



# Your Guide to Lung Cancer

Mercy 

*Your life is our life's work.*



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## BREATHE EASIER WITH MERCY

In the United States, lung cancer is the leading cause of cancer deaths for both women and men. While it can happen to anyone, people who smoke have the greatest risk of developing lung cancer.

Advances in screening technology have made it easier to detect lung masses in their earliest stages. It's important to see your doctor or health care provider early; the sooner you screen for cancer, the sooner you can begin treatment and the better your chances for success.

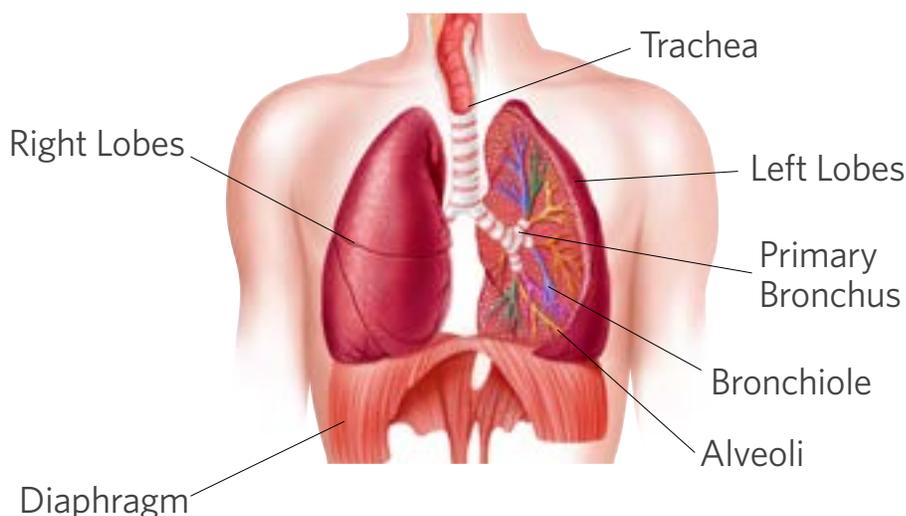
Mercy offers leading technology and compassionate care for our lung patients, so you can feel confident and comfortable throughout your treatment journey.

Mercy is honored to have earned the **Excellence in Patient Experience Award** as the top large health system in the country for patient experience, a distinction made by NRC Health, a leader in building personalized health care solutions and data-driven insights.

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 What is Lung Cancer?

► **Lung Cancer Is Third Most Common Cancer**

In 2024, the top three cancers diagnosed were breast, prostate and lung.



### WHAT IS LUNG CANCER?

The lungs are a pair of cone-shaped breathing organs that are found in the chest. They bring oxygen into the body when you breathe in and release carbon dioxide when you breathe out.

Lung cancer begins with the growth of abnormal cells in the lungs, forming a mass or tumor. Tumors in the lung can be benign (non-cancerous) or malignant (cancerous). If these cells become malignant, they can multiply and spread to other parts of the body.

Less than 5% of lung nodules are cancerous. Cancerous lung tumors are either primary (those which start in the lung) or metastatic (a result of cancer spread from another part of the body).

Unfortunately, most lung masses aren't discovered until late in the disease. The treatment for lung cancer depends on the type of cell causing the disease and the stage of advancement. The most common types of treatment are surgery, medication (including chemotherapy, targeted therapy or immunotherapy) and radiation.

# How Is Lung Cancer Diagnosed?

## Early Screening Can Prevent Cancer From Getting a Head Start

You don't need to wait for symptoms to appear to be screened for cancer. If you're high risk, ask your primary care doctor if a lung cancer screening is right for you. This is called a shared decision-making visit and is a necessary step to obtain a referral for a low-dose CT scan, one of the most common lung cancer screenings.

## Your Screening May Be Covered by Insurance

The Centers for Medicare and Medicaid Services recently updated its lung cancer screening eligibility guidelines for people covered by Medicare, expanding screening access for many people. And due to the Affordable Care Act, most private insurance plans are required to cover lung cancer screenings for those at high risk.

▶ **Test Early, Test Now**

Screening can detect lung masses in the earliest stages, when they're easiest to treat.

### Annual Screenings Underutilized

According to the American Lung Association, at least 14.6 million Americans qualify as high risk for lung cancer and are recommended to receive annual screenings with low-dose CT scans. But only 4.5% of those eligible were screened in 2022.

If you detect lung cancer early, you can begin treatment with a higher chance of a cure. Unfortunately, most lung cancer is found after symptoms appear. That's why it's important to know the signs and symptoms and call your doctor if you experience them.

#### SYMPTOMS OF LUNG CANCER:

- Persistent cough
- Wheezing
- Coughing up blood
- Hoarse voice
- Painful swallowing
- Shortness of breath
- Chest pain
- Weight loss
- Pneumonia
- Feeling tired on an ongoing basis

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## Lung Cancer Diagnosis

### ► **Mercy's Multi-Cancer Early Detection Test**

Mercy now offers a simple blood test that can detect over 50 types of cancer in your body, including many that are rare and difficult to diagnose.

[Learn more](#)

### ► **Better Imaging With CT Scans**

A study found that screening high risk individuals with low-dose CT scans could reduce lung cancer mortality by 20%, compared to a chest x-ray.

## TESTS

Your doctor may use any of the following tests and procedures to examine the lungs to detect, diagnose and stage lung cancer.

### **Physical exam and history**

An exam of your body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. Doctors will take a history of your health habits, including smoking, past jobs, illnesses and treatments.

### **Laboratory tests**

Medical procedures that test samples of tissue, blood, urine or other substances in the body. These tests help to diagnose disease, plan and check treatment, or monitor the disease over time.

### **Chest x-ray**

An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and make a picture of areas inside the body.

### **CT scan (CAT scan) of the brain, chest and abdomen**

A computerized x-ray procedure that makes a series of detailed pictures inside the body taken from different angles. A technician may inject dye into a vein or have you swallow liquids to help the tissues show up more clearly. This procedure is also called computed tomography, computerized tomography or computerized axial tomography.

### **Sputum cytology**

A microscope checks for cancer cells in the sputum (mucus coughed up from the lungs).

### **Biopsy**

The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. There are different ways a biopsy can be done, including:

#### **Fine-needle aspiration (FNA) biopsy of the lung:**

The removal of tissue or fluid from the lung, using a thin needle. A CT scan, ultrasound or other imaging procedure helps doctors find the abnormal tissue or fluid in the lung. Using a small incision, the biopsy needle is inserted into the abnormal tissue or fluid. A sample is removed with the needle and sent to the laboratory. A pathologist then views the sample under a microscope to look for cancer cells. A chest x-ray after the procedure makes sure no air is leaking from the lung into the chest.

## PROCEDURES

### Bronchoscopy

A procedure to look inside the trachea and large airways in the lung for abnormal areas. Doctors insert a bronchoscope through the nose or mouth into the trachea and lungs. A bronchoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue samples, which are checked under a microscope for signs of cancer.

Mercy offers a variety of bronchoscopy options, including advanced techniques that use imaging or robotics to help locate very small or hard-to-reach lung tumors. Your doctor can help identify the best approach for you.

### Thoracoscopy

A surgical procedure using an endoscope to look at the organs inside the chest and obtain tissue to test for abnormalities. In some cases, this procedure is used to remove part of the esophagus or lung. If certain tissues, organs or lymph nodes can't be reached, doctors may do a thoracotomy. In this procedure, a larger incision is made between the ribs and the chest is opened.

### Thoracentesis

The removal of fluid from the space between the lining of the chest and the lung, using a needle. A pathologist views the fluid under a microscope to look for cancer cells.

### Mediastinoscopy

A surgical procedure to look for abnormal areas in the organs, tissues and lymph nodes between the lungs. An incision at the top of the breastbone and a mediastinoscope inserted into the chest helps doctors examine the area. A mediastinoscope is a thin, tubelike instrument with a light and a lens for viewing. It may also have a tool to remove tissue or lymph node samples, which are checked under a microscope for signs of cancer.

### Light and electron microscopy

A laboratory test in which cells in a tissue sample are viewed under regular and high-powered microscopes to look for certain changes in the cells.

### Immunohistochemistry

A test that uses antibodies to check for certain toxins in a sample of tissue. The test usually uses a radioactive substance or a dye that causes the tissue to light up under a microscope. This type of test may be used to determine what type of cancer may be present and to pinpoint its origins.

# 2

## Know the Risks

Smoking

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Family History

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Environment

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Health

# Risk Factors for Lung Cancer

Risk factors are things that increase your chances for developing lung cancer. The most important thing you can do is to learn your own lung cancer risk and take steps to control that risk.

While there are some risk factors you can't control, such as family history, age and gender, there are some you can. For example, both smoking and inheriting certain genes are risk factors for some types of cancer, but only smoking can be avoided.

Remember, having a risk factor, or several, does not mean you'll get lung cancer. And some people who get the disease may have no known risk factors.

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## Risk Factors for Lung Cancer

### ► Smoking

#### ► What Is a Pack Year?

To figure out your pack years, multiply how many packs a day you smoke by how many years you have smoked. (assuming 20 cigarettes per pack) For example:

- If you smoked 1 pack a day for 15 years, that's 1 times 15. Therefore, you have a smoking history of 15 pack years.
- If you smoked 1½ packs a day for 20 years, that's 1.5 times 20. Therefore, you have a smoking history of 30 pack years.
- If you smoked 2 packs a day for 15 years, that's 2 times 15. Therefore, you have a smoking history of 30 pack years.

$$\frac{\text{Packs}}{\text{Per Day}} \times \frac{\text{Years}}{\text{Smoked}} = \frac{\text{Pack}}{\text{Year}}$$

## SMOKING

### Tobacco Smoking

Tobacco smoking provides the biggest risk for lung cancer. Cigarette, cigar and pipe smoking all increase the risk of lung cancer.

*Smoking causes about nine out of ten cases of lung cancer in men and about eight out of ten cases in women.*

Studies have shown that smoking low-tar or low-nicotine cigarettes doesn't lower the risk of lung cancer. Studies also show that the risk of lung cancer from smoking cigarettes increases with the number of cigarettes smoked per day and the number of years you have smoked. People who smoke have about 20 times the risk of lung cancer than those who don't smoke.

*If you've already quit smoking, you've taken the best step you can to prevent lung cancer. If you still smoke, the best way to lower your chance of getting or dying from lung cancer is to quit. Your doctor may recommend medicines that can help you quit smoking.*

### Secondhand Smoke

Being exposed to secondhand smoke also puts you at risk for lung cancer. Secondhand smoke is the smoke that comes from a burning cigarette or other tobacco product, or that is exhaled by smokers. People who inhale secondhand smoke are exposed to the same cancer-causing agents as smokers, although in smaller amounts. Inhaling secondhand smoke is called involuntary or passive smoking.

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Risk Factors for  
Lung Cancer

► Smoking  
Family History

## The Truth About Vaping

E-cigarettes haven't been available long enough for researchers to know what the long-term effects of using them may be. More research is needed.

But most e-cigarettes have high levels of nicotine. Nicotine is very addictive and can harm the brain development of teenagers. The vapor or aerosol from e-cigarettes can contain substances that are linked to lung disease, heart disease and cancer.

So while e-cigarette vapor generally contains lower levels of harmful chemicals than cigarette smoke, no tobacco products are safe.

**At Mercy, we recommend annual lung cancer screenings with low-dose computed tomography (LDCT) if you meet the following three criteria:**

- Are 50-80 years old
- Have a smoking history of 20 pack years or more
- Currently smoke or have quit within the past 15 years

*\*Screening guidelines differ among various clinical organizations, so it's important to discuss your risk factors and health history with your doctor. Some guidelines recommend starting screening earlier or continuing it longer.*

## FAMILY HISTORY

Having a family history of lung cancer is another risk factor. Children and siblings of a person who had lung cancer may have a slightly higher risk of getting the disease, especially if the relative was diagnosed at a younger age. Because cigarette smoking tends to run in families and family members are exposed to secondhand smoke, it's hard to know whether the increased risk is from the family history of lung cancer or from being exposed to cigarette smoke.

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## Risk Factors for Lung Cancer

- ▶ **Environment**  
Limiting your exposure can limit your risk.

## ENVIRONMENTAL RISK FACTORS

### Radon Gas

According to the EPA, radon is the second leading cause of lung cancer in this country and is the leading cause among non-smokers. Radon is a radioactive gas that comes from the breakdown of uranium in rocks and soil. It seeps up through the ground and leaks into the air or water supply. Radon can enter homes through cracks in floors, walls or the foundation, and levels can build up in a home.

Studies show that having high levels of radon gas inside homes and other buildings increases the number of new cases of lung cancer and the number of deaths caused by lung cancer. The risk of lung cancer is higher in smokers exposed to radon than in nonsmokers exposed to radon.

### Workplace Exposure

Studies show that being exposed to the following substances also increases the risk of lung cancer:

Asbestos	Tar and soot
Arsenic	Coal smoke
Chromium	Silica
Nickle	Diesel fumes
Beryllium cadmium	

These substances can cause lung cancer in people who are exposed to them in the workplace and have never smoked. As the level of exposure to these substances increases, the risk of lung cancer also goes up. The risk of lung cancer is even higher in people who are exposed and also smoke.

### Air Pollution

Some studies show that living in areas with higher levels of air pollution may slightly increase the risk of lung cancer.

### Past Radiation Exposure

According to the Environmental Protection Agency, exposure to low levels of radiation does not cause immediate health effects but can cause a small increase in the risk of cancer over a lifetime.

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## Risk Factors for Lung Cancer

### ► Health

For people with multiple risk factors, it can be difficult to determine which factor is most responsible for an increased risk of lung cancer.

## HEALTH

### HIV Infection

Being infected with the human immunodeficiency virus (HIV) — the cause of acquired immunodeficiency syndrome (AIDS) — is linked to a higher risk of lung cancer. People infected with HIV may have more than twice the risk of lung cancer than those who aren't infected. Since smoking rates are higher in those infected with HIV, it isn't clear whether the increased risk of lung cancer is from HIV infection or from being exposed to cigarette smoke.

### Beta Carotene Supplements in Heavy Smokers

Taking beta carotene supplement pills increases the risk of lung cancer, especially in smokers who smoke one or more packs a day. The risk is even higher for smokers who have at least one alcoholic drink every day.

# 3

## Types of Lung Cancer

There are two main types of lung cancer: small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). A third, less common type of lung cancer is called carcinoid.

### **Small cell lung cancer**

- Small cell carcinoma
  - Mixed small cell/large cell cancer
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### **Non-small cell lung cancer**

- Adenocarcinoma
  - Squamous cell carcinoma
  - Large cell carcinoma
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### **Carcinoid**

Less common

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## Types of Lung Cancer

### ► Your Lung Cancer Profile

Each type of lung cancer is different. Knowing which type you have helps determine available treatment options.

## SMALL CELL LUNG CANCER (SCLC)

There are two different types of SCLC: small cell carcinoma and mixed small cell/large cell cancer (or combined small cell lung cancer). The types of small cell lung cancer are named for the kinds of cells found in the cancer and how the cells look when viewed under a microscope. Small cell lung cancer is almost always associated with cigarette smoking and is usually treated with chemotherapy, with or without radiation.

## NON-SMALL CELL LUNG CANCER (NSCLC)

Non-small cell lung cancer is more common. It makes up about 85% of lung cancer cases. This type of cancer usually grows and spreads to other parts of the body more slowly than small cell lung cancer does. There are three different types of NSCLC:

### **Adenocarcinoma:**

A form of non-small cell lung cancer often found in an outer area of the lung. It develops in tissue that lines the cavities and surfaces of the body and glands.

### **Squamous cell carcinoma:**

A form of non-small cell lung cancer usually found in the center of the lung next to an air tube (bronchus).

### **Large cell carcinoma:**

A form of non-small cell lung cancer that can occur in any part of the lung and tends to grow and spread faster than adenocarcinoma or squamous cell carcinoma.

## CARCINOID

Lung carcinoid tumors are uncommon and tend to grow slower than other types of lung cancers. They're made up of special kinds of cells called neuroendocrine cells. They're usually classified as typical or atypical carcinoids. Carcinoids are very rare and slow-growing and are most commonly treated with surgery.

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## Treatment Options

Surgery

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Medication

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Radiation

# Lung Cancer Treatment

At Mercy, our cancer specialists offer the latest tools for diagnosing and treating lung cancer. We listen to your concerns and answer your questions. Taking into account your health, the kind of tumor and how far it has spread, we discuss the treatment that's right for you.

Your lung cancer treatment plan might include one or more of these options:

- Surgery to remove the tumor and surrounding tissue
- Medication, including chemotherapy, targeted therapy or immunotherapy
- Radiation therapy

.....  
 Lung Cancer  
 Treatment Options

► **Impact on  
 People of Color**

People of color who are diagnosed with lung cancer face worse outcomes compared to white Americans. They're less likely to be diagnosed early, less likely to receive surgical treatment and more likely to receive no treatment.

## Advantages of Mercy's Oncology Care

### Personal, customized approach

Our oncologists take the time to get to know you, your lifestyle and your goals. Then they formulate a treatment plan that fits your situation.

### Coordinated cancer care

Our team works closely with your medical oncologist and referring physician to bring you the most effective treatment for your condition. All your Mercy caregivers are seamlessly linked through your electronic health record, enabling team members from many different specialties to work together, helping you increase your strength and energy, alleviate pain and improve your quality of life after cancer.

### Leading-edge technology

Mercy uses the latest tools and techniques for earlier diagnoses and more positive outcomes.

### Access to clinical trials

Enrolled patients may be among the first to benefit from new treatment approaches.

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Lung Cancer  
Treatment Options

► **Types of Lung Surgery**

- Lobectomy
- Segmentectomy
- Pneumonectomy
- Sleeve resection

## SURGERY

Surgery has long been used to help cure lung cancer, particularly for cancers in stage I, II and sometimes III. Surgery is rarely used for stage IV cancers.

Several types of lung surgery are used to treat cancer:

- **Lobectomy** removes the lobe containing the tumor. It's the most common surgery for lung cancer.
- **Segmentectomy** or wedge resection — both of these remove part of a lobe. Segmentectomy is typically used to remove larger parts, while wedge resection is used for smaller pieces of a lobe. This may be an option for people with limited lung function, who can't tolerate losing a whole lobe of the lung.
- **Pneumonectomy** removes an entire lung.
- **Sleeve resection** treats cancer that extends from your lung into a nearby large airway (like your bronchial tube). Your surgeon removes the entire lobe and part of your airway. Then the remaining section of airway is reattached to a new lobe.

The type of surgery you'll need depends on several factors. These include:

- The size and location of your lung tumor.
- The stage of your cancer. To qualify for surgery, your cancer typically must be localized. This means it hasn't spread to your lymph nodes or beyond. Surgery is usually reserved for people with early stage, non-small cell lung cancer or lung carcinoid tumors.
- The health of your heart and lungs. You must be healthy enough to have, and recover from, surgery. Your doctor will order tests to make sure your leftover lung tissue will work well after surgery.

► **Lung Surgery  
Procedures**

- *Thoracotomy*  
Traditional open  
surgery
- *Thoracoscopy*  
Minimally  
invasive surgery

## Surgical Procedures

### Thoracotomy

Some patients need a type of “open” surgery called thoracotomy. Your surgeon accesses your lung through a large incision on the side of your chest, between your ribs. The ribs are spread apart to allow the surgeon to work. During surgery, the lung with the tumor is deflated and a breathing tube is inserted down the throat to help the other lung. After surgery, the cut is sewn up, but chest tubes remain for several days to drain fluid and air. The surgery normally lasts from two to six hours and may require several days of hospitalization.

### Thoracoscopy

Newer surgical methods include minimally invasive methods like thoracoscopy or VATS. This procedure can be done with or without a robot. During the procedure, several tiny incisions are made, instead of one large incision. This may reduce your pain and risk of some complications after surgery. You may also have a shorter hospital stay and quicker recovery.

Mercy offers the following minimally invasive techniques for lung cancer:

- Video-assisted thoracic surgery (VATS)
- Robotic-assisted lung surgery

No matter what type of surgery you have, your recovery can take several weeks to several months. Common side effects following lung surgery include pain, swelling and scars. Pain and swelling normally fade away in the weeks following surgery, but numbness in the area you had surgery may last longer. Infection is also a risk, which could lead to pneumonia. Collapsed lung is also a risk following surgery.

It’s important to discuss all the surgical risk factors with your doctor so you’ll be well informed. Following surgery, it’s important to share any symptoms with your doctor so they can connect you with supportive care that can help your recover and improve your quality of life.

The good news is that many people eventually return to normal activity levels — even if they’ve lost an entire lung.

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Lung Cancer  
Treatment Options

► Medication

- Chemotherapy
- Targeted Therapy
- Immunotherapy

## MEDICATION

### Chemotherapy

If you need chemotherapy to treat your cancer, you may have conflicting feelings. You want to beat cancer, no matter what it takes. But you might be nervous about how chemotherapy will affect you.

It's natural to feel anxious about any cancer treatment. But you can also rest assured, knowing chemotherapy has a long track record of success. It's helped countless people overcome cancer since the 1950s. And many of today's chemotherapy drugs are more effective, with fewer side effects.

### Understanding Chemotherapy

Chemotherapy, or "chemo", refers to more than 100 drugs used to kill cancer cells. There are key differences in how individual drugs work. But in general, chemotherapy drugs stop cancer cells from growing or multiplying.

Most people receive chemotherapy intravenously. This means a tiny plastic tube, or catheter, will carry medicine into your vein. Some chemotherapy can also be given as a pill, a shot, a skin cream or a liquid that you swallow.

The type of chemotherapy you'll need depends on several factors. These include the kind of cancer you have, the size of your tumor and whether it has spread. Because certain drug combinations kill more cancer cells, you may receive more than one chemotherapy drug at a time. This is called "combination chemotherapy."

Chemotherapy can be given alone or with other cancer treatments, such as a course of radiation. It may be used to shrink tumors before surgery or radiation therapy. It may also be used after surgery or radiation to kill any lingering cancer cells.

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## Lung Cancer Treatment Options

### ► Medication

#### *Chemotherapy*

This is a very effective tool in the fight against cancer, but managing the side effects can be challenging. Your Mercy care team is here to help with experience and compassion.

### Benefits of Chemotherapy

Chemotherapy offers many benefits. Depending on your treatment goals, it may be used to:

- Prevent your cancer from spreading
- Slow the growth of your cancer
- Kill cancer cells that have spread to other parts of your body (metastatic cancer)
- Reduce pain and other problems caused by your tumor
- Cure your cancer completely

### What to Expect

It's important to talk with your care team so you understand what to expect before, during and after chemotherapy. Chemotherapy drugs can't tell the difference between cancer cells and healthy cells. When healthy cells are destroyed, you may have side effects. These include nausea and/or vomiting, fatigue, hair loss, anemia and memory problems. You may also be more prone to infections.

Side effects of chemotherapy differ from one patient to another. Some side effects can be very serious, while others are just unpleasant. Side effects of chemotherapy depend upon many factors including:

- Drug type
- Amount taken
- Length of treatment
- Each patient's reaction

It's important to discuss side effects with your care team in advance so you know what to expect. While cancer treatments can take a toll on your quality of life, they can also help to save it. Most side effects appear shortly after treatment starts and end when the treatment ends. But others can be long lasting or appear years later. Coping with chemotherapy can be tough, so it's important to connect with a care team that provides the expertise, support and encouragement you need to get through treatment — and past cancer.

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Lung Cancer  
Treatment Options

► **Medication**

*Targeted Therapy*

This precise drug therapy battles cancer on a cellular level.

## Targeted Therapy

Targeted therapy is a newer treatment being used to target cancer cells. It involves a group of drugs that stop key molecules that help cancer cells grow. It's able to stop these molecules while causing less harm to healthy cells. That's because targeted therapies are more precise in the way they attack cancer cells. Most chemotherapy drugs can't tell the difference between cancer cells and healthy cells, so they kill both. Targeted therapies, on the other hand, aim for specific components inside your cells that help cancer grow and spread. This means they hurt cancer cells while leaving more healthy cells alone.

### Benefits of Targeted Therapy

Different targeted therapies offer different benefits. Depending on your treatment goals, your drug(s) may be used to:

- Block or turn off signals that tell cancer cells to grow or multiply
- Alter proteins within cancer cells that cause those cells to die
- Prevent new blood vessels from forming, which cuts off blood supply to your tumor
- Tell your immune system to attack the cancer cells
- Deliver toxins that kill cancer cells without harming healthy cells

As with any treatment, it's important to discuss risks and side effects with your care team to be sure you understand what to expect before, during and after targeted therapy.

For example:

- Targeted therapy drugs may cause side effects. These commonly include rashes and other skin changes, diarrhea, high blood pressure and problems with blood clotting or wound healing
- Some targeted therapy drugs may harm a fetus. Women must take steps to avoid becoming pregnant during treatment

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## Lung Cancer Treatment Options

### ► Medication

#### *Immunotherapy*

This type of targeted therapy may have fewer side effects than traditional therapy.

Many targeted therapy drugs have already been approved by the Food and Drug Administration (FDA) — and many more are still being tested by researchers. If you're not eligible for an approved drug, you may be able to try an experimental one by participating in a clinical trial. Your care team can help you explore this option.

### Immunotherapy

Immunotherapy is a type of targeted therapy that activates the strength of your immune system so your body can find and destroy cancer cells.

Some lung cancers consist of cells that have PD-L1 on their surface. Cancer cells with PD-L1 can turn off your body's immune response, so your body can't attack the tumor. Immunotherapy for lung cancer stops PD-L1 from attaching.

Immunotherapy agents being used to treat lung cancer include medicines with brand names like Opdivo<sup>®</sup>, Tecentriq<sup>®</sup>, Imfinzi<sup>™</sup> and Keytruda<sup>®</sup>. They work by telling your body's immune system to fight the cancer in your body. These medicines are given by IV, and many have fewer side effects than traditional chemotherapies.

Common side effects for immunotherapy include feeling tired, constipated, nauseated and not hungry. Some patients have muscle or bone pain. Rarely, immunotherapy can lead to organ inflammation, which can cause serious side effects. Immunotherapy isn't safe for women who are pregnant, trying to get pregnant or breastfeeding.

Not everyone is a candidate for targeted therapies (including immunotherapy), but your doctor can order special testing to see if you're eligible. If you are, your treatment plan will depend on the type of cancer you have and which targets were identified by your tests. A variety of targeted therapy drugs are now available and more clinical trials are underway. Targeted therapy may be the only treatment you need or it may be combined with other chemotherapy agents, surgery or radiation therapy.

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 Lung Cancer  
 Treatment Options

► **Types of Radiation**

- Stereotactic body
- Radiotherapy
- Image-guided radiotherapy
- Intensity-modulated radiotherapy
- Proton therapy

## RADIATION

### Radiation Therapy

Through radiation therapy, targeted energy beams are used to kill cancer cells, shrink tumors and provide relief for cancer-related symptoms. By focusing directly on the tumor, oncologists can lessen the dosage of radiation on normal, healthy tissues and reduce side effects.

Mercy’s radiation oncologists are highly trained and experienced in performing radiation treatment for people with cancer. To improve your chances for a successful recovery, they may also recommend other types of cancer treatment, such as surgery or chemotherapy.

Your Mercy oncologist will plan, prescribe and supervise your care. But it’s our team approach that allows us to provide exceptional service and compassionate cancer care. Other team members may include physician assistants, registered radiation therapists, nurses, medical physicists, dosimetrists and other support staff all working together to coordinate every aspect of your care.

### Types of Radiation Therapy

#### *Stereotactic Body Radiotherapy (SBRT)*

Stereotactic Body Radiotherapy is a precisely-targeted radiation treatment used to treat tumors in the lung, liver, pancreas, spine, head and neck region, adrenal gland, pelvis and bone. Treatment is precise, painless and takes only one to five treatment sessions as compared to several weeks for traditional radiation therapy.

In some patients, oncologists use respiratory gating to ensure the tumor does not move out of the targeted area as the patient breathes. Multiple beams allow the shape and dose of the radiation to precisely treat the target — and spare surrounding healthy tissue. SBRT is a non-invasive, outpatient procedure. Because there’s no surgical incision, patients are able to return to their usual activities immediately.

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 Lung Cancer  
 Treatment Options

► **Radiation**  
*Image-guided  
 Radiotherapy*

***Image-guided Radiotherapy (IGRT)***

When treating cancerous tumors with radiation, your Mercy team may use x-rays, ultrasound or CT scans to guide the delivery of the radiation. The precision provided by image-guided radiotherapy is important because tumors can change shape, change size or shift location from day to day.

In a fast-working organ such as the lungs, you may require frequent imaging tests during treatment. If your tumor has moved, your radiation therapy team will reposition your body and re-target your radiation to pinpoint your tumor more precisely.

**What are the advantages of IGRT?**

<p>Higher doses of targeted radiation help control the cancer.</p>	<p>Surrounding healthy tissue receives less exposure to radiation.</p>	<p>Treatment planning, patient positioning and radiation treatment happen all in one place.</p>
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Mercy cancer specialists are skilled in using IGRT to treat all types of cancer. Our goal is to provide complete and compassionate care and to get you back to an active, cancer-free life.

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Lung Cancer  
Treatment Options

► Radiation

► **Leading Technology**

Mercy's proton therapy cyclotron is located at the David C. Pratt Cancer Center in St. Louis, but is available to patients throughout our region.

***Intensity Modulated Radio Therapy (IMRT)***

An advanced type of radiation therapy, intensity-modulated radiotherapy uses beams of high-energy radiation to target cancer tumors. With IMRT, both the radiation intensity and beam shape can be changed throughout each treatment.

By adjusting the radiation dose, IMRT makes it possible to use the maximum amount of radiation to destroy cancer cells. It also avoids or minimizes the radiation exposure of surrounding healthy tissue. That means fewer side effects.

**What are the advantages of IMRT?**

<p>Many types of cancer can be treated effectively, including lung cancer.</p>	<p>A CT scan helps create a 3D image of the tumor and the normal tissues nearby, allowing your radiation therapy team to develop your treatment plan.</p>
<p>Doctors may use IMRT along with surgery or chemotherapy for better results.</p>	<p>Daily treatment usually takes only a few minutes.</p>

***Proton Therapy***

Proton therapy uses a beam of high-energy protons to target and destroy cancer cells with pinpoint accuracy in the lungs. During proton therapy, a powerful cyclotron device accelerates and charges the proton particles, so they can damage the DNA of cancer cells to keep them from growing and spreading. The protons can be focused directly on the cancer tumor, with very minimal side effects to the lungs or other surrounding healthy tissue.

.....  
 Lung Cancer  
 Treatment Options

► **Clinical Trials**

*Exploring New Treatments*

Patients enrolled in a clinical research study may be among the first to benefit from a new treatment.

## CLINICAL TRIALS

Clinical trials offer cancer patients new hope for successful treatment, and they're an important aspect of care at Mercy. We're committed to making a variety of opportunities available to patients interested in participating in research studies. Mercy's research department helps transform the health care experience by bringing you new models of care.

- We participate in trials offered by the National Cancer Institute (NCI) through the National Community Oncology Research Program (N-CORP). This program provides more than 50 NCI Phase II, III and IV trials in cancer prevention, treatment and supportive care to our adult and pediatric patients.
- We offer a selection of industry-sponsored trials to complement our N-CORP studies.

Cancer treatment trials increase our knowledge and progress against cancer. If a new treatment proves effective in a study, it may become a treatment that will help many people with cancer. Many of today's most effective treatments are based on previous study results. Because of the progress made through cancer treatment trials, many people treated for cancer are living longer.

Patients who take part in a treatment trial receive either a new treatment or the best available treatment for their cancer.

It takes a coordinated team to treat and support patients throughout the entire process. Mercy cancer specialists will help reduce your side effects, manage any pain and provide follow-up care to prevent the cancer from returning.

Our goal isn't just to provide effective care. At Mercy, we address your physical, emotional and spiritual needs, so you can live a happier, more complete life.

# 5

## A Healing Journey

Rehabilitation

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Pain Management

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Spiritual Care

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Smoking Cessation

# Patient Services

Completing treatment is just the beginning, as you may suffer side effects caused by chemotherapy or radiation treatments. You may experience pain, fatigue and disability. Through our cancer rehab program, Mercy helps you heal by improving your physical, emotional and spiritual outlook. To help our cancer survivors, Mercy offers a multifaceted survivorship training and rehabilitation program.

- ▶ **Rehabilitation**  
Getting back to the  
life you love.

## ONCOLOGY REHABILITATION SERVICES

Mercy's program looks at "the big picture" in cancer rehab, rather than a problem-centered approach.

Specialists consider the whole person, studying aspects of each patient's experience such as diet, sleep, pain, endurance, strength, exercise habits, health conditions and emotional outlook. All of these impact physical healing.

Caregivers from many different specialties work together to help you increase your strength and energy, alleviate pain and improve your quality of life after cancer. The goal of the program is to return patients to their pre-treatment lives and activities.

You may self-refer, or your doctors may refer you to specific therapies, based on your needs.

- **Pain Management**  
Effective methods  
to make your recovery  
as comfortable as  
possible.

## PAIN MANAGEMENT

### Understanding Cancer and Pain

Cancer-related pain occurs for many reasons. As your tumor develops, it may destroy tissue. And it may press on or grow into your bones, nerves or organs.

Even though cancer treatments can remove or kill a painful tumor, they may cause side effects. If you have cancer surgery, you may feel pain in your incision. If you need chemotherapy, you might experience nerve pain. And if you go through radiation therapy, you may have pain or sores in the part of your body being treated.

There is no shame in asking for help managing your pain. Effective pain management is an important part of your cancer treatment plan. If left untreated, pain can affect your mood and quality of life. You may have trouble working, sleeping or performing normal daily activities.

#### **Mercy will help you create a pain management plan that may incorporate one or more of the following:**

- Over-the-counter or prescription-strength pain relievers
- Opioid pain medications. Talk to your doctor if you have concerns about opioid dependence. For most people who use opioid painkillers correctly, the risk of addiction is low.
- Other medications, including antidepressants, steroids or nerve block injections
- Physical or occupational therapy
- Complementary and alternative therapies, including acupuncture, massage and meditation
- Referral to palliative care for stage IV patients, which prolongs survival and improves quality of life

You'll work closely with your Mercy care team the entire time you're being treated for cancer pain.

We'll make sure your pain remains well controlled with minimal side effects. When your pain begins to go away, we'll help you safely reduce or stop your medications. Fighting cancer is hard enough without the burden of pain.

Talk to your Mercy caregiver about pain management options. We can help you overcome your pain, so you can focus on overcoming cancer.

## SPIRITUAL CARE

Living with cancer is difficult for patients and family members alike. Mercy Pastoral Services can help.

Our highly-trained chaplains provide spiritual care and emotional support to you and your immediate family members at no cost.

Each Mercy cancer care facility has an experienced chaplain available to provide support regardless of your faith or worldview. Chaplains are compassionate listeners who help you process the feelings that accompany a cancer diagnosis. They serve as an advocate for you and your family, communicating with other members of your health care team and suggesting specific ways to provide compassionate, holistic care — in a way that’s best for you.

In addition to meeting with our chaplains face-to-face, you can also communicate by telephone, video-conferencing or by email — whatever is most convenient and appropriate for you and your loved ones. By taking the first step, your initial connection can lead to an ongoing, supportive relationship that can improve your cancer care.

Studies show that taking care of your spiritual needs can impact physical health. Some of the benefits include decreased feelings of anxiety, depression, anger and loneliness; lowered blood pressure; and better control of pain, nausea and discomfort.

To reach a chaplain at your Cancer Care Center, simply ask a nurse to contact the chaplain or to dial the facility’s operator to page a chaplain for you. Some facilities provide designated space (a prayer room or chapel) for quiet reflection, prayer or meditation. Feel free to ask your nurse if such a space is available at your location.

**► Smoking Cessation**

Seek support for a  
smoke-free future.

**SMOKING CESSATION**

Quitting smoking is hard, but you can do it. The good news is that you don't have to do it alone. Ask your family, friends and doctor to help you.

**Tobacco Cessation Programs**

Although smoking is the number one cause of lung cancer, we understand that it's hard to quit. If you're a smoker and you're ready to quit, Mercy offers several tools, resources and one-on-one support.

Mercy's tobacco cessation programs use leading techniques for nicotine cessation based on scientific research done by both the National Institute of Health and the U.S. Department of Health & Human Services.

Programs focus on both your physical and emotional needs as you quit. Treatment begins with an assessment of your readiness to change, with an emphasis on behavior and stress management. Working in conjunction with your Mercy doctor, we develop a personalized treatment plan that may or may not include tobacco treatment medications.

► **Smoking Cessation**  
*Never Quit on Quitting*  
Determination and  
dedication pay off.

Other ways to help you on your smoke-free journey include:

- **Preparation**  
If you like to plan ahead, set a date to quit. Pick a time when you won't have a lot of stress in your life. Talk to your partner and friends about helping you stay smoke-free. Don't let people smoke in your house.
- **A change in routine**  
For example, if you smoke after eating, take a walk instead.
- **Medication**  
Medicine can help with cravings and stress, and can increase your chances for success. You can buy nicotine gum, lozenges or patches without a prescription. Your doctor may also prescribe medicine.
- **Support**  
Seek help from:
  - Doctors, nurses or therapists
  - A friend who has quit smoking
  - National quit smoking phone lines
- **Free apps**  
Available on your smartphone or tablet
- **Internet programs**  
Many patients find support in chat rooms.  
One example: [www.smokefree.gov](http://www.smokefree.gov)

The National Network of Tobacco Cessation quit line:  
800.Quit.Now  
(800.784.8669)

## Helping You Face a Cancer Diagnosis with Confidence

Mercy has the resources and information you need to navigate this journey, and we're here to support you every step of the way. For convenient scheduling, see below for links to providers and locations near you.



Scan to learn more, or visit  
[mercy.net/LungCancerHope](https://mercy.net/LungCancerHope)