid hormone can lead to weak bones. Because of this, high doses of thyroid hormone might be used only in people with cancers who are at high risk of the cancer coming back.

External beam radiation therapy for thyroid cancer

External beam radiation treatment uses high-energy rays to destroy cancer cells or slow their growth. A focused beam of radiation is given from a machine outside the body. This type of radiation treatment is not used much for cancers that take up iodine (that is, most papillary and follicular thyroid cancers), which are better treated with radioactive iodine (RAI).

Radiation is most often given 5 days a week for several weeks. The treatment itself is painless and is much like getting a regular x-ray. Each treatment lasts only a few minutes, although the setup time — getting you into place for treatment — usually takes longer.

Possible side effects

The main drawback of this treatment is that the radiation can destroy nearby healthy tissue along with the cancer cells. Some patients get skin changes like a sunburn, but this slowly fades away. Trouble swallowing, dry mouth, hoarseness, and fatigue are also possible side effects of radiation aimed at or near the thyroid.

To reduce the risk of side effects, doctors carefully figure out the exact dose needed and aim the beam as accurately as they can to hit the target.

To learn more about radiation therapy, see the “Radiation Therapy” section of our website, or our document *Understanding Radiation Therapy: A Guide for Patients and Families*.

Chemotherapy for thyroid cancer

Chemotherapy (chemo) uses anti-cancer drugs that are put into a vein or muscle, or are taken as a pill. Chemo drugs enter the bloodstream and go throughout the body to reach and destroy cancer cells.

Chemo seldom helps for most types of thyroid cancer, but fortunately it is not needed for most cancers. It is sometimes used for advanced cancers when other treatments are not working.

Possible side effects

Chemo drugs attack cells that are growing quickly, which is why they work against cancer cells. But other cells in the body also divide quickly. These cells are likely to be affected by chemo, which can lead to side effects.

These side effects depend on the type and dose of drugs given and the length of time they are taken. Common side effects of chemo include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Diarrhea
- Increased chance of infections (from having too few white blood cells)
- Easy bruising or bleeding (from having too few blood platelets)
- Fatigue (from having too few red blood cells)

These side effects are most often short-term and go away after treatment is finished. There are often ways to lessen these side effects.

Some chemo drugs may have other side effects that need to be watched. For instance, some drugs can affect heart function. Patients getting these drugs will get regular heart function tests like echocardiograms.

For more information about chemotherapy, see the “Chemotherapy” section of our website, or our document *A Guide to Chemotherapy*.

Clinical trials for thyroid cancer

You may have had to make a lot of decisions since you've been told you have cancer. One of the most important decisions you will make is deciding which treatment is best for you. You may have heard about clinical trials being done for your type of cancer. Or maybe someone on your health care team has mentioned a clinical trial to you.

Clinical trials are carefully controlled research studies that are done with patients who volunteer for them. They are done to get a closer look at promising new treatments or procedures.

If you would like to take part in a clinical trial, you should start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service for a list of clinical trials that meet your medical needs. You can reach this service at 1-800-303-5691 or on our website at www.cancer.org/clinicaltrials. You can also get a list of current clinical trials by calling the National Cancer Institute's Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237) or by visiting the NCI clinical trials website at www.cancer.gov/clinicaltrials.

There are requirements you must meet to take part in any clinical trial. If you do qualify for a clinical trial, it is up to you whether or not to enter (enroll in) it.

Clinical trials are one way to get state-of-the-art cancer treatment. Sometimes they may be the only way to get some newer treatments. They are also the only way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

You can get a lot more information on clinical trials in our document called *Clinical Trials: What You Need to Know*.

Complementary and alternative therapies for thyroid cancer

When you have cancer you are likely to hear about ways to treat your cancer or relieve symptoms that your doctor hasn't mentioned. Everyone from friends and family to Internet groups and websites may offer ideas for what might help you. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

What are complementary and alternative therapies?

It can be confusing because not everyone uses these terms the same way, and they are used to refer to many different methods. We use *complementary* to refer to treatments that are used *along with* your regular medical care. *Alternative* treatments are used *instead of* a doctor's medical treatment.

Complementary methods: Most complementary treatment methods are not offered as cures for cancer. Mainly, they are used to help you feel better. Some examples of

methods that are used along with regular treatment are meditation to reduce stress, acupuncture to help relieve pain, or peppermint tea to relieve nausea. Some complementary methods are known to help, while others have not been tested. Some have been proven not to be helpful, and a few might even be harmful.

Alternative treatments: Alternative treatments may be offered as cancer cures. These treatments have not been proven safe and effective in clinical trials. Some of these methods may be harmful, or have life-threatening side effects. But the biggest danger in most cases is that you may lose the chance to be helped by standard medical treatment. Delays or interruptions in your medical treatments may give the cancer more time to grow and make it less likely that treatment will help.

Finding out more

It is easy to see why people with cancer think about alternative methods. You want to do all you can to fight the cancer, and the idea of a treatment with few or no side effects sounds great. Sometimes medical treatments like chemo can be hard to take, or they may no longer be working. But the truth is that most of these alternative methods have not been tested and proven to work in treating cancer.

As you think about your options, here are 3 important steps you can take:

- Look for “red flags” that suggest fraud. Does the method promise to cure all or most cancers? Are you told not to have regular medical treatments? Is the treatment a “secret” that requires you to visit certain providers or travel to another country?
- Talk to your doctor or nurse about any method you are thinking of using.
- Contact us at 1-800-227-2345 or see the “Complementary and Alternative Medicine” section of our website to learn more about complementary and alternative methods in general and to find out about the specific methods you are looking at.

The choice is yours

Decisions about how to treat or manage your cancer are always yours to make. If you want to use a non-standard treatment, learn all you can about the method and talk to your doctor about it. With good information and the support of your healthcare team, you might be able to safely use the methods that can help you while avoiding those that could be harmful.

Some questions to ask your doctor about thyroid cancer

As you cope with cancer and cancer treatment, you need to have honest, open talks with your doctor. You should feel free to ask any question, no matter how small it might seem. Here are some questions you might want to ask. Be sure to add your own questions as you think of them. Nurses, social workers, and other members of the treatment team may also be able to answer many of your questions.

- What kind of thyroid cancer do I have?
- Has my cancer spread beyond the thyroid gland?
- What is the stage of my thyroid cancer, and what does this mean?
- Are there other tests that need to be done before we decide on treatment?
- Is this form of thyroid cancer hereditary? Should my family be tested?
- Are there other doctors I need to see?
- How much experience do you have treating this type of cancer?
- How much surgery do I need? Should I get other treatments as well?
- What other treatment choices do I have?
- What should I do to be ready for treatment?
- What are the risks and possible side effects of treatment?
- Will I need to take thyroid hormone for the rest of my life?
- How long will treatment last? What will it involve? Where will it be done?
- When can I go back to my normal activities after treatment?
- Will this treatment affect my ability to have children? Do I need to avoid pregnancy for a while?
- What are the chances that my cancer will come back after treatment?
- What would we do if the treatment doesn't work or if the cancer recurs?
- What type of follow-up will I need after treatment?

No doubt you will have other questions. Be sure to write them down so that you remember to ask them during each visit with your cancer care team. For example, you might want to ask about getting a second opinion or about clinical trials for your cancer.

Moving on after treatment for thyroid cancer

For many people with thyroid cancer, treatment may remove or destroy the cancer. Completing treatment can be both stressful and exciting. You may be relieved to finish treatment, but find it hard not to worry about cancer growing or coming back. (When cancer comes back after treatment, it is called *recurrence*.) This is a very common concern in people who have had cancer.

It may take a while before your fears lessen. But it may help to know that many cancer survivors have learned to live with this uncertainty and are leading full lives. Our document *Living With Uncertainty: The Fear of Cancer Recurrence* gives more detailed information on this.

For some people, thyroid cancer may never go away completely. These people may get regular treatments with chemo, radiation, or other treatments to help keep the cancer in check. Learning to live with cancer as a more of a chronic disease can be hard and very stressful. It has its own type of uncertainty. Our document *When Cancer Doesn't Go Away* talks more about this

Follow-up care

If you have finished treatment, your doctors will still want to watch you closely. It is very important to go to all follow-up visits. During these visits, your doctors will ask about symptoms, do an exam, and might order blood tests or tests such as radioiodine scans or ultrasounds. Follow-up is needed to check for cancer coming back or spreading, as well as possible side effects of certain treatments. This is the time for you to ask your health care team any questions or concerns you have.

Most people do very well after treatment, but follow-up care can go on for a lifetime. This is very important since most thyroid cancers grow slowly and can come back even 10 to 20 years after the first treatment. Your health care team will explain what tests you need and how often they should be done.

Each type of treatment for thyroid cancer has side effects that may last for a few months. Some, like the need for thyroid hormone pills, may last your lifetime. You may be able to speed your recovery by being aware of the side effects before you start treatment. You might be able to take steps to reduce them and shorten the length of time they last. Be sure to tell your cancer care team about any symptoms or side effects that bother you so they can help you manage them.

Seeing a new doctor

At some point after your cancer is found and treated, you may find yourself seeing a new doctor who does not know about your cancer. You need to be able to give your new doctor the exact details of your cancer and treatment. Gathering these details soon after treatment might be easier than trying to get them at some point in the future. Make sure you have this information handy and always keep copies for yourself:

- Copies of your pathology reports from any biopsies or surgeries
- Copies of imaging tests (CT or MRI scans, etc.), which can usually be stored on a CD, DVD, etc.
- If you had surgery, a copy of your operative report
- If you stayed in the hospital, a copy of the discharge summary that doctors prepare when patients are sent home
- If you had radiation treatment, a summary of the type and dose of radiation and when and where it was given
- If you had chemo, a list of the drugs, drug doses, and when you took them

It is also important to keep health insurance. Tests and doctor visits cost a lot, and even though no one wants to think of their cancer coming back, this could happen.

Lifestyle changes after thyroid cancer

You can't change the fact that you have had cancer. What you can change is how you live the rest of your life — making choices to help you stay healthy and feel as well as you can. This can be a time to look at your life in new ways. Maybe you are thinking about how to improve your health over the long term. Some people even start during cancer treatment.

Make healthier choices

For many people, finding out they have cancer helps them focus on their health in ways they may not have thought much about in the past. Are there things you could do that might make you healthier? Maybe you could try to eat better or get more exercise. Maybe you could cut down on alcohol, or give up tobacco. Even things like keeping your stress level under control might help. Now is a good time to think about making changes that can have positive effects for the rest of your life. You will feel better and you will also be healthier.

You can start by working on those things that worry you most. Get help with those that are harder for you. For instance, if you are thinking about quitting smoking and need

help, call the American Cancer Society at 1-800-227-2345. A tobacco cessation and coaching service can help increase your chances of quitting for good.

Eating better

Eating right can be hard for anyone, but it can get even tougher during and after cancer treatment. Treatment may change your sense of taste. Nausea can be a problem. You may not feel like eating and lose weight when you don't want to. Or you may have gained weight that you can't seem to lose. All of these things can be very hard to deal with.

If treatment caused weight changes or eating or taste problems, do the best you can and keep in mind that these problems usually get better over time. You may find it helps to eat small portions every few hours until you feel better. You might also want to ask your cancer team about seeing a dietitian, an expert in nutrition who can give you ideas on how to deal with these treatment side effects.

One of the best things you can do after cancer treatment is put healthy eating habits into place. You may be surprised at the long-term benefits of some simple changes, like increasing the variety of healthy foods you eat. Getting to and staying at a healthy weight, eating a healthy diet, and limiting your alcohol intake may lower your risk for a number of types of cancer, as well as having many other health benefits. You can get more information in our document *Nutrition and Physical Activity During and After Cancer Treatment: Answers to Common Questions*.

Rest, fatigue, and exercise

Feeling tired (fatigue) is a very common problem during and after cancer treatment. This is not a normal type of tiredness but a bone-weary exhaustion that doesn't get better with rest. For some people, fatigue lasts a long time after treatment and can keep them from staying active. But exercise can in fact help reduce fatigue and the sense of depression that sometimes comes with feeling so tired.

If you are very tired, though, you will need to balance activity with rest. It is OK to rest when you need to. To learn more about fatigue, please see our documents *Fatigue in People With Cancer* and *Anemia in People With Cancer*.

If you were very ill or weren't able to do much during treatment, it is normal that your fitness, staying power, and muscle strength declined. You need to find an exercise plan that fits your own needs. Talk with your healthcare team before starting. Get their input on your exercise plans. Then try to get an exercise buddy so that you're not doing it alone.

Exercise can improve your physical and emotional health.

- It improves your cardiovascular (heart and circulation) fitness.

- Along with a good diet, it will help you get to and stay at a healthy weight.
- It makes your muscles stronger.
- It helps with fatigue and helps you have more energy.
- It can help lower anxiety and depression.
- It can make you feel generally happier.
- It helps you feel better about yourself.

Long term, we know that getting regular physical activity helps lower the risk of some cancers, as well as having other health benefits.

How about your emotional health after thyroid cancer?

During and after treatment, you may find yourself overcome with many different emotions. This happens to a lot of people.

You may find yourself thinking about death and dying. Or maybe you're more aware of the effect the cancer has on your family, friends, and career. You may take a new look at your relationships with those around you. Other issues may also cause concern. For instance, you might see your health care team less often after treatment and have more time on your hands. These changes can make some people anxious.

This is a good time to look for emotional and social support. You need people you can turn to. Support can come in many forms: family, friends, cancer support groups, church or spiritual groups, online support communities, or private counselors.

The cancer journey can feel very lonely. You don't need to go it alone. Your friends and family may feel shut out if you decide not to include them. Let them in – and let in anyone else who you feel may help. If you aren't sure who can help, call your American Cancer Society at 1-800-227-2345 and we can put you in touch with a group or resource that may work for you. You can also read our document *Distress in People with Cancer* or see the "Emotional Side Effects" section of our website for more information.

If treatment for thyroid cancer stops working

When a person has had many different treatments and the cancer has not been cured, over time the cancer tends to resist all treatment. At this time you may have to weigh the possible benefits of a new treatment against the downsides, like treatment side effects and clinic visits.

This is likely to be the hardest time in your battle with cancer – when you have tried everything within reason and it's just not working anymore. Your doctor may offer you

new treatment, but you will need to talk about whether the treatment is likely to improve your health or change your outlook for survival, as well as its risks and side effects.

No matter what you decide to do, it is important for you to feel as good as possible. Make sure you are asking for and getting treatment for pain, nausea, or any other problems you may have. This type of treatment is called *palliative care*. It helps relieve symptoms but is not meant to cure the cancer.

At some point you may want to think about hospice care. Most of the time this is given at home. Your cancer may be causing symptoms or problems that need to be treated. Hospice focuses on your comfort. You should know that having hospice care doesn't mean you can't have treatment for the problems caused by your cancer or other health issues. It just means that the purpose of your care is to help you live life as fully as possible and to feel as well as you can. You can learn more about this in our document, *Hospice Care*.

Staying hopeful is important, too. Your hope for a cure may not be as bright, but there is still hope for good times with family and friends – times that are filled with happiness and meaning. Pausing at this time in your cancer treatment gives you a chance to focus on the most important things in your life. Now is the time to do some things you've always wanted to do and to stop doing the things you no longer want to do. Though the cancer may be beyond your control, there are still choices you can make.

What's new in thyroid cancer research?

Research into thyroid cancer is being done right now in many hospitals, medical centers, and other places around the country. Each year, scientists find out more about what causes the disease, how to prevent it, and how to improve treatment.

Genetics

Progress in understanding the abnormal genes that cause sporadic (not inherited) thyroid cancer may lead to better treatments.

Treatment

Most thyroid cancers can be cured. But advanced cancers can be hard to treat, especially if they do not respond to radioactive iodine therapy. Doctors and researchers are looking for better and safer ways to treat thyroid cancer.

Surgery

Surgery is often an effective treatment for most thyroid cancers without causing major side effects.

Some people who have thyroid surgery are bothered by the scar it leaves on the neck. Newer approaches to surgery may help with this. For example, doctors are now looking at doing surgery through smaller cuts in the neck, or even cuts under the arm.

Radioactive iodine (RAI) treatment

Doctors are looking for better ways to see which patients are likely to have their cancers come back after surgery. These patients may be helped by getting RAI treatment after surgery.

Researchers are also looking for ways to make RAI effective against more thyroid cancers. For example, doctors are studying whether some newer drugs can be used to make thyroid cancer cells more likely to take up radioactive iodine.

Chemo

Some studies are testing the value of chemo drugs like paclitaxel (Taxol[®]) and other drugs, as well as using chemo and radiation together in treating anaplastic thyroid cancer.

Targeted drugs

Most thyroid cancers do not respond well to chemo. But unlike standard chemo drugs, targeted drugs attack certain targets on cancer cells. Targeted drugs might work in some cases when standard chemo drugs do not, and they often have different (and less severe) side effects.

Tyrosine kinase inhibitors: A class of targeted drugs known as *tyrosine kinase inhibitors* (TKIs) may help treat thyroid cancer cells with changes in certain genes. Many of these drugs also keep new blood vessels from forming (see below).

Many papillary thyroid cancers have changes in the *BRAF* gene, which helps them grow. Drugs that target cells with *BRAF* gene changes are now being studied in thyroid cancers with this gene change.

Some TKIs are already approved to treat other types of cancer, and may be useful against differentiated thyroid cancers if other treatments are no longer working.

Anti-angiogenesis drugs: As tumors grow, they need a larger blood supply to get enough nutrients. They get it by causing new blood vessels to form (a process called *angiogenesis*). Anti-angiogenesis drugs work by blocking these new blood vessels.

Some of the TKIs have anti-angiogenic properties. Other anti-angiogenesis drugs, such as bevacizumab (Avastin), are also being studied.

More information about thyroid cancer

From your American Cancer Society

Here is more information you might find helpful. You also can order free copies of our documents from our toll-free number, 1-800-227-2345, or read them on our website, www.cancer.org.

Dealing with diagnosis and treatment

Health Professionals Associated With Cancer Care

Talking With Your Doctor (also in Spanish)

After Diagnosis: A Guide for Patients and Families (also in Spanish)

Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families (also in Spanish)

Coping With Cancer in Everyday Life (also in Spanish)

Family and caregiver concerns

Talking With Friends and Relatives About Your Cancer (also in Spanish)

Helping Children When A Family Member Has Cancer: Dealing With Diagnosis (also in Spanish)

What It Takes to Be a Caregiver

Insurance and financial issues

In Treatment: Financial Guidance for Cancer Survivors and Their Families (also in Spanish)

Health Insurance and Financial Assistance for the Cancer Patient (also in Spanish)

More on cancer treatments

A Guide to Cancer Surgery (also in Spanish)

A Guide to Chemotherapy (also in Spanish)

Understanding Radiation Therapy: A Guide for Patients and Families (also in Spanish)

Cancer treatment side effects

Caring for the Patient With Cancer at Home: A Guide for Patients and Families (also in Spanish)

Distress in People With Cancer

Anxiety, Fear, and Depression

Nausea and Vomiting

Guide to Controlling Cancer Pain (also in Spanish)

Get Relief From Cancer Pain

Pain Diary

Anemia in People With Cancer

Fatigue in People With Cancer

Books

Your American Cancer Society also has books that you might find helpful. Call us at 1-800-227-2345 or visit our bookstore online at cancer.org/bookstore to find out about costs or to place an order.

National organizations and websites*

Along with the American Cancer Society, other sources of information and support include:

The American Thyroid Association

Toll-free number: 1-800-THYROID (1-800-849-7643)

Website: www.thyroid.org

Provides patient information on diseases that affect the thyroid gland, including cancer, a list of patient support organizations, and a thyroid specialist locator

National Cancer Institute

Toll-free number: 1-800-4-CANCER (1-800-422-6237)

TTY: 1-800-332-8615

Website: www.cancer.gov

Their “Cancer Information Service” offers a wide variety of free, accurate, up-to-date information about cancer to patients, their families, and the general public; also can help people find clinical trials in their area.

ThyCa: Thyroid Cancer Survivors’ Association, Inc.

Toll-free number: 1-877-588-7904

Website: www.thyca.org

For information and education on thyroid cancer types; a directory of local ThyCa thyroid cancer support group meetings coast-to-coast; the ThyCa Person-to-Person Network, which matches thyroid cancer patients with survivors of the same type of thyroid cancer for emotional and psychological support; 10 email support groups for different thyroid cancer types and situations; as well as free regional workshops

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at 1-800-227-2345 or visit www.cancer.org.

Last Medical Review: 2/27/2014

Last Revised: 2/27/2014

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For additional assistance please contact your American Cancer Society
1-800-227-2345 or www.cancer.org