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About Lung Carcinoid Tumors

Overview and Types

If you have been diagnosed with a lung carcinoid tumor or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Are Lung Carcinoid Tumors?](#)

Research and Statistics

See the latest estimates for new cases of lung carcinoid tumors and deaths in the US and what research is currently being done.

- [Key Statistics for Lung Carcinoid Tumor](#)
 - [What's New in Lung Carcinoid Tumor Research?](#)
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What Are Lung Carcinoid Tumors?

Lung carcinoid tumors (also known as *lung carcinoids*) are a type of lung cancer. Cancer starts when cells begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas. (To learn more about how cancers start and spread, see [What Is Cancer?](#))¹

Lung carcinoid tumors are uncommon and tend to grow slower than other types of lung cancers.

Where lung carcinoid tumors start

Lung carcinoid tumors start in neuroendocrine cells, a special kind of cell found in the lungs. Neuroendocrine cells are also found in other areas of the body, but only cancers that form from neuroendocrine cells in the lungs are called lung carcinoid tumors.

The neuroendocrine system

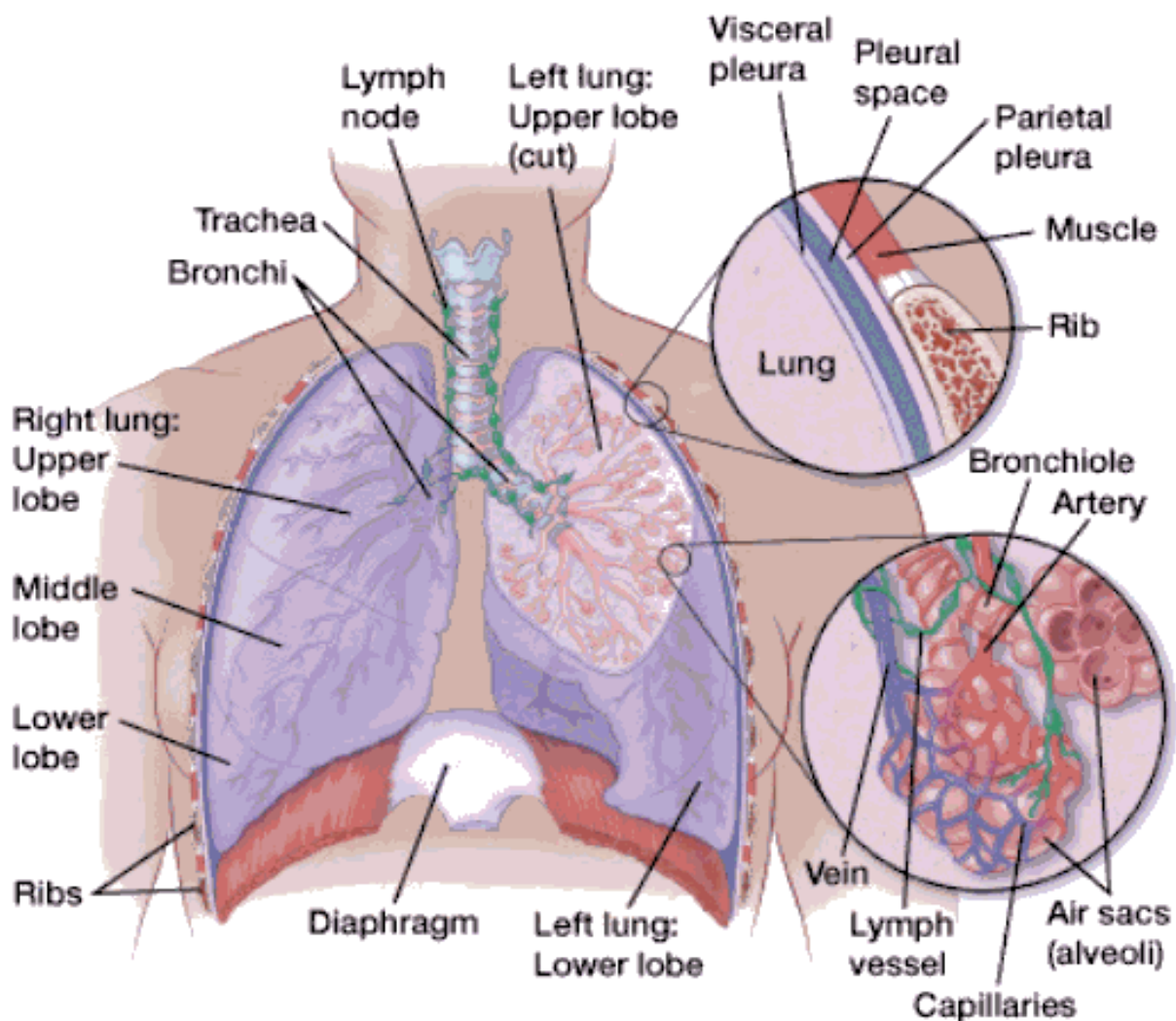
Neuroendocrine cells are like nerve cells in some way, and like hormone-making endocrine cells in other ways. They make hormones like adrenaline and similar substances. Cells in this system don't form actual organs. Instead they are scattered throughout the body in organs like the lungs, stomach, and intestines.

Neuroendocrine cells in the lungs can have several different functions. They may:

- Help control air flow and blood flow in the lungs
- Help control the growth of other types of lung cells
- Detect the levels of oxygen and carbon dioxide in the air we breathe and then release chemical messages to help the lungs adjust to these changes. (People who live at higher altitudes have more lung neuroendocrine cells, probably because there is less oxygen in the air they breathe.)

The lungs

Lung carcinoid tumors start in the lungs – 2 sponge-like organs in your chest. Their main functions are to take in oxygen and get rid of carbon dioxide.



Your right lung has 3 sections, called *lobes*. The left lung has 2 lobes. It is smaller because the heart takes up room on that side of the body.

When you breathe in, air enters through your mouth and nose and goes into your lungs through the *trachea* (windpipe). The trachea divides into tubes called the *bronchi* (singular, *bronchus*), which enter the lungs and divide into smaller branches called the *bronchioles*. At the end of the bronchioles are tiny air sacs known as *alveoli*. Many tiny blood vessels run through the alveoli. They absorb oxygen from the inhaled air into your bloodstream and pass carbon dioxide (a waste product from the body) into the alveoli where it is expelled from the body when you exhale.

A thin lining called the *pleura* surrounds the lungs. The pleura protects your lungs and helps them slide back and forth as they expand and contract during breathing. The space inside the chest that contains the lungs is called the *pleural space* (or *pleural*

cavity).

Below the lungs, a thin, dome-shaped muscle called the *diaphragm* separates the chest from the abdomen. When you breathe, the diaphragm moves up and down, forcing air in and out of the lungs.

Carcinoid tumors are sometimes classified by where they form in the lung. The tumor's location is important because it can affect which symptoms a patient has and how the tumor is treated.

- **Central carcinoids** form in the walls of large airways (bronchi) near the center of the lungs. Most lung carcinoid tumors are central carcinoids, and nearly all are typical carcinoids. (See types of lung carcinoid tumors below.)
- **Peripheral carcinoids** develop in the smaller airways (bronchioles) toward the outer edges of the lungs. Most peripheral carcinoids are typical carcinoids. (See below.)

Types of lung carcinoid tumors

Lung carcinoid tumors are a type of neuroendocrine tumor. Neuroendocrine tumors are more common in the digestive system (see [Gastrointestinal Carcinoid²Tumors³](#) and [Pancreatic Cancer⁴](#)), but the second most common place is in the lungs.

There are 2 types of lung carcinoid tumors:

- **Typical carcinoids** tend to grow slowly and rarely spread beyond the lungs. About 9 out of 10 lung carcinoids are typical carcinoids. They also do not seem to be linked with smoking.
- **Atypical carcinoids** grow a little faster and are somewhat more likely to spread to other organs. They have more cells that are dividing and look more like a fast-growing tumor. They are much less common than typical carcinoids and may be found more often in people who smoke.

In addition to lung carcinoid tumors, there are other types of neuroendocrine tumors that start in the lungs: small cell lung cancer and large cell neuroendocrine carcinoma, which is a type of non-small cell lung cancer. These lung cancers are treated differently, so it's important to know exactly what type you have. (See [Small Cell Lung Cancer⁵](#) and [Non-Small Cell Lung Cancer⁶](#).)

Hyperlinks

1. www.cancer.org/cancer/cancer-basics/what-is-cancer.html
2. www.cancer.org/cancer/gastrointestinal-carcinoid-tumor.html
3. www.cancer.org/cancer/gastrointestinal-carcinoid-tumor.html
4. [/content/cancer/en/cancer/pancreaticcancer/detailedguide/pancreatic-cancer-detailed-guide-toc.html](http://content.cancer/en/cancer/pancreaticcancer/detailedguide/pancreatic-cancer-detailed-guide-toc.html)
5. www.cancer.org/cancer/small-cell-lung-cancer.html
6. www.cancer.org/cancer/non-small-cell-lung-cancer.html

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Key Statistics for Lung Carcinoid Tumor

About 1% to 2% of all lung cancers are carcinoids. This means there are about 2,000 to 4,000 newly diagnosed lung carcinoid tumors in the United States each year.

Carcinoid tumors actually develop more often in the digestive tract than in the lungs. Only about 2 out of 10 carcinoid tumors start in the lungs.

Lung carcinoids tend to be diagnosed in people who are slightly younger than the typical age of people with other types of lung cancer. The average age at diagnosis is around 45 years for typical carcinoids and 55 years for atypical carcinoids.

Information on survival rates for lung carcinoids can be found in [Survival Rates for Lung Carcinoid Tumors](#)¹.

Visit the American Cancer Society's [Cancer Statistics Center](#)² for more key statistics.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/detection-diagnosis-staging/survival-rates.html
2. <http://cancerstatisticscenter.cancer.org/>

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American Cancer Society. *Cancer Facts & Figures 2019*. Atlanta: American Cancer Society; 2019.

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What's New in Lung Carcinoid Tumor Research?

Many medical centers around the world are researching the causes and treatment of lung carcinoid tumors. This disease is challenging to study because it is not common. But each year, scientists find out more about what causes the disease and how to improve treatment.

Genetics

Researchers have made great progress in understanding how certain changes in the DNA inside normal cells can cause them to become cancerous. DNA is the molecule that carries the instructions for nearly everything our cells do. We usually look like our parents because they are the source of our DNA. But DNA affects more than how we look.

Some genes (parts of our DNA) contain instructions for controlling when our cells grow and divide into new cells. Certain genes that cause cells to grow, divide, and stay alive are called *oncogenes*. Others that slow down cell division or cause cells to die at the right time are called *tumor suppressor genes*. Cancers can be caused by DNA changes that turn on oncogenes or turn off tumor suppressor genes.

Researchers have found many DNA changes in lung carcinoid cells in the past few years. The hope is that continued research in understanding these changes will lead to new tests for earlier diagnosis and new drugs for more effective treatment.

Diagnosis

Because the outlook and treatment of lung carcinoids and other types of lung cancer are very different, it's important to be able to tell these cancers apart as soon as possible. Researchers have made great progress in developing tests that can detect specific substances found in the cells of carcinoid tumors but not other lung cancers. Most of these tests treat tissue samples with special man-made antibodies in the lab. The antibodies are designed to recognize specific substances in certain types of tumors.

Treatment

Doctors are learning how to treat lung carcinoids more effectively. For example, newer surgical techniques allow doctors to remove parts of the lung through smaller incisions, which can result in shorter hospital stays and less pain for patients. And new radiation therapy techniques help doctors focus the radiation more precisely on tumors, lowering the amount of radiation that normal tissues get and reducing side effects.

Carcinoid tumors that have spread remain hard to treat. Most carcinoid tumors grow fairly slowly. Because standard chemotherapy drugs work by attacking quickly growing cells, they are not very effective against carcinoid tumors.

Newer drugs called *targeted therapies* may prove to be more effective against carcinoids. Targeted therapies attack the parts of cancer cells that make them different from normal, healthy cells. Each type of targeted therapy works differently, but they alter the way a cancer cell grows, divides, repairs itself, or interacts with other cells in some way.

The targeted therapy drug sunitinib (Sutent[®]) has been shown to be helpful in treating neuroendocrine tumors that start in the pancreas. More studies of this drug in carcinoid tumors (including lung carcinoid) are in progress.

Targeted drugs called *angiogenesis inhibitors* affect the growth of new blood vessels, which tumors need to grow larger. Some of these drugs are already used to treat other types of cancer and are now being studied for use against carcinoid tumors. Examples of these drugs include bevacizumab (Avastin[®]), pazopanib (Votrient[®]), axitinib (Inlyta[®]), and cabozantinib (Cometriq[®]).

Researchers are also trying to improve upon drugs related to somatostatin, which help some people with carcinoid tumors. An example is pasireotide (Signifor[®]), which may prove to be more potent than current drugs such as octreotide and lanreotide. Another new approach is to pair drugs similar to octreotide with a radioactive atom. These drugs are like those used for some radionuclide scans, but the radiation is stronger. The drugs bind to the carcinoid cells, delivering radiation to those cells and limiting the effects on normal cells. In early studies, this type of treatment has helped some patients with advanced carcinoid tumors that were no longer responding to other treatments, but more studies of these new drugs are needed.

These and other new drugs are now being studied in [clinical trials](#)¹.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html

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Lung Carcinoid Tumor Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for lung carcinoid tumors.

- [Risk Factors for Lung Carcinoid Tumors](#)
- [What Causes Lung Carcinoid Tumors?](#)

Prevention

There is no way to completely prevent cancer. But there are things you can do that might lower your risk. Learn more.

- [Can Lung Carcinoid Tumors Be Prevented?](#)

Risk Factors for Lung Carcinoid Tumors

A risk factor is anything that affects your 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 having a known risk factor, or even several risk factors, does not mean that you will

get the disease. And some people who get the disease may have few or no known risk factors.

Not much is known about why lung carcinoid tumors develop in some people but not in others. Risk factors for lung carcinoid tumors include:

Gender

Lung carcinoids occur more often in women than in men. The reasons for this are not known.

Race/ethnicity

Lung carcinoids are more common in whites than in African Americans, Asian Americans, or Hispanics/Latinos.

Age

These tumors are usually found in people about 45-55 years old, which is slightly younger than the average age for other types of lung cancer. But carcinoids can occur in people of almost any age, including children and adolescents.

Multiple endocrine neoplasia type 1

People with multiple endocrine neoplasia type 1 (MEN1), an inherited syndrome, are at high risk for tumors in certain endocrine organs, such as the pancreas and the pituitary and parathyroid glands. These people also seem to be at increased risk for lung carcinoid tumors.

Family history

Most people with lung carcinoid tumors do not have a family history of this type of cancer, but having others in your family who had lung carcinoid tumors can increase your risk. In rare cases, several family members have been diagnosed with this cancer. The overall risk is still low because this cancer is so uncommon.

Tobacco smoke

Typical lung carcinoid tumors do not seem to be linked with [smoking](#)¹ or with any known chemicals in the environment or workplace. But some studies have found that atypical lung carcinoids may be more common in people who smoke.

Hyperlinks

1. www.cancer.org/cancer/cancer-causes/tobacco-and-cancer.html

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What Causes Lung Carcinoid Tumors?

Not much is known about what causes lung carcinoid tumors. Researchers have learned a lot about how certain risk factors like cancer-causing chemicals or radiation can cause changes in lung cells that lead to carcinomas, the more common type of lung cancer. But these factors are not thought to play a large role in the development of lung carcinoid tumors.

Carcinoid tumors probably develop from tiny clusters of neuroendocrine cells called *carcinoid tumorlets* in the lung airways. Tumorlets are sometimes found unexpectedly in

lung biopsies done to treat or diagnose other conditions. In the lab, tumorlets resemble carcinoid tumors, except that they are much smaller – less than 5 mm (about ¼ inch) across. Most tumorlets never grow any bigger, but some may eventually become carcinoid tumors.

If tumorlets are found throughout the lung along with an overgrowth of neuroendocrine cells, this is called diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH). If DIPNECH is found on a biopsy sample this may mean a lung carcinoid might develop, but lung carcinoids can also develop without DIPNECH being present.

Researchers have found some common changes in chromosomes and genes inside lung carcinoid tumor cells, which might affect how these cells function. But it is still not clear exactly how these changes cause carcinoid tumorlets to develop from lung neuroendocrine cells or how they might cause tumorlets to grow and become carcinoid tumors.

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Can Lung Carcinoid Tumors Be

Prevented?

Because we do not yet know [what causes most lung carcinoid tumors](#), it is not possible to know how to prevent them.

Smoking has been linked with an increased risk of atypical carcinoids in some studies, so [quitting](#)¹ (or not starting) might reduce a person's risk.

Hyperlinks

1. www.cancer.org/healthy/stay-away-from-tobacco.html

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Thomas CF, Jett JR, Strosberg JR. Lung neuroendocrine (carcinoid) tumors: Epidemiology, risk factors, classification, histology, diagnosis, and staging. UpToDate website. <https://www.uptodate.com/contents/lung-neuroendocrine-carcinoid-tumors-epidemiology-risk-factors-classification-histology-diagnosis-and-staging>. Updated Feb. 26, 2018. Accessed July 9, 2018.

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Lung Carcinoid Tumor Early Detection, Diagnosis, and Staging

Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- [Can Lung Carcinoid Tumors Be Found Early?](#)
- [Signs and Symptoms of Lung Carcinoid Tumors](#)
- [Tests for Lung Carcinoid Tumors](#)
- [Understanding Your Pathology Report¹](#)

Stages of Lung Carcinoid Tumors

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- [Lung Carcinoid Tumor Stages](#)

Outlook (Prognosis)

Doctors often use survival rates as a standard way of discussing a person's outlook (prognosis). These numbers can't tell you how long you will live, but they might help you better understand your prognosis. Some people want to know the survival statistics for people in similar situations, while others might not find the numbers helpful, or might even not want to know them.

- [Survival Rates for Lung Carcinoid Tumors](#)

Questions to Ask About Lung Carcinoid Tumors

Here are some questions you can ask your cancer care team to help you better understand your cancer diagnosis and treatment options.

- [Questions to Ask Your Doctor About Lung Carcinoid Tumors](#)

Can Lung Carcinoid Tumors Be Found Early?

Screening is the use of tests or exams to find a disease in people who don't have symptoms. Lung carcinoid tumors are not common, and there are no widely recommended screening tests for these tumors in most people.

People with multiple endocrine neoplasia type 1 (MEN1) are at increased risk for these tumors, and some doctors recommend they have CT scans of the chest every 2-5 years.

Carcinoid tumors usually grow and spread slowly, so most are found at an early or localized stage, even if they have been causing [symptoms](#) for some time.

However, many people with peripheral carcinoid tumors or small central carcinoid tumors have no symptoms. Carcinoids that are not causing symptoms are often found when a chest x-ray or CT scan done for other reasons.

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Signs and Symptoms of Lung Carcinoid Tumors

About 2 out of 3 people with carcinoid tumors will have signs or symptoms that will lead to the diagnosis of the disease. But because carcinoids tend to grow slowly, they may not cause symptoms for several years in some people, or they may be found when tests are done for other reasons.

Central carcinoids

Most carcinoid tumors start in the large bronchial tubes leading into the lung. Symptoms can include:

- Cough, which can sometimes be bloody
- Wheezing
- Shortness of breath
- Chest pain, especially when taking deep breaths

Large carcinoids can cause partial or complete blockage of an air passage, which can lead to **pneumonia** (an infection in the lung). Sometimes a doctor may suspect a tumor only after treatment with antibiotics doesn't cure the pneumonia.

Peripheral carcinoids

Some tumors start in the smaller airways toward the outer edges of the lungs. They rarely cause any symptoms unless there are so many of them that they cause **trouble breathing**. Usually they are found as a spot on a chest x-ray or CT scan that is done for an unrelated problem.

Symptoms caused by hormones from the tumor

Some carcinoid tumors can make hormone-like substances that are released into the

bloodstream. Lung carcinoids do this far less often than [gastrointestinal carcinoid tumors](#)¹.

Carcinoid syndrome: Rarely, lung carcinoid tumors release enough hormone-like substances into the bloodstream to cause symptoms. This causes carcinoid syndrome. Symptoms can include:

- Facial flushing (redness and warm feeling)
- Diarrhea
- Wheezing
- Fast heartbeat

Many people with carcinoid syndrome find that stress, heavy exercise, and drinking alcohol can bring on these symptoms or make them worse.

Over a long time, these hormone-like substances can damage heart valves, causing:

- Shortness of breath
- Weakness
- Heart murmur (an abnormal heart sound)

Cushing syndrome: In rare cases, lung carcinoid tumors may make a hormone called ACTH. This causes the adrenal glands to make too much cortisol (a steroid hormone) and other hormones. This can lead to:

- Weight gain
- Easy bruising
- Weakness
- Drowsiness
- High blood sugar (or even diabetes)
- High blood pressure
- Increased body and facial hair

If you have symptoms of lung carcinoid tumors

The symptoms and signs above may be caused by lung carcinoid tumors, but they can also be caused by other conditions. Still, if you have any of these problems, it's important to see your doctor so the cause can be found and treated, if needed.

Hyperlinks

1. www.cancer.org/cancer/gastrointestinal-carcinoid-tumor.html

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Tests for Lung Carcinoid Tumors

Certain [signs and symptoms](#) might suggest that a person could have a lung carcinoid tumor, but tests are needed to confirm the diagnosis.

Medical history and physical exam

If you have any signs or symptoms that suggest you might have a lung carcinoid tumor (or another type of lung tumor), your doctor will take a complete medical history, including your family history, to learn about your symptoms and possible [risk factors](#)¹.

A physical exam can give your doctor information about your general health, possible signs of lung carcinoid tumor, and other health problems. During your exam, your doctor will pay close attention to your chest and lungs.

If your symptoms or the results of the exam suggest you might have a lung carcinoid tumor (or another type of tumor), more tests will be done. These might include imaging tests, lab tests, and other procedures.

Imaging tests

Doctors use imaging tests to take pictures of the inside of your body. [Imaging tests](#)² are done for a number of reasons, including to help find a suspicious area that might be cancer or to learn how far cancer may have spread (metastasized).

Chest x-ray

A chest [x-ray](#)³ is often the first imaging test a doctor orders if a lung problem is suspected. It might be able to show if there is a tumor in the lung. But some carcinoids that are small or are in places where they are covered by other organs in the chest may not show up on a chest x-ray. If your doctor is still suspicious or if something is seen on the chest x-ray, a CT scan may be ordered.

Computed tomography (CT) scan

A [CT scan](#)⁴ uses x-rays taken from different angles, which are combined by a computer to make detailed pictures of the organs. This test is most often used to look at the chest and/or belly (abdomen) to see if carcinoid has spread to other organs. It can also be used to guide a biopsy needle into an area of concern.

A CT scan is more likely to show small lung tumors than routine chest x-rays. It can also provide precise information about the size, shape, and position of any lung tumors and can help find enlarged lymph nodes that might contain cancer that has spread from the lung.

Radionuclide scans

Scans using small amounts of radioactivity and special cameras may be helpful in looking for carcinoid tumors. They can help find tumors or look for areas where cancer might have spread.

Positron emission tomography (PET) scan: For most types of cancer, PET scans use a form of radioactive glucose (sugar) to find tumors. This type of PET scan is not very useful in finding atypical carcinoid tumors, but a newer type of PET scan called a gallium-68 dotatate PET/CT scan is being used more often for typical carcinoid tumors. It uses the radioactive agent ^{68}Ga -dotatate which attaches to the somatostatin receptors on carcinoid cells. A special camera can detect the radioactivity. This gallium-68 dotatate PET/CT scan is becoming more widely available since it was approved by the FDA in 2016. It is able to find carcinoid tumors better than OctreoScan (described below).

Somatostatin receptor scintigraphy (OctreoScan): This test uses a drug called octreotide bound to radioactive indium-111. Octreotide is a hormone-like substance that attaches to carcinoid cells. A small amount is injected into a vein. It travels through the blood and is attracted to carcinoid tumors. A few hours after the injection, a special camera can be used to show where the radioactivity has collected in the body. More scans may be done in the following few days as well. Along with showing where tumors are, this test can help tell whether treatment with certain drugs such as octreotide and lanreotide is likely to be helpful.

I-131 MIBG scan: This test is used much less often. It uses a chemical called *MIBG* attached to radioactive iodine (I-131). This substance is injected into a vein, and the body is scanned several hours or days later with a special camera to look for areas that picked up the radioactivity. These areas would most likely be carcinoid tumors, but other kinds of neuroendocrine tumors will also pick up this chemical.

Sputum cytology

Even if an imaging test such as a chest x-ray or CT scan shows a mass, it's often hard for doctors to tell if the mass is a carcinoid tumor, another type of lung cancer, or an area of infection. More tests may be needed to get a sample of the abnormal cells to be looked at in the lab.

One way to do this is called *sputum cytology*. A sample of sputum (mucus you cough up from the lungs) is looked at in the to see if it contains cancer cells. The best way to do this is to get samples taken early in the morning, 3 days in a row.

This test is not as good at finding lung carcinoids as it is at finding other types of lung

cancers.

Biopsy

In many cases, the only way to know for sure if a person has some type of lung cancer is to remove cells from the tumor and look at them under a microscope. This procedure is called a *biopsy*. There are several ways to take a sample from a lung tumor.

Bronchoscopy and biopsy

This approach is used to view and sample tumors in large airways. The doctor passes a long, thin, flexible, fiber-optic tube called a *bronchoscope* down the throat and through your windpipe and bronchi to look at the lining of the lung's main airways. Your mouth and throat are sprayed first with a numbing medicine. You may also be given medicine through an intravenous (IV) line to make you feel relaxed.

If a tumor is found, the doctor can take biopsies (small samples of the tumor) through the tube. The doctor can also sample cells from the lining of the airways by wiping a tiny brush over the surface of the tumor (*bronchial brushing*) or by rinsing the airways with sterile saltwater and then collecting it (*bronchial washing*). Brushing and washing samples are sometimes helpful additions to the bronchial biopsy, but they are not as helpful in diagnosing carcinoids as they are with other lung cancers.

An advantage of this type of biopsy is that no surgery or hospital stay is needed, and you will be ready to return home within hours. A disadvantage is that this type of biopsy may not always be able to remove enough tissue to be certain that a tumor is a carcinoid. But with recent advances in the lab testing of lung tumors, doctors can usually make an accurate diagnosis even with very small samples.

Bleeding from a carcinoid tumor after a biopsy is rare but it can be serious. If bleeding becomes a problem, doctors can inject drugs through the bronchoscope into the tumor to narrow its blood vessels, or they can seal off the bleeding vessels with a laser aimed through the bronchoscope.

Endobronchial ultrasonography (EBUS) and biopsy

If a CT scan shows lymph nodes are enlarged on either side of the trachea or in the area just below where the trachea divides (carina), this test can be used to biopsy these nodes to see if they contain cancer.

Ultrasound is a type of imaging test that uses sound waves to create pictures of the

inside of your body. For this test, a small, microphone-like instrument called a *transducer* gives off sound waves and picks up the echoes as they bounce off body tissues. The echoes are converted by a computer into a black and white image on a computer screen.

For endobronchial ultrasound, a bronchoscope is fitted with an ultrasound transducer at its tip and is passed down into the windpipe. This is done with numbing medicine (local anesthesia) and light sedation.

The transducer can be pointed in different directions to look at lymph nodes and other structures in the mediastinum (the area between the lungs). A hollow needle can be passed through the bronchoscope to get biopsy samples of enlarged lymph nodes or other abnormal areas. The samples are then sent to be looked at in a lab.

Needle biopsies

Doctors can often use a hollow needle to get a small sample from a suspicious area (mass). An advantage of needle biopsies is that they don't require a surgical incision, but in some cases they might not get enough of a sample to make a diagnosis. There are two types of needle biopsies, based on the type of needle used:

- In a *fine needle aspiration (FNA)* biopsy, the doctor uses a syringe with a very thin, hollow needle (thinner than the ones used for blood tests) to withdraw (aspirate) cells and small fragments of tissue.
- In a *core biopsy*, a larger needle is used to remove one or more small cylinders (cores) of tissue. Core biopsies provide a larger sample than FNA biopsies.

If the suspected tumor is in the outer part of the lungs, either kind of biopsy needle can be inserted through the skin on the chest wall. This is called a *transthoracic needle biopsy*. The area where the needle is to be inserted may be numbed with a local anesthetic first. The doctor then guides the needle into the area while looking at the lungs with either fluoroscopy (which is like an x-ray, but the image is shown on a screen rather than on film) or CT scans. Unlike fluoroscopy, CT doesn't give a constant picture, so the needle is inserted toward the mass, a CT image is taken, and the direction of the needle is guided based on the image. This is repeated a few times until the needle is in the mass.

A possible complication of this procedure is that air may leak out of the lung at the biopsy site and into the space between the lung and the chest wall. This can cause part of the lung to collapse and could cause trouble breathing. This complication is called a *pneumothorax*. If the air leak is minimal, it often gets better without any treatment. A

large pneumothorax is treated by putting a small tube into the chest space and sucking out the air over a few days, after which it usually heals on its own.

An FNA biopsy may also be done to check for cancer in the lymph nodes between the lungs. This can be done in two ways:

- *Transtacheal FNA* or *transbronchial FNA* is done by passing the needle through the wall of the windpipe (trachea) or bronchi (the large airways leading into the lungs) during bronchoscopy or EBUS (already described above).
- In some cases an FNA biopsy is done during endoscopic esophageal ultrasound (which is similar to EBUS, except that the scope is passed down the esophagus instead of the windpipe) by passing the needle through the wall of the esophagus.

Surgical biopsies

In some cases, the types of biopsies above can't remove enough tissue to identify the type of tumor, and your doctor may need to do surgery to get a biopsy sample. Different types of operations may be used. They are most often done in the operating room while you are under general anesthesia (in a deep sleep).

Thoracotomy: For a thoracotomy, the surgeon makes an incision (cut) in the chest wall between the ribs to get to the lungs and to the space between the lungs and the chest wall. In some cases if the doctor strongly suspects a carcinoid or some other type of lung cancer, they may do a thoracotomy and remove the entire tumor without first doing a biopsy.

Thoracoscopy: This procedure is also used to look at the space between the lungs and the chest wall, but it does not require a long incision like a thoracotomy. The doctor inserts a thin, lighted scope with a small video camera on the end through a small cut made in the chest wall to look at the outside of the lungs and the space between the lungs and the chest wall. (Sometimes more than one cut is made.) Using this scope, the doctor can see potential areas of cancer and remove small pieces of tissue to look at in the lab. Thoracoscopy can also be used to sample lymph nodes and fluid and find out if a tumor is growing into nearby tissues or organs. This procedure is also known as video-assisted thoracoscopic surgery (VATS).

Mediastinoscopy: This procedure may be done if imaging tests such as a CT scan suggest that the cancer may have spread to the lymph nodes in the mediastinum (the space between the lungs). A small cut is made in the front of the neck and a thin, hollow, lighted tube is inserted behind the sternum (breast bone) and in front of the

windpipe to look at the area. Instruments can be passed through this tube to take tissue samples from the lymph nodes along the windpipe and the bronchi.

Blood and urine tests

Because carcinoid tumors can secrete hormone-like chemicals into the blood, these tumors can sometimes be found with blood or urine tests. This is especially true if you have symptoms of the [carcinoid syndrome](#), which is caused by excess levels of these chemicals in the blood.

Serotonin is made by some carcinoid tumors, and probably causes some of the symptoms. It is broken down by the body into **5-hydroxyindoleacetic acid (5-HIAA)**, which is released into the urine. A common test to look for carcinoid syndrome measures the levels of 5-HIAA in a urine sample collected over 24 hours. Measuring the serotonin levels in the blood or urine may also give useful information. These tests can help diagnose some carcinoid tumors, but they are not always accurate. Some other medical conditions, as well as foods and medicines, can affect the results, and some carcinoid tumors may not release enough of these substances to give a positive test result.

Other tests used to look for carcinoids include blood tests for **chromogranin A (CgA)**, **neuron-specific enolase (NSE)**, **cortisol**, and **substance P**. Depending on the patient's symptoms and where the tumor might be located, doctors may do other blood tests as well.

These tests are less likely to be helpful with lung carcinoid tumors than with carcinoid tumors that start elsewhere in the body, like the gastrointestinal (GI) tract.

Pulmonary function tests

If a lung carcinoid is found, pulmonary function tests (PFTs) are often done to see how well your lungs are working. This is especially important if [surgery](#)⁵ might be used to treat the cancer, because surgery will remove part or all of the lung. These tests can give the surgeon an idea of whether surgery is a good option, and if so, how much lung can be removed safely.

For a PFT, you will need to breathe in and out through a tube that is connected to a machine that measures airflow.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/causes-risks-prevention/risk-factors.html
2. www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html
3. www.cancer.org/treatment/understanding-your-diagnosis/tests/x-rays-and-other-radiographic-tests.html
4. www.cancer.org/treatment/understanding-your-diagnosis/tests/ct-scan-for-cancer.html
5. www.cancer.org/cancer/lung-carcinoid-tumor/treating/surgery.html

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Lung Carcinoid Tumor Stages

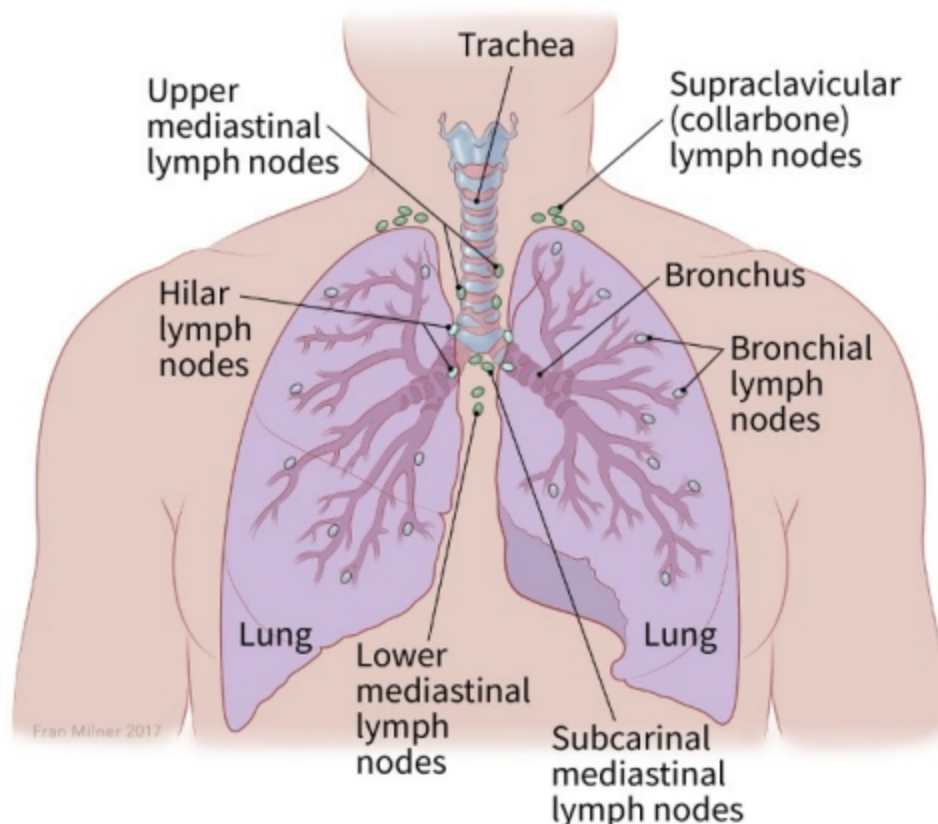
After someone is diagnosed with a lung carcinoid tumor, doctors will try to figure out if it has spread, and if so, how far. This process is called *staging*. The stage of a cancer describes how much cancer is in the body. It helps determine how serious the cancer is and how best to [treat](#)¹ it. Doctors also use a cancer's stage when talking about survival statistics.

The earliest stage is stage 0. The other main stages range from I (1) through IV (4). Some of these are divided further using letters or numbers. As a rule, the lower the stage, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. And within a stage, an earlier letter (or number) means a lower stage. Although each person's cancer experience is unique, cancers with similar stages tend to have a similar outlook and are often treated in much the same way.

How is the stage determined?

The staging system most often used for lung carcinoid tumors is the American Joint Committee on Cancer (AJCC) **TNM** system, which is based on 3 key pieces of information:

- The size and extent of the main **tumor (T)**: How large is the tumor? Has it grown into nearby structures or organs?
- The spread to nearby lymph **nodes (N)**: Has the cancer spread to nearby lymph nodes? (See image.)
- The spread (**metastasis**) to distant sites (**M**): Has the cancer spread to distant organs? (The most common site of spread is the liver.)



Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person's T, N, and M categories have been determined, this information is combined in a process called *stage grouping* to assign an overall stage. For more information, see [Cancer Staging²](#).

There is not a separate staging system for lung carcinoid tumors. It uses the same classification as non-small cell lung cancer and small cell lung cancer. The system described below is the most recent version of the AJCC system, effective as of January 2018.

Lung carcinoid tumors are typically given a *clinical stage* based on the results of physical exams, biopsies, imaging tests, and any other tests that have been done. (See [Tests for Lung Carcinoid Tumors](#).) If surgery is done, the *pathologic stage* (also called the *surgical stage*) is determined by examining tissue removed during the operation.

Staging for lung carcinoid tumors can be complex, so ask your doctor to explain it to you in a way you understand.

Stages of lung carcinoid tumors

AJCC Stage	Stage grouping	Stage description*
Occult (hidden) cancer	TX	The main tumor can't be assessed for some reason, or cancer cells are seen in a sample of sputum or other lung fluids, but the cancer isn't found with other tests, so its location can't be determined (TX). The cancer is not thought to have spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	N0	
	M0	
0	Tis	The tumor is found only in the top layers of cells lining the air passages, but it has not invaded deeper into other lung tissues (Tis). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	N0	
	M0	
IA1	T1a	The tumor is no larger than 1 cm across, it has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1a). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	N0	
	M0	
IA2	T1b	The tumor is larger than 1 cm but no larger than 2 cm across. It has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1b). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	N0	
	M0	
IA3	T1c	The tumor is larger than 2 cm but no larger than 3 cm across. It has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1c). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	N0	
	M0	
IB	T2a	The tumor has one or more of the following features (T2a): <ul style="list-style-type: none"> • It is larger than 3 cm but not larger than 4 cm across. • It has grown into a main bronchus, but is not within 2 cm of the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 4 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 4 cm across. • It is partially clogging the airways (and is not larger than 4 cm across).
	N0	
	M0	

		The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
IIA	T2b N0 M0	<p>The tumor has one or more of the following features (T2b):</p> <ul style="list-style-type: none"> • It is larger than 4 cm but not larger than 5 cm across. • It has grown into a main bronchus, but is not within 2 cm of the carina (the point where the windpipe splits into the left and right main bronchi) and it is larger than 4 cm but not larger than 5 cm across. • The tumor has grown into the visceral pleura (the membranes surrounding the lungs) and is larger than 4 cm but not larger than 5 cm across. • The tumor is partially clogging the airways (and is larger than 4 cm but not larger than 5 cm across). <p>The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).</p>
	T1a/T1b/T1c N1 M0	The tumor is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect the main branches of the bronchi (T1). It has spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (hilar lymph nodes). These lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).
	OR	
IIB	T2a/T2b N1 M0	<p>The tumor has one or more of the following features (T2):</p> <ul style="list-style-type: none"> • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but is not within 2 cm of the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across). • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm. • It is partially clogging the airways (and is not larger than 5

		<p>cm).</p> <p>The cancer has also spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (hilar lymph nodes). These lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).</p>
	OR	
	<p>T3</p> <p>N0</p> <p>M0</p>	<p>The tumor has one or more of the following features (T3):</p> <ul style="list-style-type: none"> • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. <p>The cancer has not spread to nearby lymph nodes (N0) or distant parts of the body (M0).</p>
	<p>T1a/T1b/T1c</p> <p>N2</p> <p>M0</p>	<p>The cancer is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect the main branches of the bronchi (T1). The cancer has spread to lymph nodes around the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).</p>
	OR	
	<p>T2a/T2b</p> <p>N2</p> <p>M0</p>	<p>The tumor has one or more of the following features (T2):</p> <ul style="list-style-type: none"> • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but is not within 2 cm of the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across). • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm.

IIIA		<ul style="list-style-type: none"> • It is partially clogging the airways (and is not larger than 5 cm). <p>The cancer has spread to lymph nodes around the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).</p>
	OR	
	T3 N1 M0	<p>The tumor has one or more of the following features (T3):</p> <ul style="list-style-type: none"> • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. <p>The cancer has also spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (hilar lymph nodes). These lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).</p>
	OR	
	T4 N0 or N1 M0	<p>The tumor has one or more of the following features (T4):</p> <ul style="list-style-type: none"> • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone, or the carina. • There are 2 or more separate tumor nodules in different lobes of the same lung. <p>The cancer may or may not have spread to lymph nodes within</p>

		the lung and/or around the area where the bronchus enters the lung (hilar lymph nodes). Any affected lymph nodes are on the same side as the cancer (N0 or N1). The cancer has not spread to distant parts of the body (M0).
IIIB	T1a/T1b/T1c N3 M0	The cancer is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect the main branches of the bronchi (T1). The cancer has spread to lymph nodes near the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).
	OR	
	T2a/T2b N3 M0	<p>The tumor has one or more of the following features (T2):</p> <ul style="list-style-type: none"> • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but is not within 2 cm of the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm. • It is partially clogging the airways (and is not larger than 5 cm). <p>The cancer has spread to lymph nodes near the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).</p>
	OR	
	T3 N2 M0	<p>The tumor has one or more of the following features (T3):</p> <ul style="list-style-type: none"> • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same

		<p>lobe of a lung.</p> <p>The cancer has spread to lymph nodes around the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).</p>
OR		
	<p>T4</p> <p>N2</p> <p>M0</p>	<p>The tumor has one or more of the following features (T4):</p> <ul style="list-style-type: none"> • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone (spine), or the carina (the point where the windpipe splits into the left and right bronchi). • There are 2 or more separate tumor nodules in different lobes of the same lung. <p>The cancer has spread to lymph nodes around the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).</p>
<p>IIIC</p>	<p>T3</p> <p>N3</p> <p>M0</p>	<p>The tumor has one or more of the following features (T3):</p> <ul style="list-style-type: none"> • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. <p>The cancer has spread to lymph nodes near the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the</p>

		main tumor (N3). The cancer has not spread to distant parts of the body (M0).
	OR	
	T4 N3 M0	<p>The tumor has one or more of the following features (T4):</p> <ul style="list-style-type: none"> • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone (spine), or the carina (the point where the windpipe splits into the left and right bronchi). • There are 2 or more separate tumor nodules in different lobes of the same lung. <p>The cancer has spread to lymph nodes near the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).</p>
IVA	Any T Any N M1a	<p>The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). In addition, any of the following is true (M1a):</p> <ul style="list-style-type: none"> • The cancer has spread to the other lung. • Cancer cells are found in the fluid around the lung (called a <i>malignant pleural effusion</i>). • Cancer cells are found in the fluid around the heart (called a <i>malignant pericardial effusion</i>).
	OR	
	Any T Any N M1b	<p>The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). It has spread as a single tumor outside of the chest, such as to a distant lymph node or an organ such as the liver, bones, or brain (M1b).</p>

IVB	Any T Any N M1c	The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). It has spread as more than one tumor outside the chest, such as to distant lymph nodes and/or to other organs such as the liver, bones, or brain (M1c).
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*The following additional categories are not listed in the table above:

- **T0:** There is no evidence of a primary tumor.
- **NX:** Nearby lymph nodes cannot be assessed due to lack of information.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/treating.html
2. www.cancer.org/treatment/understanding-your-diagnosis/staging.html

References

American Joint Committee on Cancer. Lung. In: *AJCC Cancer Staging Manual*. 8th ed. New York, NY: Springer; 2017: 431-456.

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Survival Rates for Lung Carcinoid Tumors

Survival rates can give you an idea what percentage of people with the same type and stage of cancer are still alive a certain amount of time (usually 5 years) after they were diagnosed. They can't tell you how long you will live, but they may help give you a better understanding of how likely it is that your treatment will be successful.

Keep in mind that survival rates are estimates and are often based on previous outcomes of large numbers of people who had a specific cancer, but they can't

predict what will happen in any particular person's case. These statistics can be confusing and may lead you to have more questions. Talk with your doctor about how these numbers may apply to you, as he or she is familiar with your situation.

What is a 5-year relative survival rate?

A **relative survival rate** compares people with the same type and stage of lung carcinoid tumor to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of lung carcinoid tumor is 90%, it means that people who have that cancer are, on average, about 90% as likely as people who don't have that cancer to live for at least 5 years after being diagnosed.

Where do these numbers come from?

The American Cancer Society relies on information from the SEER* database, maintained by the National Cancer Institute (NCI), to provide survival statistics for different types of cancer.

The SEER database tracks 5-year relative survival rates for lung carcinoid tumor in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by [AJCC TNM stages](#) (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** There is no sign that the cancer has spread outside of the lung.
- **Regional:** The cancer has spread outside of the lung to nearby structures or lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body such as the brain, liver, bones or other lung.

5-year relative survival rates for lung carcinoid tumor

(Based on people diagnosed with lung carcinoid tumor between 2008 and 2014.)

SEER Stage	5-Year Relative Survival Rate
Localized	97%
Regional	87%
Distant	57%

All SEER stages combined 89%

These numbers include people with both typical and atypical carcinoids, but survival rates would be expected to be slightly better for typical carcinoids and not as good overall for atypical carcinoids.

Understanding the numbers

- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.
- **These numbers don't take everything into account.** Survival rates are grouped based on how far the cancer has spread, but your age, overall health, [type of lung carcinoid tumor](#)¹, how well the cancer responds to treatment, and other factors can also affect your outlook.
- **People now being diagnosed with lung carcinoid tumor may have a better outlook than these numbers show.** Treatments improve over time, and these numbers are based on people who were diagnosed and treated at least five years earlier.

*SEER= Surveillance, Epidemiology, and End Results

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/about/what-is-lung-carcinoid-tumor.html
2. https://seer.cancer.gov/csr/1975_2015/

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Questions to Ask Your Doctor About Lung Carcinoid Tumors

It is important to have honest, open discussions with your cancer care team. They want to answer your questions, so that you can make informed treatment and life decisions. For instance, consider these questions:

When you're told you have a lung carcinoid tumor

- What [kind of carcinoid tumor](#)¹ do I have?
- Where is the cancer located?
- Has the carcinoid tumor spread beyond the lungs?
- What is the [stage](#) (extent) of the carcinoid tumor, and what does that mean?

- Will I need other [tests](#) before we can decide on treatment?
- Do I need to see any other doctors or health professionals?
- If I'm concerned about the costs and insurance coverage for my diagnosis and treatment, who can help me?

When deciding on a treatment plan

- What are my [treatment](#)² options?
- What do you recommend and why?
- How much experience do you have treating this type of cancer?

- Should I get a [second opinion](#)³? How do I do that? Can you recommend someone?
- What would the goal of the treatment be?
- How quickly do we need to decide on treatment?
- What should I do to be ready for treatment?
- How long will treatment last? What will it be like? Where will it be done?
- What risks or side effects are there to the treatments you suggest? Are there things I can do to reduce these side effects?
- How might treatment affect my daily activities? Can I still work full time?
- What are the chances the cancer will [recur](#)⁴ (come back) with these treatment plans?
- What will we do if the treatment doesn't work or if the cancer recurs?
- What if I have transportation problems getting to and from treatment?

During treatment

Once treatment begins, you'll need to know what to expect and what to look for. Not all of these questions may apply to you, but asking the ones that do may be helpful.

- How will we know if the treatment is working?
- Is there anything I can do to help manage side effects?
- What symptoms or [side effects](#)⁵ should I tell you about right away?
- How can I reach you on nights, holidays, or weekends?
- Do I need to change what I eat during treatment?
- Are there any limits on what I can do?
- Can I [exercise during treatment](#)⁶? If so, what kind should I do, and how often?
- Can you suggest a mental health professional I can see if I start to feel overwhelmed, depressed, or distressed?

After treatment

- Do I need a special diet after treatment?
- Are there any limits on what I can do?
- What other symptoms should I watch for?
- What kind of exercise should I do now?
- What type of follow-up will I need after treatment?
- How often will I need to have follow-up exams and imaging tests?

- Will I need any blood tests?
- How will we know if the cancer has [come back](#)⁷? What should I watch for?
- What will my options be if the cancer comes back?

Along with these sample questions, be sure to write down some of your own. For instance, you might want more information about recovery time. Or you may want to ask about [clinical trials](#)⁸.

Keep in mind that doctors aren't the only ones who can give you information. Other health care professionals, such as nurses and social workers, may have the answers to some of your questions. You can find more information about speaking with your health care team in [The Doctor-Patient Relationship](#)⁹.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/about/what-is-lung-carcinoid-tumor.html
2. www.cancer.org/cancer/lung-carcinoid-tumor/treating.html
3. www.cancer.org/treatment/finding-and-paying-for-treatment/choosing-your-treatment-team/seeking-a-second-opinion.html
4. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
5. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
6. www.cancer.org/treatment/survivorship-during-and-after-treatment/staying-active/physical-activity-and-the-cancer-patient.html
7. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
8. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
9. www.cancer.org/treatment/understanding-your-diagnosis/talking-about-cancer/the-doctor-patient-relationship.html

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Treating Lung Carcinoid Tumors

If you've been diagnosed with a lung carcinoid tumor, your treatment team will discuss your options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

How are lung carcinoid tumors treated?

Treatment options for people with lung carcinoid tumors can include:

- [Surgery to Treat Lung Carcinoid Tumors](#)
- [Supportive Procedures for Lung Carcinoid Tumor Symptoms](#)
- [Chemotherapy for Lung Carcinoid Tumors](#)
- [Other Drug Treatments for Lung Carcinoid Tumors](#)
- [Radiation Therapy for Lung Carcinoid Tumors](#)

Common treatment approaches

Treatments might be used alone or in different combinations. The main factors in selecting a treatment are the type of carcinoid, the size and location of the tumor, whether it has spread to lymph nodes or other organs, symptoms you are having, and if you have any other serious medical conditions.

- [Treatment of Lung Carcinoid, by Type and Extent of Disease](#)

Who treats lung carcinoid tumors?

Based on your treatment options, you might have different types of doctors on your treatment team. These doctors could include:

- A **thoracic surgeon**: a doctor who treats diseases of the lungs and chest with surgery
- A **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy and targeted therapy
- A **pulmonologist**: a doctor who specializes in medical treatment of diseases of the lungs
- A **radiation oncologist**: a doctor who treats cancer with radiation therapy

You might have many other specialists on your treatment team as well, including physician assistants, nurse practitioners, nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care¹](#)

Making treatment decisions

It's important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs.

It's also very important to ask questions if there is anything you're not sure about.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- [Questions to Ask Your Doctor About Lung Carcinoid Tumors²](#)
- [Seeking a Second Opinion³](#)

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- [Clinical Trials⁴](#)

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- [Complementary and Alternative Medicine⁵](#)

Help getting through cancer treatment

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Find Support Programs and Services in Your Area⁶](#)

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)⁷
- [Palliative or Supportive Care](#)⁸

The treatment information given here is not official policy of the American Cancer 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.

Surgery to Treat Lung Carcinoid Tumors

Surgery is the main treatment for lung carcinoid tumors whenever possible. If the tumor hasn't spread, it can often be cured by surgery alone.

Types of lung surgery

Different operations can be used to treat (and possibly cure) lung carcinoid tumors. These operations require general anesthesia (where you are in a deep sleep) and are usually done through a surgical incision between the ribs in the side of the chest (called a *thoracotomy*).

- **Pneumonectomy:** An entire lung is removed.
- **Lobectomy:** An entire section (lobe) of a lung is removed.
- **Segmentectomy or wedge resection:** Part of a lobe is removed.
- **Sleeve resection:** Part of a large airway is removed. Picture a tumor in a large airway as a stain on a shirt sleeve, about an inch or two above the wrist. This surgery would be like cutting across the sleeve above and below the stain and sewing the cuff back onto the shortened sleeve. When this surgery can be done

instead of a pneumonectomy, more lung function can be preserved.

With any of these operations, nearby lymph nodes are also removed to look for possible spread of the cancer.

The type of operation your doctor recommends depends on the size and location of the tumor and on how well your lungs are functioning. People whose lungs are healthier can withstand having more lung tissue removed.

When you wake up from surgery, you will have a tube (or tubes) coming out of your chest and attached to a special canister to allow excess fluid and air to drain out. The tube(s) will be removed once the fluid drainage and air leak slow down. Generally, your time in the hospital after surgery can range from 3 to 7 days depending on the type of surgery that is done.

Lymph node sampling

With any of these operations, lymph nodes near the lungs are usually removed to look for possible spread of the cancer. This is important because the carcinoid might have spread to lymph nodes by the time it is diagnosed. (This risk is higher for atypical carcinoids than for typical carcinoids.) If the lymph nodes containing cancer are not removed, it will increase the risk of the carcinoid tumor spreading even farther, to other organs. If this happens, you may no longer be able to be cured by surgery. Checking for cancer cells in the lymph nodes can also provide some indication of your risk of the cancer come back.

Video-assisted thoracic surgery (VATS)

This is a less invasive type of surgery for some cancers in the lungs. During this operation, a thin, rigid tube with a tiny video camera on the end is placed through a small cut in the side of the chest to help the surgeon see inside the chest. One or two other small cuts are created in the skin, and long instruments are passed through these cuts to do the same operation that would be done using an open approach (thoracotomy). Because only small incisions are needed, there is less pain after the surgery and a shorter hospital stay – usually around 4 to 5 days.

Most experts recommend that only smaller tumors near the outside of the lung be treated this way. The cure rate after this surgery seems to be the same as with surgery done with a larger incision. But it is important that the surgeon doing this operation be experienced because it requires a great deal of technical skill.

Possible risks and side effects of lung surgery

Possible complications depend on the extent of the surgery and the person's health beforehand. Serious complications can include excessive bleeding, wound infections, and pneumonia.

Lung surgery is a major operation, and recovering from the operation typically takes weeks to months. If the surgery is done through a thoracotomy, the surgeon must spread the ribs to get to the lung, so the area near the incision will hurt for some time after surgery. Your activity will be limited for at least a month. People who have VATS instead of thoracotomy have less pain after surgery and tend to recover more quickly.

If your lungs are in good condition (other than the presence of the cancer) you can usually return to normal activities after a lobe or even an entire lung has been removed. If you also have non-cancerous diseases such as emphysema or chronic bronchitis (which are common among heavy smokers), you may become short of breath with activity after surgery.

More information about Surgery

For more general information about surgery as a treatment for cancer, see [Cancer Surgery](#)¹.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)².

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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Supportive Procedures for Lung Carcinoid Tumor Symptoms

If you can't have major surgery because your lung function is at a low level or you have other serious medical problems, or if the cancer has spread too much to be removed, other treatments may be used to relieve some symptoms.

These treatments, called *palliative procedures*, can relieve symptoms, but they do not cure the cancer and are recommended only if you can't have surgery to completely remove the tumor. If you are treated with these procedures you may also get [radiation therapy](#).

Treating airway blockage

If the tumor is blocking airways in the lung, it might lead to pneumonia or shortness of breath. Removing most of the tumor through a bronchoscope or destroying most of it with a laser (on the end of a bronchoscope) can be helpful. In some cases, a bronchoscope may be used to place a stent (a stiff tube) made of metal or silicone in the airway after treatment to help keep it open.

Treating fluid buildup

In rare instances, fluid can build up inside the chest (outside of the lungs), press on the

lungs and affect breathing. Usually, a hollow needle is put through the skin and into the pleural space to remove the fluid. (This is known as a *thoracentesis*.) For most people, removing the fluid can relieve breathing problems right away, but the fluid will often build up again quickly if nothing else is done.

Pleurodesis

To remove the fluid and keep it from coming back, doctors sometimes do a procedure called *pleurodesis*. A small cut is made in the skin of the chest wall, and a hollow tube is placed into the chest to remove the fluid. Either talc or a drug such as doxycycline or certain chemotherapy drugs (like bleomycin) is then instilled into the chest cavity. This causes the linings of the lung (visceral pleura) and chest wall (parietal pleura) to stick together, sealing the space and limiting further fluid buildup. The tube is often left in for a day or two to drain any new fluid that might collect.

Catheter placement

This is another way to control fluid buildup. One end of the catheter (a thin, flexible tube) is placed in the chest through a small cut in the skin, and the other end is left outside the body. This is done in a doctor's office or hospital. Once in place, the catheter can be attached to a special bottle or other device to allow the fluid to drain out on a regular basis.

Procedures to relieve symptoms of liver metastases

If the cancer spreads to the liver, treating the liver tumors may help with symptoms. When there are only 1 or 2 tumors in the liver, they may be removed with surgery. If there are more than just a few liver tumors (or if a person is too sick for surgery), other techniques may be used.

Ablation

Ablation techniques destroy tumors without removing them. They are generally not used for large tumors, and are best for tumors no more than about 2 cm (a little less than an inch) across.

- **Radiofrequency ablation (RFA)** uses high-energy radio waves for treatment. A thin, needle-like probe is placed through the skin and into the tumor. Placement of the probe is guided by ultrasound or CT scans. The tip of the probe releases a high-frequency current that heats the tumor and destroys the cancer cells.

- **Ethanol (alcohol) ablation** (also known as *percutaneous ethanol injection*) kills the cancer cells by injecting concentrated alcohol directly into the tumor. This is usually done through the skin using a needle guided by ultrasound or CT scans.
- **Microwave thermotherapy** uses microwaves to heat and destroy cancer cells.
- **Cryosurgery (cryotherapy)** destroys a tumor by freezing it with a metal probe. The probe is guided through the skin and into the tumor using ultrasound. Then very cold gasses are passed through the probe to freeze the tumor, killing the cancer cells. This method may be used to treat larger tumors compared to the other ablation techniques, but it sometimes requires general anesthesia (where you are asleep).

Embolization

Arterial embolization (also known as *transarterial embolization* or TAE): This is another option for tumors that can't be removed completely. It can be used for larger tumors (up to about 5 cm or 2 inches across). This technique reduces the blood flow to the cancer cells by blocking the branch of the hepatic artery feeding the area of the liver containing the tumor. Blood flow is blocked (or reduced) by injecting materials that plug up the artery. Most of the healthy liver cells will not be affected because they get their blood supply from the portal vein.

In this procedure a catheter is put into an artery in the inner thigh and threaded up into the liver. A dye is then injected into the bloodstream to allow the doctor to monitor the path of the catheter via angiography, a special type of x-ray. Once the catheter is in place, small particles called *microspheres* are injected into the artery to plug it up.

Radioembolization: In the United States, this is done by injecting small radioactive beads into the hepatic artery. The beads travel to the tumor and give off small amounts of radiation only at the tumor sites.

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Chemotherapy for Lung Carcinoid Tumors

Chemotherapy (chemo) is the use of anti-cancer drugs that are injected into a vein or taken by mouth. These drugs enter the bloodstream and reach almost all areas of the body, making this treatment useful for some types of lung cancer that have spread to organs beyond the lungs.

Unfortunately, carcinoid tumors usually do not respond very well to chemo. It is mainly used for carcinoid tumors that have spread to other organs, are causing severe symptoms, have not responded to [other medicines](#), or atypical carcinoids that are dividing quickly. Sometimes, it may be given after [surgery](#).

Because chemo does not always shrink carcinoid tumors, it is important to ask your doctor about the chances of it helping and if the benefits are likely to outweigh the risk of side effects.

Some of the chemo drugs that may be used for advanced lung carcinoids include:

- Etoposide (VP-16)
- Cisplatin
- Carboplatin
- Temozolomide
- Oxaliplatin

- 5-fluorouracil (5-FU)
- Streptozocin

Chemo drugs can be used together or alone, and often along with other types of medicines. Frequently used chemo drugs/combinations include carboplatin/etoposide, cisplatin/etoposide, temozolomide, and oxaliplatin .

Doctors give chemo in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Chemo cycles generally last about 3 to 4 weeks, and initial treatment is typically 4 to 6 cycles. Chemo is often not recommended for patients in poor health, but advanced age by itself is not a barrier to getting chemo.

Possible side effects of chemotherapy

Chemo drugs attack cells that are dividing quickly, which is why they work against cancer cells. But other cells, such as those in the bone marrow (where new blood cells are made), the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemo, which can lead to side effects.

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

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Diarrhea or constipation
- 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 usually go away after treatment is finished. There are often ways to avoid or lessen these side effects. For example, drugs can be given to help prevent or reduce nausea and vomiting.

Some drugs can have other side effects. For example, cisplatin can damage nerve endings (a condition called *neuropathy*). This may lead to symptoms (mainly in the hands and feet) such as pain, burning or tingling sensations, sensitivity to cold or heat,

or weakness. In most cases this goes away once treatment is stopped, but it may last a long time in some people. For more information, see [Peripheral Neuropathy](#)¹.

You should tell your medical team about any side effects or changes you notice while getting chemotherapy, so that they can be treated promptly. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to keep the effects from worsening.

More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see [Chemotherapy](#)².

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)³.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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Other Drug Treatments for Lung Carcinoid Tumors

For people with metastatic lung carcinoid tumors, several medicines can help control symptoms and tumor growth.

Somatostatin analogs

These drugs are related to somatostatin, a natural hormone that seems to help slow the growth of neuroendocrine cells. They are especially useful in people who have [carcinoid syndrome](#)¹ (facial flushing, diarrhea, wheezing, rapid heart rate) and in people whose tumors show up on a [somatostatin receptor scintigraphy](#)² (SRS) scan.

Octreotide is helpful in treating the symptoms of carcinoid syndrome. Sometimes octreotide can temporarily shrink carcinoid tumors, but it does not cure them.

The original version of octreotide (Sandostatin[®]) is injected under the skin (subcutaneously) at least twice daily. Some people learn to give this injection themselves at home. A long-acting version of the drug (Sandostatin LAR[®]) is injected into a muscle once a month by your doctor or nurse. Depending on the severity of symptoms, some people are given injections every day when first starting treatment. Once the doctor finds the correct dose, the longer-acting monthly injection may then be used.

Side effects can include pain or burning at the injection site, stomach cramps, nausea, vomiting, headaches, dizziness, and fatigue.

Lanreotide is a drug similar to octreotide. It is injected under the skin once a month. It may be given by your doctor or nurse, or you may learn how to give the injection at home. Side effects are similar to those of octreotide, although pain at the injection site is less common.

Targeted drugs

In recent years, anti-cancer drugs that work differently from [standard chemotherapy](#) drugs have been developed for some types of cancer. These drugs target specific parts of cancer cells. They are sometimes helpful when chemotherapy is not. They often have different side effects than chemotherapy.

The targeted drug, **everolimus** (Afinitor[®]), has been shown to help treat advanced lung carcinoid tumors. It can be used with or without somatostatin drugs, such as octreotide. Common side effects include diarrhea, fatigue, rash, mouth sores and swelling of the legs or arms.

See [Targeted Cancer Therapy](#)³ for more information about this type of drug.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/detection-diagnosis-staging/signs-and-symptoms.html
2. www.cancer.org/cancer/lung-carcinoid-tumor/detection-diagnosis-staging/how-diagnosed.html
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Radiation Therapy for Lung Carcinoid Tumors

Radiation therapy is the use of high-energy rays (such as x-rays) or radioactive particles to kill cancer cells.

[Surgery](#) is the main treatment for most carcinoid tumors, but radiation therapy may be an option for those who can't have surgery for some reason. It may also be given after surgery in some cases if there's a chance some of the tumor was not removed. Radiation therapy can also be used to help relieve symptoms such as pain if the cancer has spread to the bones or other areas.

External beam radiation therapy

[External beam radiation therapy](#)¹ uses a machine that delivers a beam of radiation to a specific part of the body. This is the type of radiation used most often for lung carcinoid tumors.

Before your treatments start, the radiation team will determine the correct angles for aiming the radiation beams and the proper dose of radiation. Treatment is much like getting an x-ray, but the radiation dose is stronger. The procedure itself is painless. Each treatment lasts only a few minutes, but the setup time – getting you into place for treatment – usually takes longer. Most often, radiation treatments are given 5 days a week for several weeks, but this can vary based on the reason it's being given.

The main side effects of lung radiation therapy are fatigue (tiredness) and temporary sunburn-like skin changes where the radiation passed through the skin. If high doses are given, radiation therapy can cause scar tissue to form in the lungs over time, which might lead to trouble breathing and an increased risk of pneumonia.

Radioactive drugs

Another type of radiation therapy uses drugs containing radioactive particles. This type of treatment is called **peptide receptor radionuclide therapy (PRRT)** and may be useful in treating some widespread carcinoid tumors. Lutetium (Lu-177) dotatate (Lutathera®) is a PRRT that has been approved for patients with gastrointestinal and pancreatic neuroendocrine tumors, but can also be considered for some lung carcinoid tumors that have the somatostatin receptor. Lu-177 is a radioactive substance. It is carried to the cancer cells by dotatate where it attaches to carcinoid tumor cells. This lets doctors deliver high doses of radiation directly to the tumors. It is given as an infusion into a vein (IV).

The most common side effects are nausea, kidney and liver problems, low white blood counts, low platelet counts, and vomiting.

Since this therapy involves radiation that is injected into the bloodstream, you will be given special instructions on how to minimize the radiation exposure during and after treatment.

More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation Therapy](#)².

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)³.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation/external-beam-radiation-therapy.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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Treatment of Lung Carcinoid, by Type and Extent of Disease

The treatment of lung carcinoid tumors depends largely on the [type](#)¹ (typical versus atypical) and extent of the cancer. Other factors, such as a person's overall health and ability to withstand surgery, are also important.

Many doctors use the TNM staging system (see [Lung Carcinoid Tumor Stages](#)²) to formally describe the extent of these cancers. But for treatment purposes most doctors use a simpler system, dividing these tumors into 2 groups:

- **Resectable tumors:** those that can be treated with surgery
- **Unresectable tumors:** those that can't be removed completely by surgery

Resectable lung carcinoid tumors

Resectable carcinoid tumors haven't spread far beyond where they started and can be removed completely. In the TNM staging system, this includes most stage I, II, and IIIA cancers.

For people who are healthy enough to withstand it, these cancers are treated with [surgery](#). The extent of the surgery depends on the type of carcinoid tumor and the size and location of the cancer. Atypical carcinoids may need more extensive surgery than typical carcinoids. Nearby lymph nodes are usually removed as well, especially if you have an atypical carcinoid.

Most patients with resectable lung carcinoid tumors are cured with surgery alone and don't need other treatments. Some experts recommend further treatment for people with an atypical carcinoid that has spread to lymph nodes. This can be [chemotherapy](#), [radiation therapy](#), or both. But it's not clear if the added treatments lower the chance of the cancer coming back, or if they help people live longer.

Unresectable lung carcinoid tumors

Unresectable carcinoid tumors include those that have grown too much or spread too far to be removed completely by surgery (including some stage IIIA, most stage IIIB and stage IV cancers), as well as tumors in people who are not healthy enough for surgery.

Treatment depends on the stage of the cancer, where the cancer is, whether it is a typical or atypical carcinoid, and whether you have symptoms of the carcinoid syndrome.

For stage IIIA cancers in people who can't have surgery, experts typically recommend radiation to treat typical carcinoids, and chemotherapy (chemo) and radiation for atypical carcinoids.

Some type of [systemic treatment](#) is often recommended for more advanced cancers (stages IIIB and IV), sometimes along with radiation therapy. Somatostatin analogs like octreotide (Sandostatin) or lanreotide (Somatuline) can be helpful for patients who have carcinoid syndrome or whose tumors can be seen on somatostatin receptor scintigraphy (OctreoScan). Chemo and targeted therapy are also options.

In general, typical carcinoids tend to grow slowly, and [chemotherapy](#) is often not very successful. If you have only a small number of tumors that can be removed, surgery (both on the lung and at the site of metastasis) is likely to be your best option.

Lung carcinoid tumors usually spread to the liver first. If the carcinoid has spread only to your liver but can't be removed with standard surgery, another option might be to have a liver transplant. This is a very complex operation that most doctors still consider experimental. It is done at only a few transplant centers.

If the carcinoid is in your liver and is causing symptoms, procedures such as ablation or hepatic artery embolization may be helpful. They may relieve symptoms or slow the growth of the cancer, but are very unlikely to result in a cure. These treatments are discussed in detail in [Palliative Procedures for Lung Carcinoid Tumor Symptoms](#)³.

For people with earlier stage cancers who can't have surgery, most doctors recommend radiation therapy for typical carcinoids and chemotherapy plus radiation therapy for atypical carcinoids.

External radiation therapy can also be used to relieve symptoms caused by tumors such as bone pain. For more widespread disease, radioactive drugs may be helpful.

Recurrent carcinoid tumors

When cancer comes back after treatment, it is called a *recurrence*. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the liver or bone).

Carcinoid tumors can sometimes come back, even several years after the initial treatment. If this happens, further treatment options depend on where the cancer is and what treatments have already been used. Cancers that recur locally or in only 1 or 2 areas can sometimes be treated with further surgery. If surgery is not an option, [radiation therapy](#), [chemotherapy](#), or [other drugs](#) may be tried. Because recurrent cancers can often be hard to treat, [clinical trials](#)⁴ of new types of treatment may be a good option.

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/about/what-is-lung-carcinoid-tumor.html
2. www.cancer.org/cancer/lung-carcinoid-tumor/detection-diagnosis-staging/staging.html
3. [/content/cancer/en/cancer/lungcarcinoidtumor/detailedguide/lung-carcinoid-tumor-treating-palliative-procedures.html](http://content.cancer/en/cancer/lungcarcinoidtumor/detailedguide/lung-carcinoid-tumor-treating-palliative-procedures.html)
4. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html

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After Lung Carcinoid Tumor Treatment

Living as a Cancer Survivor

For many people, cancer treatment often raises questions about next steps as a survivor.

- [Living as a Lung Carcinoid Tumor Survivor](#)

Cancer Concerns After Treatment

Treatment may remove or destroy the cancer, but it is very common to have questions about cancer coming back or treatment no longer working.

- [Second Cancers After Lung Carcinoid Tumor](#)

Living as a Lung Carcinoid Tumor Survivor

For some people with carcinoid tumors, [treatment](#)¹ 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 coming back. This is a very common if you've had cancer.

For other people, the lung carcinoid tumors may never go away completely. Some

people may get regular treatments with chemotherapy, radiation therapy, or other therapies to try to keep the cancer in check for as long as possible. Learning to live with cancer that does not go away can be difficult and very stressful.

Follow-up care

If you have completed treatment, your doctors will still want to watch you closely. It's very important to go to all your follow-up appointments. During these visits, your doctors will ask if you are having any problems and may do exams and lab tests or imaging tests to look for signs of cancer or treatment [side effects](#)².

Almost any cancer treatment can have side effects. Some might only last for a few days or weeks, but others might last a long time. Some side effects might not even show up until years after you have finished treatment. Your doctor visits are a good time to ask questions and talk about any changes or problems you notice or concerns you have.

It's important for all lung cancer survivors, to let their health care team know about any new symptoms or problems, because they could be caused by the cancer [coming back](#)³ or by a new disease or [second cancer](#).

Doctor visits and tests

For people with no signs of cancer remaining, many doctors recommend follow-up visits (which may include CT scans and blood tests) about every 3 months for the first couple of years after treatment, about every 6 months for the next several years, then at least yearly after 5 years. Some doctors may advise different follow-up schedules.

Ask your doctor for a survivorship care plan

Talk with your doctor about developing a survivorship care plan for you. This plan might include:

- A suggested schedule for follow-up exams and tests
- A list of potential late or long-term side effects from your treatment, including what to watch for and when you should contact your doctor
- A schedule for other tests you might need, such as tests to look for long-term health effects from your cancer or its treatment
- Suggestions for things you can do that might improve your health, including possibly lowering your chances of the cancer coming back

Keeping health insurance and copies of your medical records

Even after treatment, it's very important to keep [health insurance](#)⁴. Tests and doctor visits cost a lot, and even though no one wants to think of their cancer coming back, this could happen.

At some point after your cancer treatment, you might find yourself seeing a new doctor who doesn't know about your medical history. It's important to keep copies of your medical records to give your new doctor the details of your diagnosis and treatment. Learn more in [Keeping Copies of Important Medical Records](#)⁵.

Can I lower the risk of my cancer progressing or coming back?

If you have (or have had) lung carcinoid, you probably want to know if there are things you can do that might lower your risk of the cancer growing or coming back, such as exercising, eating a certain type of diet, or taking nutritional supplements.

Adopting healthy behaviors such as [not smoking](#)⁶, [eating well](#),⁷ [getting regular physical activity](#)⁸, and [staying at a healthy weight](#)⁹ is important. We know that these types of changes can have positive effects on your health that can extend beyond your risk of lung carcinoid or other cancers.

Quitting smoking

If you smoke, quitting is important. Although most lung carcinoid tumors are not linked with smoking, some lung carcinoids, like atypical carcinoids, are. Of course, quitting smoking can have other health benefits such as improved healing, lowering your risk of some other cancers, as well as improving your outcome (prognosis) from the cancer. If you need help quitting, talk to your doctor or call the American Cancer Society at 1-800-227-2345.

Diet, nutrition, and dietary supplements

The possible link between diet and lung cancer growing or coming back is much less clear. Some studies have suggested that diets high in fruits and vegetables might help prevent lung cancer from developing in the first place, but this hasn't been studied in people who already have lung cancer.

Some early studies have suggested that people with early-stage lung cancer who have higher vitamin D levels might have better outcomes, but so far no study has shown that taking extra vitamin D (as a supplement) helps. On the other hand, studies have found that beta carotene supplements may increase the risk of lung cancer in smokers.

Dietary supplements are not regulated like medicines in the United States – they do not have to be proven effective (or even safe) before being sold, although there are limits on what they're allowed to claim they can do. If you're thinking about taking any type of nutritional supplement, talk to your health care team. They can help you decide which ones you can use safely while avoiding those that could be harmful.

If the cancer comes back

If cancer does come back at some point, your treatment options will depend on where the cancer is, what treatments you've had before, and your health.

For more information on how recurrent cancer is treated, see [Treatment of Lung Carcinoid, by Type and Extent of Disease](#)¹⁰.

For more general information on recurrence, see [Understanding Recurrence](#)¹¹.

Second cancers after treatment

People who've had lung carcinoid tumor can still get other cancers. Lung cancer survivors are at higher risk for getting another lung cancer, as well as some other types of cancer. Learn more in [Second Cancers After Lung Carcinoid Tumors](#).

Getting emotional support

Some amount of feeling [depressed, anxious, or worried](#)¹² is normal when lung carcinoid is a part of your life. Some people are affected more than others. But everyone can benefit from help and support from other people, whether friends and family, religious groups, support groups, professional counselors, or others. Learn more in [Life After Cancer](#).¹³

Hyperlinks

1. www.cancer.org/cancer/lung-carcinoid-tumor/treating.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
3. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-

- [recurrence.html](#)
4. <https://www.cancer.org/treatment/finding-and-paying-for-treatment/understanding-health-insurance/managing-your-health-insurance.html>
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 6. www.cancer.org/healthy/stay-away-from-tobacco.html
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 12. <https://www.cancer.org/treatment/treatments-and-side-effects/emotional-side-effects.html>
 13. www.cancer.org/treatment/survivorship-during-and-after-treatment/be-healthy-after-treatment/life-after-cancer.html

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Second Cancers After Lung Carcinoid Tumor

Lung carcinoid tumor survivors can be affected by a number of health problems, but often a major concern is facing cancer again. Cancer that comes back after treatment is called a *recurrence*. But some cancer survivors develop a new, unrelated cancer later. This is called a *second cancer*.

Unfortunately, being treated for lung carcinoid tumor doesn't mean you can't get another cancer. People who have had lung carcinoid tumors can still get the same types of cancers that other people get. In fact, they might be at higher risk for certain types of cancer.

Survivors of lung carcinoid tumors can get any type of second cancer, but they have an increased risk of:

- [Prostate cancer](#)¹
- [Male breast cancer](#)²
- [Female breast cancer](#)³

Exactly how high the risk is of these second cancers is not known at this time.

Follow-up after lung carcinoid treatment

After completing treatment, you should still see your doctor regularly. Report any new symptoms or problems, because they could be caused by the cancer spreading or coming back, or by a new disease or second cancer.

Lung carcinoid survivors should also follow the [American Cancer Society guidelines for the early detection of cancer](#)⁴, such as those for colorectal, breast, cervical, and prostate cancer. Screening tests can find some cancers early, when they are likely to be treated more successfully. For people who have had lung carcinoid tumors, most experts don't recommend any additional testing to look for second cancers unless you have symptoms or if you or your family have multiple endocrine neoplasia I (MEN I) syndrome.

Can I lower my risk of getting a second cancer?

There are steps you can take to lower your risk and stay as healthy as possible. For example, people who have had lung carcinoid tumors should do their best to [stay away from tobacco products](#)⁵. Not smoking lowers the chance of developing most lung cancers, but whether or not it helps decrease the possibility of a new lung carcinoid tumor from forming is not known.

To help maintain good health, lung carcinoid survivors should also:

- Try to get to and stay at a [healthy weight](#)⁶
- Stay [physically active](#)⁷
- Eat a [healthy diet](#)⁸, with an emphasis on plant foods
- Limit [alcohol](#)⁹ to no more than 1 drink per day for women or 2 per day for men

These steps may also lower the risk of some other health problems.

See [Second Cancers in Adults](#)¹⁰ for more information about causes of second cancers.

Hyperlinks

1. www.cancer.org/cancer/prostate-cancer.html
2. www.cancer.org/cancer/breast-cancer-in-men.html
3. www.cancer.org/cancer/breast-cancer.html
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