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# LUNG CANCER

*A Treatment Guide for Patients and their Families*



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# LUNG CANCER

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# Advancements guide how lung cancer is treated

**T**he rapid pace of lung cancer research continues to give doctors a better understanding of the disease and how to treat it. These advances are offering hope to people with lung cancer and their loved ones. With so much promising information available, it is important to find a lung cancer specialist who can help you make sense of the details about your diagnosis and assist you in making informed treatment decisions.

When you first learn you have cancer, your reactions can range from shock to disbelief, fear to determination. It is important to learn about your diagnosis, listen to the medical team's advice, ask questions and lean on supportive family and friends.

Diagnostic tests will include blood tests, imaging scans of the chest and brain, a biopsy and molecular testing for biomarkers (see *Molecular Testing & Biomarkers*, page 6).

You may feel that you should start treatment immediately, but in most cases, it is preferable to wait until all of the diagnostic test results are in. Sometimes molecular test results can take up to two weeks. Knowing this ahead of time can help you prepare mentally because it can be stressful to wait. Finding genomic biomarkers through molecular testing, however, is critical in identifying potential therapies. With that information, your doctor can develop the best treatment plan for you based on your cancer's unique characteristics.

## HOW LUNGS FUNCTION

Your lungs are a pair of large, spongy, expandable organs in your chest cavity that are surrounded by a thin layer of protective tissue (pleura). The right lung is a little larger with three parts (lobes), and the left lung has only two (see *Anatomy of the Lungs*).

When you inhale, your lungs absorb oxygen, which is delivered to neighboring red blood cells that then deliver the oxygen to the rest of your body. When you exhale, your lungs rid the body of carbon dioxide. Your diaphragm helps your lungs expand and contract when you breathe.

Cancer develops when abnormal cells in the lining of the airways accumulate to form a tissue mass (primary tumor). A primary tumor may grow into the lining around the lung and form secondary tumors nearby. Many lung cancer patients also have chronic pulmonary disease in the non-cancer tissues of the lung,

which may interfere with lung function and alter therapeutic options. Pulmonologists often assist in assessing lung function.

In advanced disease, lung cancer cells break away and enter the bloodstream to form tumors in distant sites such as the opposite lung, liver, brain or bones. These are known as metastases. Even though they are in other parts of the body, they are still considered lung cancer and are treated as such.

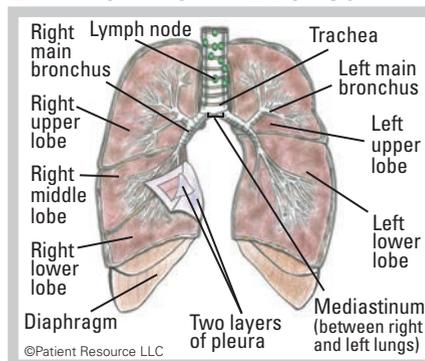
## TYPES OF LUNG CANCER

Pathologic examination of diagnostic biopsies will determine which pathologic type of lung cancer you have: non-small cell lung cancer (NSCLC) or small cell lung cancer (SCLC).

The majority of lung cancer diagnoses are NSCLC, which has several subtypes:

- Adenocarcinoma is the most common NSCLC subtype, especially in people who have never smoked. It generally begins in the mucus-producing cells that are farthest away from the airways. It usually grows more slowly than other types and tends to develop in the peripheral lung and spread to distant sites more often than other types, except for SCLC.
- Squamous cell lung cancer (epidermoid carcinoma) is the second most common subtype. It starts in the early versions of squamous cells, the thin, flat cells that line the inside of the airways in the lungs. It most often develops in the central part of the lung. It spreads to distant sites less often than adenocarcinoma.
- Large cell lung cancer, the least common type of NSCLC, can develop anywhere in the lungs and tends to grow and spread quickly. When large cell lung cancer includes neuroendocrine features, such as higher-than-normal amounts of hormones, it may behave and be treated like SCLC. Other times it may have features more like adenocarcinoma.

## ANATOMY OF THE LUNGS



SCLC is named for its appearance under a microscope. It often starts in the central airways (bronchi) in the center of the chest. An aggressive form of lung cancer, it most often spreads to distant parts of the body before it is found. Research is underway to explore SCLC subtypes and how they may respond to treatment.

There are other less common types of lung cancer, including mesothelioma, typical and atypical carcinoid tumors, sarcoma and others, which can also begin in other organs.

## SEEKING A SECOND OPINION

Getting a second opinion is encouraged for many reasons. It can ensure your diagnosis is accurate by confirming your pathology report and stage of cancer, as well as making you aware of clinical trials to consider.

Doctors bring different training and experience to treatment planning. Some doctors may favor one approach, such as a trial, while others might suggest a different combination of treatments. They can also answer any additional questions you may have.

Most doctors welcome a second opinion and will recommend another physician or hospital. Above all, the goal is for you to have the best care available. ■

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Since 2013, retired Navy veteran Larry Gershon and his medical team have partnered in shared decision making to manage his Stage IV non-small cell lung cancer (NSCLC). He says education, self-advocacy and support have helped him navigate his treatments. Dedicated to helping others with lung cancer, Larry was recently recognized as GO<sub>2</sub> for Lung Cancer's 2023 Rays of Hope winner for his avid participation in the lung cancer community.



## Finding purpose in an unexpected diagnosis

➔ After I couldn't shake a bad cold that had progressed to asthma-like symptoms, an X-ray showed a small spot in the upper right lobe of my lung. A CT, PET, surgical biopsy and brain MRI confirmed cancer. It was Stage IV because it had metastasized to my brain. This was definitely not a diagnosis I expected.

Fortunately, we had access to excellent medical facilities. My medical team included a skilled general oncologist and a thoracic oncologist who specializes in lung cancer. We agreed on a treatment plan that consisted of four rounds of chemotherapy followed by maintenance chemotherapy.

I was 65 years old and working full time. I was concerned that treatment would prevent me from providing for my family. Fortunately, my chemotherapy was on Tuesdays, and I didn't feel the effects until the weekend. By Mondays, I felt well enough to be back at work.

During chemotherapy treatment, the genomic testing results came back from my surgical biopsy and showed I had a mutation known as an *EGFR* exon 19 deletion. That meant I was a candidate for targeted therapy; however, we were getting good results with chemotherapy, so we kept the targeted therapy option in our back pocket for use in the future.

After about a year of chemotherapy, I took a break from treatment. During that "chemo holiday," I was introduced to GO<sub>2</sub> for Lung Cancer, an organization then known as the Bonnie J. Addario Lung Cancer Foundation. That was the beginning of my education, empowerment and advocacy for myself. Most important, the support I received helped me know there is HOPE.

GO<sub>2</sub> offers a Living Room series where medical professionals and thought leaders discuss the advances in lung cancer. It's available in person, live via online streaming and by replay. The GO<sub>2</sub> website has a library of past Living Room videos and is filled with information and resources for both patients and caregivers.

Because I was fortunate to learn so much about lung cancer, I felt the best thing I could do was give back by sharing that knowledge and supporting others. Truthfully, it helps me focus on something other than my own situation.

Along with sharing my experience as a survivor with researchers to help them as they work to improve lung cancer treatments, I'm a phone buddy for GO<sub>2</sub>. I talk with newly diagnosed patients about their diagnosis and treatment. I don't give medical advice, obviously, but I talk about my own experiences. I offer support and often help them prepare for their appointments.

Staying up to date with new developments in lung cancer treatments helped me prepare for scan results that showed new tumors. I have had brain metastases treated with cyber knife and also surgically removed. A recent scan showed a new tumor in my lower right lung. I had a biopsy of the tumor to determine whether it was caused by a new mutation. The biopsy showed a new mutation in addition to the original *EGFR* mutation. It is a *MET* amplification. I am now taking two targeted therapies — one for the original *EGFR* mutation and another for the *MET* amplification. Scans a few weeks ago showed the combination is working well.

Over the years when scans have shown new areas of disease, I have had liquid (blood) biopsies or tissue biopsies. My recent experience was that the *MET* amplification did not show up in the blood, but it did in tissue. Both methods have their pros and cons.

I am now semi-retired, on my fourth line of treatment and feel fortunate to be able to enjoy my family and live an active life. I am hopeful the next great treatment option will be available in the future when I need it. ■

### Advice from Larry

- ▶ **Seek out a lung cancer specialist.** I can't emphasize enough how critical this is, either as your primary oncologist or as a second or third opinion. It is unfair to expect a general oncologist who treats all types of cancer to be up to date about every lung cancer innovation because there are so many.
- ▶ **Consider clinical trials.** Some focus on treatments and others on side effects, quality-of-life issues and more. I participated in a trial exploring the effectiveness of a product that detects circulating tumor cells.
- ▶ **Advocate for yourself.** It can be hard to find your voice, but it is easier when you are educated about your diagnosis. Learn about your lung cancer so you can take an active role in shared decision making with your medical team.
- ▶ **Find support.** Having my wife, family and GO<sub>2</sub> by my side has been invaluable. Ask your medical team for referrals to other reputable resources.
- ▶ **There is HOPE.** More lung cancer treatments were approved by the FDA between 2017 and 2022 than in the 50 years combined before that!

# Determining your path forward begins with staging

**Y**our doctor uses a process called staging to learn extensive information about your cancer diagnosis, such as the location of the tumor, its size, whether it has spread to lymph nodes or other organs, the existence of any biomarkers, and the type or subtype of the cancer. This information will help your doctor develop a prognosis (outlook) and design a treatment plan uniquely for you.

To gather this information, these and other tests may be used:

- Physical exam.
- Tests of blood, urine and body fluids.
- Imaging studies. A positron emission tomography (PET), computed tomography (CT) of the chest and magnetic resonance imaging (MRI) of the brain are routine.
- Tissue biopsy and/or liquid biopsy. Some biopsies are performed with a needle, although certain situations require that part or all of the tumor be removed surgically.

- Biomarker and molecular testing to look for gene alterations and driver alterations.

The pathologist, a doctor trained in identifying diseases by studying cells and tissues under a microscope, will examine your biopsy sample and create a pathology report. It will include results of tissue sample testing and may include results from biomarker testing, tumor molecular analysis or other tests.

Staging usually occurs right after diagnosis, but the tests used for diagnosing and staging may be repeated during treatment to monitor

the effectiveness of the treatment or to determine a recurrence. If the cancer returns, some of the original tests, including molecular tests, will be performed again. If a new stage is assigned, it is often preceded by an “r” to denote that it has been restaged and is different from the original stage given at diagnosis.

## LUNG CANCER STAGING SYSTEMS

Developed by the American Joint Committee on Cancer (AJCC) and the International Association for the Study of Lung Cancer (IASLC), the AJCC TNM system uses the following categories to stage non-small lung cancer (NSCLC) (see Table 1):

- **T category:** identifies the primary tumor’s size and location.
- **N category:** indicates whether lymph nodes show evidence of cancer cells. This is important because it shows how far the disease has progressed.
- **M category:** describes distant metastasis (spread), if any. Cancer can grow into nearby tissue or travel through lymph vessels or blood vessels to more distant parts of the body. An M subcategory may be added based on the presence of tumor cells that can be detected only by using a microscope or molecular testing.

**TABLE 1**  
**AJCC TNM SYSTEM FOR CLASSIFYING LUNG CANCER**

Classification	Definition
<b>Tumor (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed, or tumor proven by the presence of malignant (cancerous) cells in sputum (mucus that has been coughed up) or bronchial washings (cells collected from inside the airways) but not visualized by imaging or bronchoscopy.
<b>T0</b>	No evidence of primary tumor.
<b>Tis</b>	Carcinoma in situ. Squamous cell carcinoma in situ (SCIS). Adenocarcinoma in situ (AIS): adenocarcinoma with pure lepidic pattern (on the alveolar lining), ≤ (not more than) 3 cm in greatest dimension.
<b>T1</b>	Tumor ≤ (not more than) 3 cm in greatest dimension, surrounded by lung or visceral pleura (membrane surrounding the lung), without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus). Minimally invasive adenocarcinoma: adenocarcinoma [≤ (not more than) 3 cm in greatest dimension] with a predominantly lepidic pattern (on the alveolar lining) and ≤ (not more than) 5 mm invasion in greatest dimension.
<b>T1mi</b>	Tumor ≤ (not more than) 1 cm in greatest dimension.
<b>T1a</b>	Tumor > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension.
<b>T1b</b>	Tumor > (more than) 2 cm but ≤ (not more than) 3 cm in greatest dimension.
<b>T1c</b>	Tumor > (more than) 3 cm but ≤ (not more than) 5 cm or having any of the following features: • Involves the main bronchus regardless of distance to the carina (ridge at the base of the trachea), but without involvement of the carina. • Invades visceral pleura (membrane surrounding the lung). • Associated with atelectasis (collapse of part of the lung) or obstructive pneumonitis (inflammation of lung tissues) that extends to the hilar region, involving part or all of the lung.
<b>T2</b>	Tumor > (more than) 3 cm but ≤ (not more than) 4 cm in greatest dimension.
<b>T2a</b>	Tumor > (more than) 3 cm but ≤ (not more than) 4 cm in greatest dimension.
<b>T2b</b>	Tumor > (more than) 4 cm but ≤ (not more than) 5 cm in greatest dimension.
<b>T3</b>	Tumor > (more than) 5 cm but ≤ (not more than) 7 cm in greatest dimension or directly invading any of the following: parietal pleura (outer lung membrane), chest wall (including superior sulcus tumors), phrenic nerve (nerve that helps control breathing), parietal pericardium; or separate tumor nodule(s) in the same lobe as the primary.
<b>T4</b>	Tumor > (more than) 7 cm or tumor of any size invading one or more of the following: diaphragm, mediastinum (area between the lungs), heart, great vessels, trachea (windpipe), recurrent laryngeal nerve (nerve that helps speech), esophagus, vertebral body, or carina (at base of the trachea); separate tumor nodule(s) in an ipsilateral lobe (lobe that is on the same side of the body) different from that of the primary.
<b>Node (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in ipsilateral (on the same side) peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension.
<b>N2</b>	Metastasis in ipsilateral (on the same side) mediastinal and/or subcarinal lymph node(s).
<b>N3</b>	Metastasis in contralateral (on the opposite side) mediastinal, contralateral hilar, ipsilateral (on the same side) or contralateral scalene, or supraclavicular lymph node(s) (located above the collarbone).
<b>Metastasis (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.
<b>M1a</b>	Separate tumor nodule(s) in a contralateral (on the opposite side) lobe; tumor with pleural or pericardial nodules or malignant pleural or pericardial effusion.
<b>M1b</b>	Single extrathoracic (outside of the lung) metastasis in a single organ (including involvement of a single nonregional node).
<b>M1c</b>	Multiple extrathoracic (outside of the lung) metastases in a single organ or in multiple organs.

Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer Science+Business Media.

**TABLE 2**  
**STAGES OF LUNG CANCER**

Stage	T	N	M
<b>Occult carcinoma</b>	TX	N0	M0
<b>0</b>	Tis	N0	M0
<b>IA1</b>	T1mi T1a	N0 N0	M0 M0
<b>IA2</b>	T1b	N0	M0
<b>IA3</b>	T1c	N0	M0
<b>IB</b>	T2a	N0	M0
<b>IIA</b>	T2b	N0	M0
<b>IIB</b>	T1a or T1b or T1c T2a or T2b T3	N1 N1 N0	M0 M0 M0
<b>IIIA</b>	T1a or T1b or T1c T2a or T2b T3 T4	N2 N2 N1 N0 or N1	M0 M0 M0 M0
<b>IIIB</b>	T1a or T1b or T1c T2a or T2b T3 T4	N3 N3 N2 N2	M0 M0 M0 M0
<b>IIIC</b>	T3 T4	N3 N3	M0 M0
<b>IV</b>	Any T	Any N	M1
<b>IVA</b>	Any T	Any N	M1a or M1b
<b>IVB</b>	Any T	Any N	M1c

First, the T, N and M status is reviewed to determine the extent of the cancer. Then, a number is assigned that can range from Stage 0 through Stage IV (see Table 2).

Stage 0 is also known as in situ, and it is a precursor of an invasive cancer. Stages I and II are generally confined to the local area where the cancer is found with or without adjacent lymph node involvement. They are treated as early stage and are considered potentially curable; therefore, every effort should be made to render a cure for these diagnoses. Stage III NSCLC is considered lo-

cally advanced, still confined to the chest but having spread to regional lymph nodes outside the lung in the mediastinum. Stage IV is locally or regionally advanced disease that has spread to distant sites, such as the other lung, brain, liver or bone. For illustration purposes, the tumors in Figure 1 are only shown on one side of the lungs. They may, however, be present in any area of the lungs.

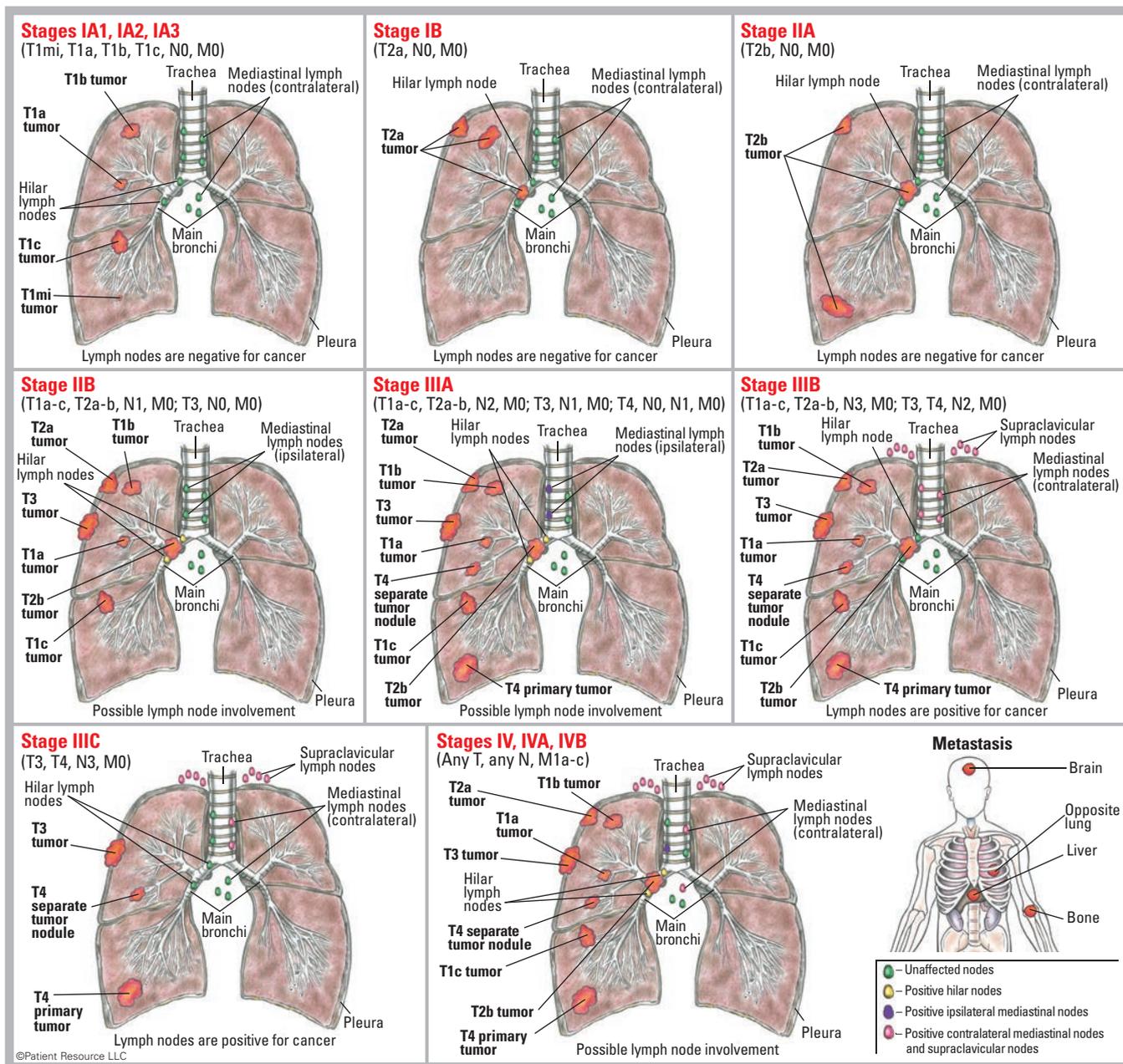
The Veterans Administration Lung Study Group (VALSG) staging system is commonly used to stage small cell lung cancer (SCLC), although the AJCC TNM system may also

be consulted. VALSG divides SCLC into two stages:

**Limited-stage SCLC** is confined to one part of the chest, in just one part of the lung and in nearby lymph nodes. It is considered Stages I to III in the AJCC TNM staging system.

**Extensive-stage SCLC** has spread to other parts of the body, such as the area between the lungs, the other lung, or outside of the chest, such as to the brain or bone. It is considered to be Stage IV in the AJCC TNM staging system. ■

**FIGURE 1**  
**AJCC ILLUSTRATED STAGES OF LUNG CANCER**



**KEY WORDS**

► **Contralateral:** on the opposite side as the primary tumor ► **Hilar lymph nodes:** in the lungs, in the region where the bronchi, arteries, veins and nerves enter and exit the lungs ► **Ipsilateral:** on the same side as the primary tumor ► **Mediastinal lymph nodes:** between the lungs, in the part of the chest that lies between the sternum and the spinal column

# Take an active role in your care by knowing your biomarkers

**D**iscovering the mutations (changes) present in cancer cells enables doctors to take a more patient-focused approach by offering access to treatments such as molecular therapy, targeted therapy or immunotherapy. These treatments are designed to target only the specific genetic abnormalities causing cancer and may spare you from aggressive treatments such as chemotherapy, which can damage healthy cells and result in many side effects. Molecular testing is the key to finding abnormalities in lung cancer, and this approach has revolutionized how lung cancer is treated today.

Cancer is a disease of our genes, which are pieces of DNA in our cells. Cancer forms when genes begin to change or mutate.

Several genes found in lung cancer may have mutations or fusions that contribute to cancer (see Table 1). A mutation is any change in the DNA sequence of a cell. Mutations may be caused by mistakes during cell division, or they may be caused by exposure to DNA-damaging agents in the environment. Fusions occur when two different genes are joined together. The result is a new gene that may lead to cancer.

Molecular testing is a broad term that refers to looking at a cancer's biomarkers from biopsied tumor tissue or a blood sample (liquid biopsy). This testing is recommended specifically for non-small cell lung cancer (NSCLC), especially if the cancer is advanced. It is not typically used for small cell lung cancer (SCLC) diagnoses. Research is underway to

determine whether SCLC may have mutations that can be targeted with therapy.

## WHEN MOLECULAR TESTING IS USED

Also known as tumor profiling, molecular testing is performed in a laboratory to detect biomarkers, which are substances such as genes or molecules that can be measured in the blood, plasma, urine, cerebrospinal fluid or other body fluids or tissues. They are produced by cancer cells or other cells of the body in response to cancer.

For NSCLC, molecular testing is typically performed along with other tests before treatment begins to identify whether you are a candidate for molecular therapy, targeted therapy or immunotherapy. It may also be used during treatment to look for resistance to these therapies, or may be used if the cancer returns. When a tumor returns, it may have different genetic alterations than before, which may affect treatment options and prompt another round of biomarker testing.

Your doctor should order biomarker testing on a tissue sample collected during a biopsy and on a peripheral blood sample. Not all cancer centers offer molecular testing, but samples can be sent to a commercial lab, so it is important to ask whether it has been performed on your blood or tissue samples. Ask your doctor to explain which biomarkers were tested for and the results.

If the testing has not been performed, request it to find out whether you may have access to drug therapies that target the cancer. Knowing your lung cancer's biomarkers will be crucial to the development of your treatment plan and will help you take a more active role in your care.

## HOW TESTING IS PERFORMED

The test(s) your doctor chooses may depend on the type of cancer you have and the known genetic alterations associated with it. Some cancer centers only test for one or two biomarkers, but comprehensive biomarker testing allows your doctor to look for all possible alterations regardless of whether drugs have been approved for them or not.

Tissue testing is most commonly used for these tests and frequently requires 2 to 3 weeks to obtain the final results. It may be difficult to wait for results, but it is valuable to determine whether you have any mutations for which therapy is available. A PD-L1 test can help determine whether immunotherapy is right for you and may provide results within 48 hours.

Blood sample results often come back within a week and are accurate enough for therapy selection. They are not as sensitive as tissue testing, so waiting for the tissue results is standard unless there is a need for immediate therapy.

In general, your doctor will follow these steps:

1. A biopsy of tumor tissue is taken. It can be done by several methods, and different tests require different amounts of tissue.
2. The sample is sent to a laboratory where a pathologist looks for the presence of cancer cells and documents certain characteristics of the tumor cells in the sample.
3. Specialized equipment is used to sequence the tumor's DNA and find any abnormalities.
4. If abnormalities are found, they are compared to known mutations of the type or subtype of your particular cancer.
5. Results are returned to your doctor in a pathology report.
6. If testing finds a genetic alteration, your doctor may suggest options that are approved to target that alteration.
7. If the genetic alteration found does not have a specialized treatment, your doctor may recommend standard of care treatment or a clinical trial that is testing the mutation identified in your tissue sample.

Talk with your doctor about when and how you will receive results. ■

TABLE 1  
SOME COMMON BIOMARKERS  
IN LUNG CANCER

Description	Type
Gene mutations	<i>BRAF</i> <i>EGFR</i> <i>ERBB2 (HER2)</i> <i>KRAS</i> <i>MET</i>
Gene fusions	<i>ALK</i> <i>NTRK</i> <i>RET</i> <i>ROS1</i>
Biomarker for immunotherapy	PD-L1
Optional biomarkers for immunotherapy	Microsatellite instability-high (MSI-H) or deficient mismatch repair (dMMR); tumor mutational burden (TMB)



# FAQs offer insight into clinical trials

**L**essons learned from conducting clinical trials result in more solutions, and more hope, for people facing lung cancer. Clinical trials come in many forms — from testing new treatments and procedures to researching strategies for disease prevention, improved diagnostic tools and more.

Simply by participating in a trial, you will be a partner in cancer research, helping improve treatments for future patients. The need is great for more participants in every area; minority patients are particularly needed.

The answers to the following frequently asked questions will help you feel more knowledgeable as you explore this option.

**Q: What are clinical trials?**

**A:** Clinical trials are research studies that look for new strategies to offer more benefits than the current standard of care. Most of the advances made in treating cancer today were once therapies or procedures that were developed, tested and evaluated through the clinical trials process to gain approval for use from the U.S. Food and Drug Administration (FDA).

**Q: What is the focus of each type of trial?**

**A:** People are most familiar with therapeutic clinical trials. They test treatments such as new drug therapies, medical procedures or devices. They also study surgical techniques that are less invasive, result in less trauma and reduce patient recovery time.

*Disease prevention and patient screening trials* are aimed at identifying or diagnosing a particular disease or condition. They also find ways to prevent the initial development or recurrence of a disease or condition. They can include medicines, vaccines or lifestyle changes, among other approaches.

*Diagnostic tools and procedures trials* examine new and improved methods for identifying a condition or the risk factors for that condition.

By conducting *genetic risk factors trials*, researchers seek to learn more about the genetic disorders and disease-related mutations that cause various types of cancer.

*Lifestyle/behavioral changes trials* explore and measure ways to make people more comfortable as they manage a chronic con-

dition. Some test the effect lifestyle changes have on lowering cancer risk and on current cancer treatments.

**Q: Are therapeutic clinical trials only a last resort?**

**A:** No. They may be an option at any time during treatment. A therapeutic trial may be your best first treatment option, especially if your diagnosis has few or no approved therapies. It could offer an alternative if your cancer has become resistant to your current treatment. Or, the therapy being tested may offer fewer side effects than your current treatment, improving your quality of life.

**Q: Aren't clinical trials risky?**

**A:** As with any cancer treatment, those used in clinical trials present potential risks. The Informed Consent form that you are required to sign to participate lists the known risks, side effects and more. Read it thoroughly and ask questions to ensure you feel well-informed. It may reassure you to know that more specialists will be involved in your care because you will be monitored by the medical team managing your trial as well as by your regular oncologist.

**Q: Do drug trials use a placebo instead of the therapy being tested?**

**A:** Treatment is not replaced with a placebo. If you are not getting the trial drug, you will receive the current standard of care. When placebos are used, such as in combination studies, they are used along with the current standard of care and with the full knowledge of the participants. Even in those rare cases, you will always get at least the standard of care treatment for your diagnosis.

**Q: Can I leave a clinical trial once it has started?**

**A:** Participation is always voluntary. You can withdraw at any time and for any reason.



**Q: Is it possible for me to participate if I live in a rural community?**

**A:** Yes, access to clinical trials is much broader than it used to be. They take place in nationally known cancer centers and university medical centers in major cities, but they also happen in regional hospitals and oncologists' offices. Many trials today are using telehealth so you don't have to travel for every appointment or to sign the Informed Consent form in person.

**Q: What if my doctor doesn't suggest a clinical trial?**

**A:** You are encouraged to ask about clinical trials soon after diagnosis so your medical team knows they can include trials as an option in your treatment plan.

**Q: Can I look for a clinical trial on my own?**

**A:** Absolutely. Start by using the list of trusted clinical trial sites on page 17, and ask your doctor for additional recommendations. Have your exact diagnosis, pathology report and details of your previous cancer treatments on hand to help determine whether you meet the basic eligibility requirements. Every participant in a trial must meet the same criteria, such as the stage of disease, sites of metastasis and more.

Tell your doctor about any trials you are interested in and discuss whether they may be a good fit for you. ■

# Learn about all of the potential options available to you

**T**reating lung cancer has changed dramatically in the past decade and now offers more hope to people with this disease and their loved ones. Your doctor will develop a treatment plan for you based on whether you have non-small cell lung cancer (NSCLC) or small cell lung cancer (SCLC), the subtype of the lung cancer, possible lymph node involvement, metastasis, the stage, potential biomarkers and your overall health.

Working with an oncologist who specializes in your type of lung cancer and who is knowledgeable about the latest advances and potential clinical trials may offer you the best outlook. The goal is for you to receive the best level of care possible to help you have your desired quality of life.

## TREATMENT OPTIONS

Your treatment plan may include one or more of the following.

**Surgery**, also called resection, is typically the primary treatment for early-stage (Stages I, II and some IIIA) NSCLC tumors. It is not commonly used for SCLC and is typically reserved only for very early-stage SCLC disease. In that case, chemotherapy is administered after surgery.

Ideally, a board-certified thoracic surgeon who is experienced in lung cancer should determine whether the tumor(s) can be successfully removed. The type of procedure selected will depend on how much of your lung is affected, tumor size and location, and your overall health.

The following types of resection may be done by open thoracotomy (a large incision in the chest wall that requires separation of the ribs) or by less invasive procedures, such as video-assisted thoracoscopic surgery (VATS) with or without robotic surgery. These are performed as the doctor inserts scopes through small incisions. These VATS procedures may help preserve muscles and nerves, reduce complications and shorten recovery time:

- Wedge resection removes the tumor with a triangular piece of a lobe of the lung.
- Segmental resection (segmentectomy) removes a larger section of a lobe.
- Lobectomy removes one of the lungs' five lobes.

- Pneumonectomy removes an entire lung.
- Sleeve resection (sleeve lobectomy) removes part of the bronchus (main airway) or pulmonary artery to the lung along with one lobe to save other portions of the lung.

Some early-stage tumors may be removed with robotic surgery. Special equipment provides a three-dimensional view inside the body while the surgeon guides a robotic arm and high-precision tools that can bend and rotate much more than the human wrist. Finding a surgeon with extensive training and experience is highly recommended.

**Drug therapy** is systemic treatment that travels throughout the body (see Figure 1). Types include chemotherapy, immunotherapy, molecular therapy and targeted therapy. They may be used alone or in combination.

**Chemotherapy** is typically part of the treatment plan for most stages of NSCLC and is the primary treatment for all stages of SCLC. It may be given alone or in combination with surgery, radiation therapy or immunotherapy.

In early stage NSCLC, it may be used before surgery (neoadjuvant therapy) to help shrink the tumor, after surgery (adjuvant therapy) to kill remaining cells, as maintenance therapy following standard chemotherapy to prevent recurrence, or as palliative care to help relieve symptoms. For metastatic NSCLC, chemotherapy may be combined with immunotherapy (chemoimmunotherapy) or targeted therapy.

For limited-stage SCLC, chemotherapy is combined with radiation therapy to the chest. In extensive-stage SCLC, chemotherapy is combined with immunotherapy. Chemotherapy is also used for second-line treatment. If a recurrence occurs, depending on how quickly the cancer returns, the first chemotherapy combination may be used again in the second-line setting if there was a good and long lasting response to therapy. If there was not, other chemotherapies are approved to treat SCLC as second-line therapy, or a different combination of chemotherapies may be used.



## Stay on time with treatments for best results

**Understanding the importance of correctly taking your medications and keeping appointments is critical when treating lung cancer.** Taking medication on time every time is referred to as medication adherence, and it applies to every type of treatment, including oral therapies at home and supportive care therapies such as anti-nausea and white blood cell growth factors, and receiving intravenous treatments or radiation therapy at your doctor's office or cancer clinic.

Medication adherence is important because it can influence the effectiveness of the therapy and the management of side effects. If your medications are not taken exactly as prescribed, the consequences can lead to unnecessary or unrelieved side effects, physician visits, hospitalizations and even cancer progression.

Before beginning treatment, talk to your doctor about how and when to take your medication. If you feel overwhelmed or confused by your treatment plan, ask your doctor or pharmacist for help. Sometimes your medication can be adjusted to make side effects more tolerable.

► Download the Patient Resource Medication Journal to keep track of your medications at [PatientResource.com/Medication\\_Journal](https://www.PatientResource.com/Medication_Journal)

**Immunotherapy** stimulates your immune system to find and attack cancer. It may be used alone or in combination with other types of immunotherapy or chemotherapy.

It is standard first-line therapy for Stage IV NSCLC without specific molecular alterations and is approved in combination with chemotherapy as neoadjuvant therapy for early stage NSCLC. It is standard after chemotherapy and radiotherapy for unresectable Stage III NSCLC and standard with chemotherapy (chemoimmunotherapy) for extensive-stage SCLC. Its use with chemoradiation as initial therapy in limited-stage SCLC is being explored.

Immune checkpoint inhibitors are monoclonal antibody drugs given intravenously that prevent the immune system from slowing down, allowing it to keep up its fight against the cancer. Checkpoints keep the immune system “in check,” preventing an attack on normal cells. They are like the “brakes” of the immune system. Checkpoint inhibitors take the “brakes” off the immune system.

Three checkpoint receptors are available to slow down the immune system:

- PD-1 (programmed cell death protein 1) is a receptor found on T-cells (a type of immune cell) that helps keep the immune system in check. PD-1 can tell the immune system to slow down only if it connects with PD-L1.
- PD-L1 (programmed death-ligand 1) is a protein that, when combined with PD-1, sends a signal to reduce the production of T-cells and enable more T-cells to die. When PD-1 (the receptor) and PD-L1 (the protein) combine, the reaction signals that it is time to slow down.
- CTLA-4 (cytotoxic T-lymphocyte-associated protein 4) is another check-

point like PD-1. CTLA-4, however, can connect with more than one protein.

The goal of immune checkpoint inhibitors is to prevent PD-1 and PD-L1 from connecting so that the immune system does not slow down. Immunotherapy is given through an IV and prevents these connections by targeting and blocking PD-1, PD-L1 or CTLA-4 so the immune cells can continue fighting the cancer.

Depending on your diagnosis, your doctor may test for the tumor’s PD-L1 expression, which may indicate the tumor could respond to immunotherapy. The test is performed on a tissue sample from a biopsy. Results indicate whether a sample contains either a high level (more than 50 percent), low level (less than 50 percent) or no level (less than 1 percent) of PD-L1. People whose tumors have a high level are considered good candidates for treatment with immunotherapy.

**Chemoimmunotherapy** combines chemotherapy with immunotherapy. It may be used to treat early stage NSCLC before or after surgery or both. It may be used in Stage IV NSCLC if there are no molecular drivers and if the PD-L1 score is less than 50.

It is the preferred treatment for extensive-stage SCLC. Once the initial treatments are complete and testing shows no signs of cancer, you may continue immunotherapy as continuation maintenance for up to one year.

**Molecular therapy** is personalized treatment that may be used if the tumor contains a known biomarker. It is given orally as a pill and is recommended as first-line therapy for NSCLC. If the first-line therapy is not effective, another one may be considered. Unlike chemotherapy, which attacks healthy cells as well as cancer cells, it is designed to affect only cancer cells. Currently, there are no approved molecular therapies for SCLC.

The genetic alterations treated by molecular therapy may include gene fusions, which are created by joining two different genes together, and mutations, which can occur when there is any change in the DNA sequence of a cell. They include the following:

- ALK fusions
- BRAF mutations
- EGFR mutations
- KRAS mutations
- MET exon 14 skipping mutations
- NTRK fusions
- RET fusions
- ROS1 fusions

## COMMON TREATMENT TERMS

➔ **Your medical team may use words that are unfamiliar to you. These terms may be used when describing your treatment options.**

**First-line therapy** is the first treatment used.

**Second-line therapy** is given when the first-line therapy does not work or is no longer effective.

**Standard of care** refers to the widely recommended treatments known for the type and stage of cancer you have.

**Neoadjuvant therapy** is given to shrink a tumor before the primary treatment (usually surgery).

**Adjuvant therapy** is additional cancer treatment given after the primary treatment (usually surgery or radiotherapy) to destroy remaining cancer cells and lower the risk that the cancer will come back.

**Local treatments** are directed to a specific organ or limited area of the body and include surgery and radiation therapy.

**Systemic treatments** travel throughout the body and are typically drug therapies, such as chemotherapy, molecular therapy, targeted therapy and immunotherapy.

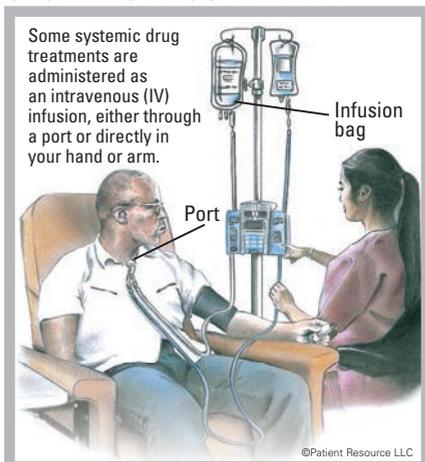
**Response to therapy** means that the cancer has reduced in size or lost its blood supply in a manner that can be measured by CT or MRI.

Some drugs that treat these abnormalities are tyrosine kinase inhibitors (TKIs). In a healthy cell, tyrosine kinases are enzymes that are responsible for certain functions such as cell signaling (communication between cells) and cell growth and division. These enzymes may be too active or found at high levels in some cancer cells. Blocking them may help keep cancer cells from growing.

TKIs are now available for EGFR mutations, ALK fusions, NTRK fusions, ROS1 fusions, MET exon 14 skipping mutations, RET fusions and certain BRAF mutations for first-line therapy. TKIs for other molecular abnormalities are currently being researched. Molecular therapies have been approved to target KRAS mutations but are not sufficiently active for first-line use, so they are available for second or later lines of therapy.

Continued on page 10

### FIGURE 1 SYSTEMIC DRUG THERAPY



In NSCLC, molecular therapy is associated with higher response rates, longer-lasting benefits and far fewer side effects than chemotherapy.

To determine whether you are a candidate for molecular therapy, a biopsy tissue sample and blood sample must be tested at a specialized lab to detect any known molecular biomarkers. This should be done before your treatment begins. Ask your doctor whether tissue from a previous biopsy can be used, if applicable.

Because many tumors do not have biomarkers for which approved therapies currently exist, clinical trials are underway to find effective treatments for additional genetic abnormalities. If your tumor tested positive for a biomarker that does not have an approved targeted treatment, ask your doctor about participating in a clinical trial.

**Targeted therapy** is systemic drug therapy directed at proteins involved in making cancer cells grow that do not have proven biomarkers. Monoclonal antibodies (mAbs) and angiogenesis inhibitors, which are given intravenously (by IV) and always with chemotherapy, are the types of targeted therapy approved to treat NSCLC. An angiogenesis inhibitor is approved for certain SCLC diagnoses.

- Monoclonal antibodies (mAbs) are laboratory-made antibodies designed to target specific tumor antigens, which are substances that cause the body to make a specific immune response. They can work in different ways, such as flagging targeted cancer cells for destruction, blocking growth signals and receptors, and delivering other therapeutic agents directly to targeted cancer cells.
- Angiogenesis inhibitors shut down vascular endothelial growth factor (VEGF), a protein that is essential for creating blood vessels. With no vessels to supply blood, the tumor eventually “starves” and dies. Angiogenesis inhibitors are often given in combination with chemotherapy.

**An antibody-drug conjugate (ADC)** is a type of monoclonal antibody (mAb) that is designed to target only cancer cells, leaving healthy cells alone. The mAb binds to specific proteins or receptors found on certain types of cells, including cancer cells. The linked chemotherapy drug enters these cells and kills them without harming other cells.

An ADC has been approved to treat the human epidermal growth factor receptor-2 (HER2) mutations. Other ADCs are being investigated in clinical trials.

**Radiation therapy**, also called radiotherapy, uses high-energy radiation to destroy cancer cells and shrink tumors. It is often combined with other treatment types for NSCLC and SCLC. It may also be used as palliative care to help relieve pain from cancer that spreads to the bone.

**External-beam radiation therapy (EBRT)** is the most common form of radiation therapy used. EBRT comes in multiple forms:

- Three-dimensional conformal radiation therapy (3D-CRT) uses precise mapping to shape and aim radiation beams at the tumor(s) from multiple directions, typically causing less damage to normal tissue.
- Stereotactic body radiotherapy (SBRT) is a form of 3D-CRT offering precision delivery of high-dose radiation through beams aimed at the tumor from multiple directions. SBRT may be the primary treatment for small tumors or early-stage cancers when a person cannot undergo surgery or makes the decision not to have surgery.
- Intensity-modulated radiation therapy (IMRT) is an advanced form of 3D-CRT that delivers radiation from a machine that moves around the person, aiming beams at varying strengths for increased precision. This technique may be used to treat tumors located near sensitive areas such as the spinal cord.
- Proton beam therapy destroys cancer cells by using charged particles called protons. This treatment typically results in less damage to healthy tissue and fewer side effects than traditional radiation therapy.
- Volumetric arc-based therapy (VMAT) delivers IMRT in an arc shape around the tumor.

For NSCLC, radiation can be used after surgery to treat any remaining cancer. It may also be combined with chemotherapy (chemoradiation), be the primary therapy for Stage I and some Stage II tumors, treat where the tumor has spread or alleviate bone pain from metastases.

For SCLC, radiation therapy is used for limited-stage SCLC that has not spread to the lymph nodes and cannot be treated with surgery. It is often combined with chemotherapy in a treatment called chemoradiation. In some instances, your doctor may offer prophylactic cranial irradiation to prevent the spread of SCLC to the brain. Before moving forward, talk with your doctor about the potential advantages and risks of this

## » Meet the health care team

**A multidisciplinary team will be involved in your care. It may include the following highly skilled professionals.**

**Medical oncologists** treat cancer with drug therapy and other medications.

**Surgical oncologists** operate to remove cancer tumors and have special training in performing biopsies.

**Oncology nurses** provide inpatient or outpatient care in a cancer treatment facility.

**Pulmonologists** are doctors who have special training in diagnosing and treating diseases of the lungs.

**Thoracic surgeons** operate in the chest.

**Thoracic radiologists** are experts at imaging the chest and metastatic sites.

**Respiratory therapists** are health professionals trained to evaluate and treat people who have breathing problems or other lung disorders.

**Radiation oncologists** treat cancer using radiation therapy.

**Patient navigators/nurse navigators** serve as guides throughout the continuum of care, from diagnosis through treatment and follow-up. These patient advocates



help identify barriers to treatment such as the need for transportation or help with copays and deductibles, and accessing resources to resolve such barriers.

**Palliative care specialists** work to provide physical and emotional relief for cancer symptoms and treatment-related side effects.

**Rehabilitation specialists/physical therapists** help restore movement and build physical strength after cancer treatment.

**Nutritionists/dietitians** help meet nutritional challenges that arise during and after treatment.

**Oncology pharmacists** have special training in how to design, administer, monitor and adjust chemotherapy for cancer patients.

**Geriatric specialists** are physicians who focus on the health care of elderly people.

preventive approach for your specific situation. People with extensive-stage SCLC may receive radiation therapy to treat remaining disease in the chest.

**Chemoradiation**, also called chemoradiotherapy or concurrent chemoradiation, combines chemotherapy with radiation therapy. It makes cancer cells more sensitive to radiation, making it easier for the radiation therapy to kill them. It is an option for some Stage IIB and Stage III NSCLCs. Patients with limited-stage SCLC are usually treated with both chemotherapy and radiation therapy given concurrently for two of four chemotherapy cycles.

**Radiofrequency ablation (RFA)** may be used to treat small NSCLC tumors when surgery is not an option. A needle placed directly into the tumor passes a high-frequency electrical current to the tumor that destroys cancer cells with intense heat. It is rarely used for SCLC tumors.

**Cryosurgery**, also called cryoablation and cryotherapy, kills cancer cells by freezing them with a probe or another instrument that is super-cooled with liquid nitrogen or similar substances. An endoscope, which is a thin tube-like instrument, is used for this procedure to treat NSCLC tumors in the airways of the lungs. It is not used to treat SCLC.

**Photodynamic therapy** kills cancer cells by injecting a drug that has not yet been exposed to light into a vein. The drug is drawn to cancer cells more than normal cells. Fiber optic tubes are then used to carry a laser light to the cancer cells, where the drug becomes active and kills the cells. It is used mainly to treat tumors on or just under the skin or in the lining of internal organs. When the tumor is in the airways, therapy is directed to the tumor through an endoscope. It may help relieve breathing problems or bleeding in NSCLC and can also treat small tumors. It is not used for SCLC.

**Clinical trials** may offer the opportunity to try an innovative treatment that is testing drug therapies or types of surgery or radiation therapy before they are widely available (see *Clinical Trials*, page 7). Some are even underway to find improved methods to stop smoking.

**Consolidation therapy** is treatment that is given after cancer partially responded to

initial therapy. It is used to kill any cancer cells that may be left in the body. It may include radiation therapy, surgery or treatment with drug therapies designed to kill cancer cells.

### UNDERSTANDING RESISTANCE

Molecular and targeted therapies have been a game-changer in treating NSCLC and have extended the lives of many people. However, it is known that lung cancer can become resistant to these therapies. This means the disease may stop responding after treatment has been underway for a length of time.

Resistance is believed to develop when some cancer cells survive after being treated. The surviving cells recover and begin to grow and divide again, often with new genetic changes that the initial treatment is not designed to target.

Research is underway to understand how and why resistance develops and to find ways to prevent it or slow it down to extend the effectiveness of the original therapy.

If resistance has occurred, new biomarker tests may be performed to determine whether new genetic alterations have developed. If they have, a different drug may be available to treat it. Talk with your doctor about the possibility of developing resistance to any molecular or targeted therapies you may take. In some cases of NSCLC, you may have the option of using another drug that targets the same genetic alteration. Knowing you may have an alternative could help to alleviate your fears about your options if a drug stops working.

### FOLLOW-UP CARE

Part of treating lung cancer will be ongoing monitoring of your treatment, symptoms, side effects and health status. Regular follow-up appointments help ensure your treatment is working and that the disease has not become resistant to the medications, as well as to monitor you for second cancers or other health care issues. These appointments may include periodic physical exams, blood tests and imaging tests. You will be responsible for letting your medical team know about any symptoms that develop between appointments.

Follow-up appointments also give you the opportunity to address new symptoms or concerns, especially those related to recurrence and continued side effects of treatment. Tell your doctor how you feel physically, mentally and emotionally, or between appointments if something changes. ■

## SOME COMMON DRUG THERAPIES FOR LUNG CANCER

For some possible combination therapies your doctor might suggest, go to [PatientResource.com/Lung\\_Cancer\\_Treatment](http://PatientResource.com/Lung_Cancer_Treatment)

### TARGETED THERAPY

#### EGFR inhibitors

- ▶ amivantamab-vmjw (Rybrevant)
- ▶ necitumumab (Portrazza)

#### HER2 mutations

- ▶ fam-trastuzumab deruxtecan-nxki (Enhertu)

#### VEGF inhibitors (angiogenesis inhibitors)

- ▶ bevacizumab (Avastin)
- ▶ ramucirumab (Cyramza)

### IMMUNOTHERAPY

#### Immune checkpoint inhibitors

- ▶ atezolizumab (Tecentriq)
- ▶ cemiplimab-rwlc (Libtayo)
- ▶ durvalumab (Imfinzi)
- ▶ ipilimumab (Yervoy)
- ▶ nivolumab (Opdivo)
- ▶ pembrolizumab (Keytruda)
- ▶ tremelimumab (Imjudo)

### MOLECULAR THERAPY

#### ALK fusion

- ▶ alectinib (Alecensa)
- ▶ brigatinib (Alunbrig)
- ▶ ceritinib (Zykadia)
- ▶ crizotinib (Xalkori)
- ▶ lorlatinib (Lorbrena)

#### BRAF V600E mutation

- ▶ dabrafenib (Tafinlar)/trametinib (Mekinist)

#### EGFR mutation

- ▶ afatinib (Gilotrif)
- ▶ amivantamab-vmjw (Rybrevant)
- ▶ dacomitinib (Vizimpro)
- ▶ erlotinib (Tarceva)
- ▶ gefitinib (Iressa)
- ▶ mobocertinib (Exkivity)
- ▶ osimertinib (Tagrisso)

#### KRAS mutation

- ▶ adagrasib (Krazati)
- ▶ sotorasib (Lumakras)

#### MET exon 14 skipping mutation

- ▶ capmatinib (Tabrecta)
- ▶ tepotinib (Tepmetko)

#### NTRK gene fusion

- ▶ entrectinib (Rozlytrek)
- ▶ larotrectinib (Vitrakvi)

#### RET fusion

- ▶ pralsetinib (Gavreto)
- ▶ selpercatinib (Retevmo)

#### ROS1 fusion

- ▶ crizotinib (Xalkori)
- ▶ entrectinib (Rozlytrek)

### CHEMOTHERAPY

- ▶ carboplatin (Paraplatin)
- ▶ cisplatin (Platinol)
- ▶ docetaxel (Docefrez, Taxotere)
- ▶ doxorubicin (Adriamycin)
- ▶ etoposide (Etopophos)
- ▶ gemcitabine (Gemzar, Infugem)
- ▶ irinotecan (Camptosar)
- ▶ lurbinectedin (Zepzelca)
- ▶ methotrexate
- ▶ paclitaxel (Taxol)
- ▶ paclitaxel protein-bound (Abraxane)
- ▶ pemetrexed (Alimta)
- ▶ topotecan (Hycamtin)
- ▶ vinorelbine (Navelbine)

As of 9/8/23

# Planning is key for side effect management

**T**he reality is that most cancer treatments have side effects, so planning for them is important. Your supportive care team members are aware of the many advances that help minimize and even prevent some side effects. Work closely with your team to understand the symptoms and signs to watch for and what to do when you experience one.

Supportive care is available from the time you receive your diagnosis through survivorship. It is also referred to as palliative care, and people often confuse it with hospice care, which is reserved for end of life. Think of palliative care as “quality-of-life preservation or restoration,” and use it for comfort care and symptom management of the physical, emotional, practical, spiritual, financial and family-related challenges associated with cancer.

The following are some common side effects in alphabetical order. Whether you experience them and how you respond to them will depend on many factors, including your diagnosis, treatment plan, health history, age and other characteristics:

- **Bone loss and pain:** Weakened bone caused by the cancer or treatment
- **Breathing problems:** Shortness of breath (dyspnea) with or without cough (may be caused by anemia, a lower-than-normal red blood cell count), upper respiratory infections
- **Bruising and bleeding:** May be caused by thrombocytopenia, a lower-than-normal number of platelets in the blood
- **Chemo brain (cognitive dysfunction):** Brain fog, confusion and/or memory problems
- **Constipation:** Difficulty passing stools or having less frequent bowel movements compared to your usual bowel habits
- **Decreased appetite:** Eating less than usual, feeling full after minimal eating, not feeling hungry
- **Diarrhea:** Frequent loose or watery bowel movements that are commonly an inconvenience but can become serious if left untreated
- **Edema:** Swelling caused by excess fluid in body tissues
- **Fatigue:** Tiredness that is much stronger and harder to relieve than the fatigue a

healthy person has; may also be caused by anemia, a lower-than-normal red blood cell count

- **Fever:** Raised body temperature that could signal an infection
- **Hair loss (alopecia):** Hair loss on the head, face and/or body
- **Mouth sores (oral mucositis):** Tiny sores begin in the mouth lining and become red, burn-like or ulcer-like sores; can make it difficult to eat, drink or swallow
- **Myelosuppression:** Decrease of red blood cells, white blood cells and platelets that may cause fatigue, dizziness and shortness of breath
- **Nausea and vomiting:** The feeling of needing to throw up and/or throwing up
- **Neuropathy:** Numbness, pain, burning sensations and tingling, usually in the hands or feet at first
- **Neutropenia/leukopenia:** Low white blood cell count that increases the risk of infection

- **Pain:** Musculoskeletal pain and aches that occur in the muscles, bones, tendons, ligaments or nerves
- **Skin reactions:** Rash, redness and irritation or dry, flaky or peeling skin that may itch
- **Taste changes:** Cells in the mouth that are damaged by treatments may sometimes cause food to taste different (for example, a metallic taste)
- **Weight loss:** When this happens unintentionally, it may be from decreased appetite, mouth sores or sore throat from radiation therapy that make it challenging to eat, or because your body isn't absorbing the nutrients needed to maintain weight

## POTENTIALLY SEVERE SIDE EFFECTS

Though they are not common, potentially severe side effects can occur with certain treatments. Ask your doctor whether you are at risk from the therapies in your treatment plan, how to identify the symptoms and when to seek emergency care. Report symptoms immediately so they can be treated right away. Some potentially severe side effects include the following.

**Immune-related adverse events (irAEs)** are associated with certain immunotherapy drugs. They can occur if the immune system

TABLE 1

## IMMUNE-RELATED ADVERSE EVENTS (irAEs)

Body System*	irAE	Symptoms & Signs
Cardiovascular	Myocarditis	Chest pain, shortness of breath, leg swelling, rapid heartbeat, changes in EKG reading, impaired heart pumping function
Endocrine	Endocrinopathies	Hyperthyroidism, hypothyroidism, diabetes, extreme fatigue, persistent or unusual headaches, visual changes, alteration in mood, changes in menstrual cycle
Gastrointestinal	Colitis	Diarrhea with or without bleeding, abdominal pain or cramping, bowel perforation
Liver	Hepatitis	Yellow/orange-colored skin or eyes (jaundice), nausea, abdominal pain, fatigue, fever, poor appetite
Nervous system	Neuropathies	Numbness, tingling, pain, a burning sensation or loss of feeling in the hands or feet, sensory overload, sensory deprivation
Neurologic	Encephalitis	Confusion, hallucinations, seizures, changes in mood or behavior, neck stiffness, extreme sensitivity to light
Pulmonary/lung	Pneumonitis	Chest pain, shortness of breath, unexplained cough or fever
Renal/kidneys	Nephritis	Decreased urine output, blood in urine, swollen ankles, loss of appetite
Skin	Dermatitis	Rash, skin changes, itching, blisters, painful sores

\*Body systems listed in alphabetical order. Talk to your doctor about what to expect.

becomes overstimulated by treatment and causes inflammation in one or more organs or systems in the body (see Table 1).

Some irAEs can develop rapidly, becoming severe and even life-threatening without swift medical attention. Others can be detected early during routine laboratory and imaging tests even before you can feel symptoms, which makes it crucial to stay on schedule with all follow-up appointments. Contact your medical team if symptoms arise between appointments, and remain alert to the possibility of irAEs for up to two years after completing immunotherapy.

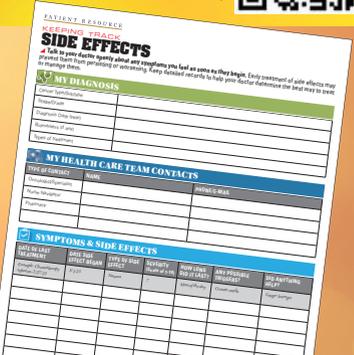
**Infection** can occur as a result of a low white blood cell count (neutropenia/leukopenia) or other factors. Contact your doctor immediately – do not wait until the next day – if you have any of these symptoms: oral temperature over 100.4°F, chills or sweating; body aches, chills and fatigue with or without fever; coughing, shortness of breath or pain-

## Keep track of your side effects

**During cancer treatment, it is common to feel symptoms and side effects. The sooner you let your health care team know about them, the sooner they can be addressed. Provide as much detail as possible, such as when they begin and if anything makes them better.**

▶ **To help, download a free tracker at [PatientResource.com/Tracker](http://PatientResource.com/Tracker)**

Scan to download

ful breathing; abdominal pain; sore throat; mouth sores; painful, swollen or reddened skin; pus or drainage from an open cut or sore; pain or burning during urination; pain or sores around the anus; or vaginal discharge or itching.

**Infusion-related reactions** most frequently occur with drug therapies that are given

intravenously (IV) through a vein in your arm or through a port, usually soon after exposure to the drug. Reactions are generally mild, such as itching, rash or fever. Other symptoms, such as shaking, chills, low blood pressure, dizziness, throat tightness, skin rash or flushing, breathing difficulties and irregular heartbeat, can be serious or even fatal without medical intervention. ■

## The emotional effects of cancer

➔ **Managing cancer can be so unsettling** that it affects your mental health. You may go from being scared or angry to anxious to depressed, sometimes all in a day. Don't be surprised at the frequency of your mood changes or by how intense your feelings are. Everything you feel is normal, and it is important to approach these emotional side effects as you would physical side effects. Before you become overwhelmed, find out how to get relief and remember that you're not alone.

Take advantage of the resources around you, starting with your family, friends and community. Your supportive care team can connect you with support groups, advocacy organizations, counselors, psychologists, psychiatrists and other specialists. Some organizations offer one-on-one buddy programs that pair you with another person who has your type of lung cancer. It can be comforting to share your feelings with people who can relate, especially if you experience the stigma associated

with having lung cancer. That can be debilitating emotionally, regardless of whether you smoked.

Focusing on relaxing activities, such as meditation, reading or journaling, can help. Yoga, walking and other exercises offer stress relief. Many people believe that having a positive attitude makes a difference. Today, studies are even underway to explore whether a hopeful outlook during cancer treatment may be directly related to a better outcome. Other studies suggest that people who are educated about their illness heal more quickly because they understand and follow their treatment plans more efficiently.

Even with the best intentions, be aware that some days will be more difficult than others. Be kind to yourself, and accept that it is okay to have the occasional down day. Contact your health care team right away if you are unable to follow treatment due to extreme emotional distress. Get immediate medical attention for thoughts of suicide or death.



***“Although smoking is a risk factor for lung cancer, it doesn’t mean someone who smoked deserves to have this terrible disease. Anyone can get cancer, and it doesn’t help to judge. We should focus on support for the person, their family and more research to end this illness.”***

~ **Jill Feldman**, lung cancer survivor ([PatientResource.com/Lung\\_Survivor\\_Jill\\_Feldman](http://PatientResource.com/Lung_Survivor_Jill_Feldman))

Scan to read Jill's story



# Ensure your quality of life during treatment

**W**hile your multidisciplinary health care team focuses on your treatment and managing side effects, you are in charge of the things you can control, such as your attitude, diet, activity level, sleep, stress management and support network. Though your role is different from that of your doctor, it is just as important and can make a valuable difference in your care and quality of life.

Following are strategies you can adopt during and after lung cancer treatment.

## FOCUS ON NUTRITION AND HYDRATION

Following a nutritious, well-balanced diet and drinking plenty of fluids can help you overcome some challenges such as fatigue, appetite loss, stress and depression.

A registered dietitian can help you develop a nutrition plan that addresses your body's increased nutritional needs and manage side effects that affect your ability to eat, such as dry mouth, difficulty swallowing, changes in taste and fatigue.

Appetite loss is also common during treatment. The resulting weight loss is not just weight you can stand to lose, it is also loss of muscle mass, which you need for walking, breathing and swallowing. It is important to ensure you are eating the calories and nutrients your body needs.

Staying hydrated is also crucial. Side effects of certain drug therapies, such as diarrhea or vomiting, and radiation therapy can cause dehydration, which may make nausea, fatigue and headaches worse. Drinking water can help. Ask your doctor or a dietitian about the amount of fluid appropriate for you.

## AIM FOR DAILY PHYSICAL ACTIVITY

Being active can help maintain muscle, reduce fatigue and improve your emotional

well-being. The thought of engaging in physical activity may feel too challenging and intimidating, but any movement – not just strenuous exercising – is beneficial for people with lung cancer.

Focus on avoiding inactivity and get moving. Try not to be completely sedentary. Think about activities that you enjoy doing. It can be as simple as walking, turning on some music and dancing, or going to the mailbox. You might even set a clock to remind you to get up and walk 5 to 10 minutes every hour.

Your doctor may recommend breathing and stretching exercises to increase your lung capacity before or after surgery and to extend your range of motion and reduce stiffness (see *Exercises for people with lung cancer*).

## GET ENOUGH SLEEP

Cancer treatment can affect your sleep pattern, so it is important that you try to get 7 to 9 hours of quality sleep per night. Steps you can take include the following:

- Start a habit of going to bed at the same time and waking up at the same time.
- Wind down before bed. That includes shutting down your screens, such as your TV and phone.
- Turn on relaxing music.
- Avoid snacking, drinking caffeine and exercising too late into the evening.

Talk with your doctor if you have trouble maintaining a good sleep schedule.

## STOP TOBACCO USE

If you currently smoke or use tobacco products, it is important to stop and to avoid smoky environments (see *Smoking Cessation*, page 16).

## REDUCE STRESS

Receiving a cancer diagnosis is often stressful, but certain strategies can help, such as spending time outside, attending social events, reading a book, listening to music, calling a friend, joining a support group or writing in a journal. Other suggestions include meditation, yoga, mental imagery or visualization, and relaxed breathing.

## ASK ABOUT SEXUAL HEALTH

Treatment can affect the way you feel about yourself and how you relate intimately to your partner. Many people face decreased libido (sex drive), inability to achieve or maintain arousal, pain during intercourse, or the delay or absence of orgasm. For people with lung cancer, the cardiopulmonary system may not be sufficient for sexual activity. Talk with your doctor before treatment begins to find out what to expect and when it is safe to resume sexual activity after treatment.

## FIND SUPPORT

Many advocacy organizations offer peer-to-peer support that pairs you with someone with the same diagnosis. Hearing from someone who is going through a similar experience can be invaluable.

## JOIN THE LUNG CANCER REGISTRY

The Lung Cancer Registry is a database of patient information that is donated by patients or by a loved one of someone who faced lung cancer. It is a direct way to improve the future of lung cancer treatment by simply sharing insights and experiences.

Participants provide data by answering questions from a home computer or mobile device. No medical visits are required, and no biopsies or specimens need to be submitted. And, it is free to join. To get involved, go to [www.lungcancerregistry.org](http://www.lungcancerregistry.org). ■

## EXERCISES FOR PEOPLE WITH LUNG CANCER

### Breathing exercises

Exercises such as diaphragmatic breathing can strengthen muscles that improve endurance and regulate your breathing when you are short of breath.



### Stretching exercises

Light stretching on a regular basis can help expand your chest cavity and lung capacity. It can also increase your range of motion and flexibility.



# Embrace caregiving and plan ahead



► *Being a caregiver for a loved one with lung cancer will draw on many of the skills you already possess, and you will likely learn some new ones along the way. You will find this valuable role takes patience, flexibility and warmth, along with organizational skills. It is essential*

*to remember to accept support and make time for self-care. Don't try to shoulder everything alone.*

*Following are some of the key responsibilities you may take on as your loved one's caregiver and ways to care for yourself.*

Caring for your loved one	Caring for yourself
<b>Ask your loved one for their input.</b> This may be new territory for you both. You don't want to "overhelp" and take away independence, so it is important to have a frank conversation about needs.	<b>Stress management.</b> Do whatever gives you comfort and relief. Giving yourself some alone time, even for a few minutes, can clear your head. Yoga, journaling, crafts and walking are a few examples of ways to reduce the stress and anxiety that often accompany this role.
<b>Do your research.</b> Learn about this type of lung cancer diagnosis and treatment plan.	<b>Healthy eating.</b> You are likely preparing nutritious meals and snacks for your loved one. Follow your own lead, and eat the same healthy foods. If you need help planning meals, ask your loved one's health care team if a dietitian is on staff.
<b>Get the "OK" to receive and share HIPAA-protected information.</b> This includes medical information about your loved one that is shared in person, by phone, using the portal, via telehealth, if available, or in other ways.	<b>Maintain a healthy sleep schedule.</b> Getting a good night's sleep is important for your mind and body.
<b>Introduce yourself to the team.</b> Building strong relationships with the health care team paves the way for better communication.	<b>Preventive health care.</b> Schedule and keep your own medical appointments and preventive screenings. You won't be an effective caregiver if your own health is suffering.
<b>Attend medical appointments and drive, if needed.</b> Ask questions, and take notes.	<b>Delegate tasks.</b> Accept offers of help from trusted friends and family. Create a list of tasks that can be done by others, such as grocery shopping, meal preparation, house cleaning, lawn mowing and snow shoveling, pet care and carpooling.
<b>Track and give medications.</b> Note side effects and symptoms, and share this information with the health care team. Know the situations that warrant a call to the doctor.	<b>Stay social.</b> Though your schedule may not be as full or as flexible as before, it is important to keep up with your relationships. Connect with friends and continue doing the activities you enjoy.
<b>Update family and friends.</b> Email or online updates allow everyone to hear information at the same time.	<b>Support resources.</b> Support groups, whether in person or online, are valuable because you can learn a lot from others who are in similar situations. If you prefer to talk one-on-one with someone, find a therapist who has experience working with people who care for loved ones with cancer. With these helpers and your friends and family members, you should never feel alone.
<b>Help with personal care.</b> This may include assistance with bathing, getting dressed and other personal needs.	<b>Self-care.</b> Pamper yourself. Get a massage, manicure or pedicure, or enjoy a nap to rejuvenate yourself.
<b>Perform household tasks.</b> This may include laundry, shopping, cleaning and lawn care.	<b>Pursue a hobby or creative outlet.</b> These activities offer a mental break from the stress caregiving can cause.
<b>Encourage activity.</b> Even low levels of exercise can help reduce fatigue and improve emotional well-being.	<b>Exercise.</b> Even a daily 10-minute walk can rejuvenate your mind and your body.
<b>Understand how to operate breathing equipment,</b> such as an incentive spirometer or supplemental oxygen. Learn to operate a backup oxygen tank in case of a power outage.	<b>Be kind to yourself.</b> Self-compassion is important for taking care of yourself. Give yourself credit for managing the tough, complex work of caregiving.
<b>Organize insurance bills and paperwork.</b> Develop a system that is easy to maintain. Also work with your loved one to prepare an Advance Directive, Living Will, Will and Power of Attorney.	<b>Watch for caregiver burnout.</b> Pay attention to when the responsibilities become too much to handle. Red flags include being impatient, irritable, lonely or overwhelmed.

# Discover the advantages of stopping smoking

**I**t is not too late to quit smoking, even if you have been diagnosed with lung cancer. Many people believe that it no longer matters whether they continue smoking. This simply is not true. Studies show that there are multiple benefits you can look forward to once you quit. Some benefits will be seen immediately and others are long term.

The impact that quitting will have on your treatment is by far the most important. Stopping the use of tobacco products will increase the effectiveness of your radiation therapy and chemotherapy, and you may even experience fewer severe side effects.

## FINDING HELP AND SUPPORT

Quitting nicotine might seem scary and overwhelming, especially because it is such an addictive substance regardless of whether you have been a smoker for a long time or not. You are not alone. Take comfort that your multidisciplinary team is there to help you along the

way. If previous attempts to stop did not last, consider what worked for you and what didn't. You can use this information to your advantage.

Many approaches can help you quit, such as nicotine replacement therapy, medications and local support groups.

Additional strategies that may help include finding alternate methods of stress relief and staying away from people, places, and things that tempt you to smoke, at least for the time being. Think about marking a day on your calendar where you plan to quit, and let select friends and family know about this plan. Having a set day can help prepare you, and telling others can help hold you accountable so you stick to it.

Talk to your health care team about which strategies might work best for you and what they recommend. The most successful approach will likely be a combination of several things. Learn more from the resources in *Assistance*, page 17. ■

### Immediate benefits:

- Helps you breathe easier
- Reduces lung inflammation that can lead to cancer progression
- Improves wound healing to recover faster after surgery
- Strengthens your immune system to ward off infections better

### Long-term benefits:

- Decreases the risk of secondary cancers
- Improves survival after treatment
- Lowers blood pressure and heart rate
- Increases lung function
- Enhances the sense of taste

## ASSISTANCE

# Support and financial resources available for you

## CANCER EDUCATION

American Cancer Society	www.cancer.org, 800-227-2345
American Society of Clinical Oncology	www.cancer.net, 888-651-3038
CANCER101	www.cancer101.org, 646-638-2202
CancerCare	www.cancercares.org, 800-813-4673
Cancer Support Community	www.cancersupportcommunity.org, 888-793-9355
The Gathering Place	www.touchedbycancer.org, 216-595-9546
Get Palliative Care	www.getpalliativecare.org
Global Resource for Advancing Cancer Education (GRACE)	www.cancergrace.org
GO <sub>2</sub> for Lung Cancer	www.go2.org
National Cancer Institute	www.cancer.gov, 800-422-6237
National Comprehensive Cancer Network (NCCN)	www.nccn.org, 212-690-0300
NCI Cancer Information Service	800-422-6237
Patient Resource	www.patientresource.com, 800-497-7530
Scott Hamilton CARES Foundation	www.scottcares.org, 844-726-8884
Triage Cancer	www.triagecancer.org, 424-258-4628
Union for International Cancer Control	www.uicc.org

## CAREGIVERS & SUPPORT

BeholdBeGold	www.beholdbegold.org
Cactus Cancer Society	www.cactuscancer.org
CanCare	www.cancare.org, 713-461-0028
CANCER101	www.cancer101.org, 646-638-2202
Cancer and Careers	www.cancerandcareers.org, 646-929-8032
CancerCare	www.cancercares.org, 800-813-4673
Cancer Connection	www.cancer-connection.org, 413-586-1642
Cancer Hope Network	www.cancerhopenetwork.org, 877-467-3638
Cancer Really Sucks!	www.cancerreallysucks.org

Cancer Support Community	www.cancersupportcommunity.org, 888-793-9355
Cancer Support Community Helpline	888-793-9355
Cancer Support Services	www.cancersupportservices.org, 877-593-4212
Cancer Survivors Network	csn.cancer.org, 800-227-2345
Caregiver Action Network	www.caregiveraction.org, 855-227-3640
CaringBridge	www.caringbridge.org, 651-789-2300
Center to Advance Palliative Care	www.capc.org, 347-835-0658
Chemo Angels	www.chemoangels.com
Cleaning for a Reason	www.cleaningforareason.org
Clear Ribbon Foundation	www.clearribbon.com
Connect Thru Cancer	www.connectthrucancer.org, 610-436-5555
Cooking with Cancer	www.cookingwithcancer.org, 205-978-3570
Family Caregiver Alliance	www.caregiver.org, 800-445-8106
Friend for Life Cancer Support Network	www.friend4life.org, 866-374-3634
The Gathering Place	www.touchedbycancer.org, 216-595-9546
GO <sub>2</sub> for Lung Cancer	www.go2.org, 202-463-2080
Guide Posts of Strength, Inc.	www.cancergps.org, 336-883-4483
Imerman Angels	www.imermanangels.org, 866-463-7626
Livestrong Foundation	www.livestrong.org, 855-220-7777
Living Hope Cancer Foundation	www.getupandlive.org
Lotsa Helping Hands	www.lotsahelpinghands.com
LUNGevity Caregiver Resource Center	www.lungevity.org/caregiver, 844-360-5864
MyLifeLine	www.mylifeline.org, 888-793-9355
National LGBT Cancer Project	www.lgbtcancer.org, 917-301-1913
National Transitions of Care Coalitions	ntocc.org/consumers
Patient Empowerment Network	www.powerfulpatients.org, 833-213-6657
SHARE Caregiver Circle	www.sharecancersupport.org/caregivers-support, 844-275-7427
Stronghold Ministry	www.mystronghold.org, 877-230-7674

Triage Cancer ..... [www.triagecancer.org](http://www.triagecancer.org), 424-258-4628  
 Walk with Sally ..... [www.walkwithsally.org](http://www.walkwithsally.org), 310-322-3900  
 Well Spouse Association ..... [www.wellspouse.org](http://www.wellspouse.org), 732-577-8899  
 WeSPARK Cancer Support Center ..... [www.wespark.org](http://www.wespark.org), 818-906-3022  
 Wigs & Wishes ..... [www.wigsandwishes.org](http://www.wigsandwishes.org), 856-582-6600

## CLINICAL TRIALS

Cancer Support Community ..... [www.cancersupportcommunity.org/find-clinical-trial](http://www.cancersupportcommunity.org/find-clinical-trial), 888-793-9355  
 Center for Information & Study on Clinical Research Participation ..... [www.searchclinicaltrials.org](http://www.searchclinicaltrials.org), 877-633-4376  
 ClinicalTrials.gov ..... [www.clinicaltrials.gov](http://www.clinicaltrials.gov)  
 GO<sub>2</sub> for Lung Cancer LungMATCH ..... [go2.org/lungmatch](http://go2.org/lungmatch), 800-298-2436  
 Lazarex Cancer Foundation ..... [www.lazarex.org](http://www.lazarex.org), 877-866-9523, 925-820-4517  
 LUNGevity Clinical Trial Search ..... [clinicaltrials.lungevity.org](http://clinicaltrials.lungevity.org), 312-407-6100, 240-454-3100  
 National Cancer Institute ..... [www.cancer.gov/clinicaltrials](http://www.cancer.gov/clinicaltrials), 800-422-6237  
 NCI Cancer Information Service ..... 800-422-6237  
 WCG CenterWatch ..... [www.centerwatch.com](http://www.centerwatch.com), 866-219-3440

## LUNG CANCER

A Breath of Hope Lung Foundation ..... [abreathofhope.org](http://abreathofhope.org)  
 American Lung Association ..... [www.lung.org](http://www.lung.org)  
 Caring Ambassadors Lung Cancer Program ..... [www.lungcancercap.org](http://www.lungcancercap.org)  
 Free ME from Lung Cancer ..... [www.freemefromlungcancer.org](http://www.freemefromlungcancer.org)  
 GO<sub>2</sub> for Lung Cancer ..... [www.go2.org](http://www.go2.org)  
 International Association for the Study of Lung Cancer ..... [www.iaslc.org](http://www.iaslc.org)  
 Lung Cancer Action Network ..... [www.lungcan.org](http://www.lungcan.org)  
 Lung Cancer Foundation of America ..... [www.lcfamerica.org](http://www.lcfamerica.org)  
 Lung Cancer Registry ..... [www.lungcancerregistry.org](http://www.lungcancerregistry.org)  
 Lung Cancer Research Foundation ..... [www.lungcancerresearchfoundation.org](http://www.lungcancerresearchfoundation.org)  
 LUNGevity Foundation ..... [www.lungevity.org](http://www.lungevity.org)

## MENTAL HEALTH SERVICES

American Psychosocial Oncology Society Helpline ..... 866-276-7443

## NUTRITION

American Cancer Society ..... [www.cancer.org](http://www.cancer.org), 800-227-2345  
 CancerCare ..... [www.cancercare.org](http://www.cancercare.org), 800-813-4673  
 Cancer Support Community ..... [www.cancersupportcommunity.org](http://www.cancersupportcommunity.org), 888-793-9355  
 PearlPoint Nutrition Services ..... [pearlpoint.org](http://pearlpoint.org), 877-467-1936

## REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

AbbVie Savings Card ..... [abbvie.com/patients/patient-support/patient-assistance/savings-card](http://abbvie.com/patients/patient-support/patient-assistance/savings-card), 800-222-6885  
 Alecensa Access Solutions ..... [genentech-access.com/patient/brands/alecensa](http://genentech-access.com/patient/brands/alecensa), 877-436-3683  
 Alunbrig Co-Pay Assistance ..... [www.here2assist.com](http://www.here2assist.com), 844-817-6468, option 2  
 Alunbrig SMART Free Trial Program ..... [www.alunbrig.com/smart-free-trial-program](http://www.alunbrig.com/smart-free-trial-program), 833-618-2786  
 Amgen Safety Net Foundation ..... [amgensafetynetfoundation.com](http://amgensafetynetfoundation.com), 888-762-6436  
 Amgen SupportPlus Co-Pay Program ..... [www.amgensupportplus.com/patient](http://www.amgensupportplus.com/patient), 866-264-2778  
 Arzerra Novartis Financial Assistance ..... [www.patient.novartis.com/financial-assistance](http://www.patient.novartis.com/financial-assistance), 800-282-7630  
 AstraZeneca Access 360 ..... [myaccess360.com/patient](http://myaccess360.com/patient), 844-275-2360  
 AstraZeneca Patient Savings Programs for Specialty Products ..... [astrazenecaspecialtysavings.com](http://astrazenecaspecialtysavings.com), 844-275-2360  
 AstraZeneca Prescription Savings Program (AZ&ME) ..... [azandmeapp.com](http://azandmeapp.com), 800-292-6363  
 Avastin Access Solutions ..... [www.avastin.com/patient/financial-resources.html](http://www.avastin.com/patient/financial-resources.html), 877-436-3683  
 Bayer US Patient Assistance Foundation ..... [patientassistance.bayer.us](http://patientassistance.bayer.us), 866-228-7723  
 BI Cares Patient Assistance Program ..... [www.boehringer-ingenelheim.us/our-responsibility/patient-assistance-program](http://www.boehringer-ingenelheim.us/our-responsibility/patient-assistance-program), 800-556-8317  
 Bristol Myers Squibb Access Support ..... [bmsaccesssupport.bmscustomerconnect.com/patient](http://bmsaccesssupport.bmscustomerconnect.com/patient), 800-861-0048  
 Bristol Myers Squibb Patient Assistance Foundation ..... [bmspaf.org](http://bmspaf.org), 800-736-0003  
 Cyramza Financial Support ..... [www.lillyoncologysupport.com/cyramza-financial-support](http://www.lillyoncologysupport.com/cyramza-financial-support), 866-472-8663  
 Enhertu4U ..... [www.enhertu4u.com/patient](http://www.enhertu4u.com/patient), 833-364-3788  
 Gavreto Financial Assistance ..... [www.gavreto.com/nsclc/#patient-support](http://www.gavreto.com/nsclc/#patient-support), 888-258-7768  
 Genentech Access Solutions ..... [genentech-access.com/patient](http://genentech-access.com/patient), 877-436-3683  
 Genentech Oncology Co-pay Assistance Program ..... [copayassistance.now.com](http://copayassistance.now.com), 855-692-6729  
 Genentech Patient Foundation ..... [gene.com/patients/patient-foundation](http://gene.com/patients/patient-foundation), 888-941-3331  
 Gilotrif Co-pay Assistance Program ..... [www.gilotrif.com](http://www.gilotrif.com), 877-546-5349  
 Imfinzi Access 360 ..... [myaccess360.com/patient/imfinzi-durvalumab](http://myaccess360.com/patient/imfinzi-durvalumab), 844-275-2360  
 Imjudo Access 360 ..... [myaccess360.com/patient/imfinzi-durvalumab](http://myaccess360.com/patient/imfinzi-durvalumab), 844-275-2360  
 Iressa Access ..... [myaccess360.com/patient/iressa-gefitinib](http://myaccess360.com/patient/iressa-gefitinib), 844-275-2360  
 Janssen CarePath ..... [www.janssencarepath.com](http://www.janssencarepath.com), 877-227-3728  
 Keytruda KEY+YOU ..... [www.keyplusyou.com](http://www.keyplusyou.com), 855-398-7832, press 2  
 Keytruda Merck Access Program ..... [merckaccessprogram-keytruda.com/hcc/](http://merckaccessprogram-keytruda.com/hcc/), 855-257-3932

Krazati Mirati & Me ..... [krazati.com/support](http://krazati.com/support), 844-647-2842  
 Lilly Cares Foundation Patient Assistance Program ..... [lillycares.com](http://lillycares.com), 800-545-6962  
 Lilly Oncology Support Center ..... [www.lillyoncologysupport.com](http://www.lillyoncologysupport.com), 866-472-8663  
 Merck Access Program ..... [www.merckaccessprogram-keytruda.com/hcc/MerckHelps](http://www.merckaccessprogram-keytruda.com/hcc/MerckHelps) ..... [www.merckhelps.com](http://www.merckhelps.com), 800-727-5400  
 myAbbVie Assist ..... [abbviepaf.org](http://abbviepaf.org), 800-222-6885  
 Novartis Oncology Universal Co-pay Program ..... [copay.novartis.com](http://copay.novartis.com), 877-577-7756  
 Novartis Patient Assistance Foundation ..... [www.novartis.us/our-products/patient-assistance/patient-assistance-foundation-enrollment](http://www.novartis.us/our-products/patient-assistance/patient-assistance-foundation-enrollment), 800-277-2254  
 Novartis Patient Assistance NOW Oncology (PANO) ..... [patient.novartis.com/financial/assistance/pano](http://patient.novartis.com/financial/assistance/pano), 800-282-7630  
 Opdivo BMS Access Support ..... [bmsaccesssupport.bmscustomerconnect.com/patient/financial-support](http://bmsaccesssupport.bmscustomerconnect.com/patient/financial-support), 800-861-0048  
 Patient Rx Solutions ..... [patientrxsolutions.com](http://patientrxsolutions.com), 800-676-5884  
 Pfizer Oncology Together ..... [www.pfizeroncologytogether.com/patient](http://www.pfizeroncologytogether.com/patient), 877-744-5675  
 Portrazza Lilly Cares Foundation ..... [www.lillycares.com](http://www.lillycares.com), 800-545-6962  
 Rozlytrek Access Solutions ..... [genentech-access.com/patient/brands/rozlytrek](http://genentech-access.com/patient/brands/rozlytrek), 877-436-3683  
 Tafinlar + Mekinist Financial Resources ..... [www.us.tafinlar.mekinist.com](http://www.us.tafinlar.mekinist.com), 877-577-7756  
 Tagrisso Access 360 ..... [myaccess360.com/patient/tagrisso-osimertinib](http://myaccess360.com/patient/tagrisso-osimertinib), 844-275-2360  
 Takeda Oncology Co-Pay Assistance Program ..... [www.takedaoncologycopay.com](http://www.takedaoncologycopay.com)  
 Takeda Oncology Here2Assist ..... [www.here2assist.com](http://www.here2assist.com), 844-817-6468, option 2  
 Tecentriq Access Solutions ..... [genentech-access.com/patient/brands/tecentriq](http://genentech-access.com/patient/brands/tecentriq), 877-436-3683  
 Tepmetko Oncology Navigation Center ..... [tepmetko.com/us-en/home/cost-assistance](http://tepmetko.com/us-en/home/cost-assistance), 844-662-3631  
 Vitrakvi Access Services by Bayer ..... [www.vitrakvi-us.com/patient-assistance-program](http://www.vitrakvi-us.com/patient-assistance-program), 800-288-8374  
 Yervoy BMS Access Support ..... [bmsaccesssupport.bmscustomerconnect.com/patient/financial-support](http://bmsaccesssupport.bmscustomerconnect.com/patient/financial-support), 800-861-0048  
 Zykadia Financial Resources ..... [www.novartis.us/our-products/patient-assistance](http://www.novartis.us/our-products/patient-assistance), 888-669-6682

## STOPPING TOBACCO USE

American Cancer Society ..... [www.cancer.org](http://www.cancer.org), 800-227-2345  
 American Lung Association Lung Helpline and Tobacco Quitline ..... 800-586-4872  
 BecomeAnEx ..... [www.becomeanex.org](http://www.becomeanex.org)  
 CDC Tobacco Quitline ..... 1-800-QUIT-NOW, 800-784-8669  
 National Cancer Institute LiveHelp ..... [livehelp.cancer.gov/app/chat/chat\\_launch](http://livehelp.cancer.gov/app/chat/chat_launch)  
 National Cancer Institute Smoking Quitline ..... 877-44U-QUIT, 877-448-7848  
 Nicotine Anonymous ..... [nicotine-anonymous.org](http://nicotine-anonymous.org)  
 North American Quitline Consortium ..... [naquitline.org](http://naquitline.org)  
 Smokefree.gov ..... [smokefree.gov](http://smokefree.gov), 800-784-8669  
 SmokefreeTXT ..... [smokefree.gov/toolstips/text-programs](http://smokefree.gov/toolstips/text-programs) and text QUIT to 47848

## SURVIVORSHIP

13thirty Cancer Connect ..... [www.13thirty.org](http://www.13thirty.org)  
 A Time to Heal Cancer Foundation ..... [www.atimetohealfoundation.org](http://www.atimetohealfoundation.org), 402-401-6083  
 American Society of Clinical Oncology ..... [www.cancer.net/survivorship](http://www.cancer.net/survivorship), 888-651-3038  
 Angel On My Shoulder ..... [www.angelonmysoulder.org](http://www.angelonmysoulder.org)  
 Cactus Cancer Society ..... [www.cactuscancer.org](http://www.cactuscancer.org)  
 Cancer ABCs ..... [www.cancerabcs.org](http://www.cancerabcs.org), 516-445-2026  
 Cancer and Careers ..... [www.cancerandcareers.org](http://www.cancerandcareers.org), 646-929-8032  
 Cancer Hope Network ..... [www.cancerhopenetwork.org](http://www.cancerhopenetwork.org), 877-467-3638  
 Cancer Support Community ..... [www.cancersupportcommunity.org](http://www.cancersupportcommunity.org), 888-793-9355  
 Cancer Survivors Network ..... [csn.cancer.org](http://csn.cancer.org), 800-227-2345  
 CancerCare ..... [www.cancercare.org](http://www.cancercare.org), 800-813-4673  
 Centers for Disease Control and Prevention (CDC) ..... [www.cdc.gov/cancer/survivors](http://www.cdc.gov/cancer/survivors), 800-232-4636  
 Global Resource for Advancing Cancer Education (GRACE) ..... [www.cancergrace.org](http://www.cancergrace.org)  
 Hope for Two... The Pregnant with Cancer Network ..... [www.hopefortwo.org](http://www.hopefortwo.org)  
 Imerman Angels ..... [www.imermanangels.org](http://www.imermanangels.org), 866-463-7626  
 Indian American Cancer Network ..... [www.iacanetwork.org](http://www.iacanetwork.org)  
 Law Enforcement Cancer Support Foundation ..... [www.lawenforcementcancer.org](http://www.lawenforcementcancer.org)  
 Livestrong Foundation ..... [www.livestrong.org](http://www.livestrong.org)  
 National Cancer Survivors Day ..... [ncsd.org](http://ncsd.org), 615-794-3006  
 National Coalition for Cancer Survivorship ..... [www.canceradvocacy.org](http://www.canceradvocacy.org), 877-622-7937  
 National LGBT Cancer Network ..... [www.cancer-network.org](http://www.cancer-network.org), 212-675-2633  
 National LGBT Cancer Project ..... [www.lgbtcancer.org](http://www.lgbtcancer.org), 917-301-1913  
 Reel Recovery ..... [www.reelrecovery.org](http://www.reelrecovery.org), 800-699-4490  
 River Discovery ..... [riverdiscovery.org](http://riverdiscovery.org)  
 Stupid Cancer ..... [www.stupidcancer.org](http://www.stupidcancer.org), 212-619-1040  
 Survivor's Outdoor Experience ..... [www.survivorsoutdoorexperience.org](http://www.survivorsoutdoorexperience.org)  
 Triage Cancer ..... [www.triagecancer.org](http://www.triagecancer.org), 424-258-4628  
 True North Treks ..... [www.truenorthtreks.org](http://www.truenorthtreks.org)  
 Walk With Sally ..... [www.walkwithsally.org](http://www.walkwithsally.org), 310-322-3900

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