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11th Edition

LUNG CANCER

A Treatment Guide for Patients and their Families



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11th Edition LUNG CANCER

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Support will surround you after a lung cancer diagnosis

You may have just been diagnosed with lung cancer, but you can take comfort in knowing that medical professionals, scientists, researchers, health care workers, support groups, survivors and anyone who has been touched by lung cancer are members of a tight-knit community. In their own way, each contributes to the significant advances that are being made in treating and managing the disease. From developing groundbreaking therapies to sharing valuable advice, together they, and now you as well, are working toward the shared goal of curing lung cancer.

LUNG BASICS

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

When you inhale, your lungs absorb oxygen, which is delivered to neighboring red blood cells that then carry 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. This is called a primary tumor. It may grow into the lining around the lung and form secondary tumors nearby. People with lung cancer often have chronic pulmonary disease in the non-cancer tissues of the lung, which may interfere with lung function and change treatment options. Pulmonologists often assist in assessing lung function and work closely with oncologists (see *Get to Know Your Health Care Team*).

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

TYPES OF LUNG CANCER

Lung cancer has two main pathologic types: non-small cell lung cancer (NSCLC) or small cell lung cancer (SCLC). This guide focuses on NSCLC, the more common of the two.

NSCLC has several subtypes:

- Adenocarcinoma is the most common NSCLC subtype, especially in people who have never smoked. It usually grows more slowly than other types and tends

to 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 spreads to distant sites less often than adenocarcinoma.
- Large cell lung cancer is the least common type of NSCLC. It 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.

SCLC is named for its appearance under a microscope. It is an aggressive form of lung cancer and 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.

Less common types of lung cancer include mesothelioma, typical and atypical carcinoid tumors and sarcoma. These and others can begin in other organs.

SEEKING A SECOND OPINION

Even though you may trust your doctor completely, you deserve to gather as much information as possible about your diagnosis and treatment options. Seek a second (or third or fourth) opinion of a lung cancer specialist; if possible, find a physician who has experience treating a diagnosis similar to yours. The additional input will confirm your pathology report, diagnosis and stage, and you will benefit from the unique training and experience each doctor brings.

You may be concerned that you will offend your doctor. Most doctors welcome a second opinion and are often pleased to give you a referral. The ultimate goal is for you to get the best care possible.



» Get to know your health care team

Treating lung cancer is a team effort. It's important to know who's on your team and how you'll work together to achieve the best possible outcome.

Medical oncologists treat cancer with drug therapy and other medications.

Surgical oncologists perform biopsies and operations to remove cancer tumors.

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

Pathologists are doctors trained in identifying diseases by studying cells and tissues under a microscope.

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

Thoracic surgeons perform operations in the chest.

Thoracic radiologists are expertly trained 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.

Nurse navigators are guides throughout the continuum of care, from diagnosis through treatment and follow-up. They advocate for patients, helping identify barriers to treatment and accessing resources to resolve such barriers.

Palliative care specialists 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 patients meet nutritional challenges during and after treatment.

Oncology pharmacists are specially trained in how to design, administer, monitor and adjust chemotherapy for people with cancer.

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

You may also feel you have to begin treatment right away. Generally, unless your diagnosis is extremely advanced, you can take the time to explore your options and make the decision that is right for you. ■

Passion for Advocacy drives lung cancer survivor

Twelve years before being diagnosed with adenocarcinoma of the lung, I had a small lump removed from my left breast. I always kept my follow-up appointments, and got a mammogram and sonogram annually. I didn't have any issues until a couple of years ago. My left breast began to hurt, and it continued to bother me. Because I was concerned, I insisted that my doctor fit me in for an appointment. Although he didn't see anything from the physical exam, he ordered a breast MRI that showed a mass on the right side of my lung. I had a biopsy, and the results shocked me. At 47, I had lung cancer.

This diagnosis came out of the blue. I didn't think I was at risk for lung cancer. I never smoked, and only my mother's half-brother had experienced cancer in the past. I didn't have the typical symptoms of lung cancer, such as a cough, wheezing or trouble breathing. On top of that, aside from a pretty stressful career as an engineer and executive director for a water company, I had always considered myself to be really healthy. I had exercised all my life and went to the gym about four days a week. Even on long workdays, I still made time to lift weights at the gym. I focused on my nutrition and did meal prep, and I was never sick.

My treatment plan first consisted of surgery to remove the upper lobe of my right lung. The hope was that it would be curative, but we hit a snag. At my surgical follow-up, my doctor mentioned the word "mutation" and ordered additional treatment in the form of a targeted therapy and radiation therapy. I was crushed to hear that I needed more treatment.

I was very unfamiliar with lung cancer in general, and I hadn't heard of mutations. With my first treatment, I was given some pamphlets that included information about the targeted therapy and how it is designed to treat the *EGFR* exon 19 deletion.

From then on, I knew I needed to educate myself about my diagnosis. I found support groups online and they have made a world of difference for me. I've learned about the *EGFR* exon 19 deletion and the tremendous importance of biomarkers and mutations in lung cancer treatment. I've also received great suggestions for managing side effects from people who are undergoing the same treatment.

These groups have inspired me to get involved in promoting awareness about lung cancer. I traveled to Washington, D.C., to meet with representatives on Capitol Hill and emphasize the need for more funding. I was recently invited to be part of a panel discussion for a Lung Cancer Health Equity Summit in Atlanta. It's the first panel I've been invited to, and I'm excited to represent the Latina community on it.

Support groups have also given me a sense of community. Except for my uncle and his wife and a childhood friend, I don't have many family members or friends nearby. And, though I appreciate them, managing lung cancer treatment can be extremely difficult emotionally. I have a hard time turning off all the "what ifs" in my brain, especially at night. I began seeing a therapist and a psychiatrist, who prescribed medication to help me sleep better.



How she could have Stage III lung cancer is still a mystery to Gloria Arroyo de Leon. A healthy never-smoker with no known family history of cancer, Gloria has now discovered a passion for advocacy and bringing lung cancer into the spotlight.

I also go to church twice a week, and I lean on God to make me mentally stronger and help me understand why I have this diagnosis. I trust that God has me in his hands. Advocacy has become my passion, and it helps occupy my mind. My next step is to find more people here in Puerto Rico who have had lung cancer in their lives and grow the support community near me.

Before my diagnosis, I was going through life but I wasn't truly living. I was doing the same thing every day ... getting up early, going to a stressful job, exercising, going to bed and doing the same thing all over the next day. I didn't make time for doing other important things that I should have. Now, I'm faithfully living my life through advocacy.

What I'm doing may not help me directly with my diagnosis, but I hope it will help others in the future. ■

Advice from Gloria

- 1 **If you can, find a cancer center where all your doctors are in the same place and where a nurse navigator or social worker can help you manage your care.**
- 2 **Join support groups. People who are going through what you are will introduce you to things you didn't know to ask about, such as biomarkers and mutations.**
- 3 **Take a list of questions to your first medical appointment so you can start educating yourself right away.**
- 4 **Stay alert to new treatments, clinical trials and other advances in lung cancer.**

Treatment strategies are guided by staging results

Friends and family members may ask about your stage of lung cancer, so it is helpful for you to understand staging and its importance. Before your medical team can recommend your unique treatment plan and develop a prognosis (outlook), they learn as much as possible about your cancer through a process called staging. Staging enables them to identify 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.

The staging process typically includes the following:

- 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 (done surgically) and/or liquid biopsy (performed with a needle)
 - Biomarker and molecular testing to look for gene and driver alterations
- The results of your biopsy sample will be examined by a pathologist, who will then create a pathology report. The report will include results of tissue sample testing as well as results from biomarker testing, tumor molecular analysis or other tests (see *Molecular Testing*, page 6).

Staging usually occurs right after diagnosis. The same tests, along with others used for diagnosis and tumor molecular analysis, may be repeated later to monitor the effectiveness of the treatment or to determine a recurrence. If a new stage is assigned, it is often preceded by an “r” to show that it has been restaged and is different from the original stage given at diagnosis.

LUNG CANCER STAGING SYSTEMS

The American Joint Committee on Cancer (AJCC) 8th Edition uses the T, N and M 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
Tumor (T)	
TX	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.
T0	No evidence of primary tumor.
Tis	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.
T1	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.
T1mi	Tumor ≤ (not more than) 1 cm in greatest dimension.
T1a	Tumor > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension.
T1b	Tumor > (more than) 2 cm but ≤ (not more than) 3 cm in greatest dimension.
T1c	Tumor > (more than) 2 cm but ≤ (not more than) 3 cm in greatest dimension.
T2	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.
T2a	Tumor > (more than) 3 cm but ≤ (not more than) 4 cm in greatest dimension.
T2b	Tumor > (more than) 4 cm but ≤ (not more than) 5 cm in greatest dimension.
T3	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.
T4	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.
Node (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	Metastasis in ipsilateral (on the same side) peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension.
N2	Metastasis in ipsilateral (on the same side) mediastinal and/or subcarinal lymph node(s).
N3	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).
Metastasis (M)	
M0	No distant metastasis.
M1	Distant metastasis.
M1a	Separate tumor nodule(s) in a contralateral (on the opposite side) lobe; tumor with pleural or pericardial nodules or malignant pleural or pericardial effusion.
M1b	Single extrathoracic (outside of the lung) metastasis in a single organ (including involvement of a single nonregional node).
M1c	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
Occult carcinoma	TX	N0	M0
0	Tis	N0	M0
IA1	T1mi T1a	N0 N0	M0 M0
IA2	T1b	N0	M0
IA3	T1c	N0	M0
IB	T2a	N0	M0
IIA	T2b	N0	M0
II B	T1a or T1b or T1c T2a or T2b T3	N1 N1 N0	M0 M0 M0
IIIA	T1a or T1b or T1c T2a or T2b T3 T4	N2 N2 N1 N0 or N1	M0 M0 M0 M0
II B	T1a or T1b or T1c T2a or T2b T3 T4	N3 N3 N2 N2	M0 M0 M0 M0
IIIC	T3 T4	N3 N3	M0 M0
IV	Any T	Any N	M1
IVA	Any T	Any N	M1a or M1b
IVB	Any T	Any N	M1c

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

Stage 0, also known as in situ, 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 locally ad-

vanced, 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 shown only on one side of the lungs. They may, however, be present in any area of the lungs.

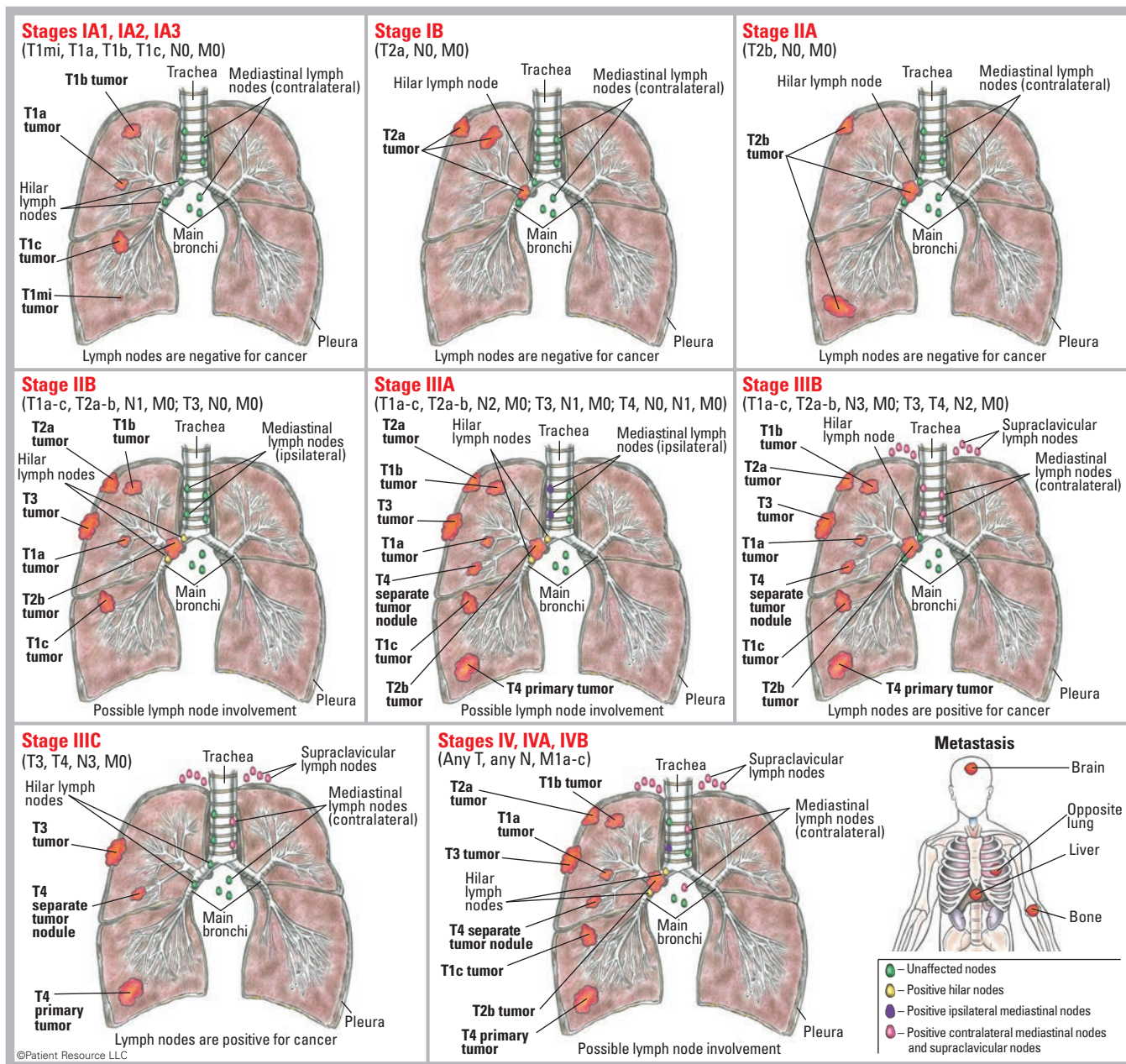
The Veterans Administration Lung Study Group (VALSG) staging system is commonly used to stage small cell lung cancer (SCLC), although the AJCC TNM system may also

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 to be 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

Educate yourself on the role of biomarkers in lung cancer

Molecular testing has revolutionized how lung cancer is treated. These tests, which are typically performed during the diagnostic process, allow doctors to determine which genetic abnormalities may be causing or contributing to your disease. Much of the success of treating non-small cell lung cancer (NSCLC) is due to treatments designed to target specific abnormalities. Research is still focused on identifying new ones and ways to treat them.

We now understand that cancer arises from changes that occur in a person's genes. These changes are known as mutations or genetic abnormalities, and they can cause cells to grow out of control and become cancer cells. Knowing the mutations involved can help your doctor diagnose your type or subtype of cancer, choose a treatment option designed for a specific mutation and monitor your condition for a possible recurrence.

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. Some of these mutations may be detected in a tissue or blood sample (liquid biopsy). Several gene mutations that are known to cause cancer have been discovered in lung cancer (see Table 1). The majority of lung cancer mutations have been found in NSCLC, but a new biomarker has been discovered in small cell lung cancer (SCLC). All stages of NSCLC (except Stage I) should have molecular testing because systemic therapy

will be used in addition to surgery (or radiation therapy) either before (neoadjuvant) or after (adjuvant), or before and after surgery.

To determine whether your lung cancer has these mutations, 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 the biomarkers you 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 SAMPLES ARE TESTED

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. One biomarker your doctor may test for is PD-L1, which may indicate whether immunotherapy is right for you. It is not a biomarker for cancer, but used to determine if immunotherapy is an appropriate treatment.

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.

STEP-BY-STEP

1. A biopsy of tumor tissue is taken. It can be done using 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 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.
8. Talk with your doctor about when and how you will receive results.

HOW TESTING IMPACTS TREATMENT CHOICES

When testing confirms the presence of genetic abnormalities, depending on the mutation, you may be eligible for 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.

Biomarker testing may also be used during treatment to look for resistance to these therapies, or may be used if the cancer returns (recurrence). Resistance can occur when cancer cells – even a small group of cells within a tumor – contain molecular changes that make them insensitive to a particular drug before treatment even begins. Because cancer cells within the same tumor often have a variety of molecular changes, this so-called intrinsic resistance is common. Cancer cells can also adapt to the

TABLE 1
SOME COMMON BIOMARKERS IN LUNG CANCER

Description	Type
Gene mutations	<i>BRAF</i> <i>EGFR</i> <i>HER2</i> <i>KRAS</i> <i>MET</i>
Gene fusions	<i>ALK</i> <i>NTRK</i> <i>RET</i> <i>ROS1</i>
Biomarkers for immunotherapy	PD-L1 DLL3
Optional biomarkers for immunotherapy	Microsatellite instability-high (MSI-H) or deficient mismatch repair (dMMR); tumor mutational burden (TMB)

drug while it is being administered. These cancer cells acquire new molecular changes that allow them to escape the drug's effects.

During treatment, it is important to monitor a patient for resistance because when cancer cells resist the effects of drugs, they can grow and reform tumors, a process known as recurrence or relapse. Sometimes resistance develops quickly, within a matter of weeks of starting treatment. In other cases, it develops months, or even years, later. When a tumor returns, it may have different genetic alterations than before, which may affect treatment options and prompt another round of biomarker testing to determine whether there is a new actionable genetic alteration for which a molecular therapy is available.

The results of the molecular testing will be given to your doctor in a pathology report. The format of the report may be different for each facility but generally includes details about your health history and results

of the examination and laboratory testing of tissue and blood samples.

SIGN UP FOR THE ONLINE PORTAL

Online portals offer a convenient way for you and your doctor to communicate outside of an office visit. The portal is a secure website that gives patients 24-hour access to personal health information. Most health care systems, hospitals and doctor's offices have a patient portal. This portal helps patients to take a more active role in managing their health. Using a secure username and password, patients can view health information such as their lab results. Portals are often used in combination with your electronic health record, which contains all of your personal health history, including past diagnoses, medications and test results.

Many portals allow patients to securely message the doctor, request prescription refills, schedule non-urgent appointments, update contact information, download and complete forms, receive email reminders and

alerts and other options. The portal allows you to be in touch with your health care provider's office 24 hours a day, but they are not for urgent issues.

When you first meet your health care team, ask them if they offer an online patient portal. They will provide you with instructions for setting it up. You will create a username and secure password so that only you have access to your health information. Patient portals have privacy and security safeguards in place to protect your health information.

It is possible that your test results may be posted to the portal before your doctor has had a chance to explain them to you. The information may look confusing and you may not understand what the results mean. If you have any questions before the next appointment to go over the results and what they mean, it may be helpful to message the doctor through the online portal.

An online portal is a valuable tool to keep you connected with your health care team. ■

CLINICAL TRIALS

Research and trials focus on finding new, better treatment options

Strategies for treating and managing lung cancer are progressing at a rapid pace. People who have lung cancer containing certain abnormalities are finding success with newly approved molecular and targeted therapies. These, and all other previous advances, are the result of clinical trials. The medical and research communities want to keep up this momentum, but they can only do so with the help of people who are willing to participate. As a result, understanding clinical trials and the positive impact they have on the future of lung cancer treatment is crucial.

Clinical trials are highly regulated research studies that search for new and better ways to prevent, diagnose, treat and cure cancer. The type of clinical trial most people are familiar with tests new medical approaches, such as new drugs, drug combinations, surgeries, medical procedures and devices.

However, these studies are also used to explore non-treatment strategies, such as disease prevention, patient screening, diagnostic tools and procedures, genetic risk factors and lifestyle/behavioral changes. Many trials incorporate measures to improve quality of life.

The quality of research increases when the volunteers come from diverse groups because many factors influence how people react to certain drugs, medical devices and treatment plans. Additionally, different life experiences add valuable perspectives to these projects. Consequently, volunteers of all ages, genders, locations, ethnicities, weights, sexual orienta-

tions and socioeconomic groups are needed. Minority patients are especially encouraged to consider participating.

Whether you are newly diagnosed or ready for a new treatment option, clinical trials offer potential access to state-of-the-art therapies that may help you as well as lung cancer patients for generations to come. ■



How to Search for a Clinical Trial

If you are open to considering participating in a trial, let your health care team know. As they look for trials that may be a good fit, you can do the same online.

- 1 Have the details of your diagnosis, pathology report and information about any previous cancer diagnoses and treatments on hand.
- 2 Visit www.clinicaltrials.gov.
- 3 Fill out the basic form, including your preference for location and specific treatments. Add your molecular testing results and other details in the "Other terms" section.
- 4 Review the list of available trials and discuss them with your doctor to determine whether you meet the required criteria.
- 5 New trials are added frequently, so check back on clinicaltrials.gov and visit other clinical trial search sites. See *Assistance*, page 17, for more resources.

Partner with your doctor to take an active role in care decisions



Research and clinical trials have led to more treatment options for lung cancer in the past 10 years, offering hope to people with cancer and their loved ones. This ongoing research holds the promise of more treatment options in the future as well as potentially finding a cure. If possible, find a doctor who specializes in your type of lung cancer and who is knowledgeable about the latest treatment advances and potential clinical trials.

Once all diagnostic test results are in (including molecular testing), your doctor will make a diagnosis, determine a stage and use that information to develop a treatment plan for you based on whether you have non-small cell lung cancer (NSCLC) or small cell lung cancer (SCLC). People with NSCLC (except those at Stage I) should have molecular testing because drug therapy will likely be used in addition to surgery or radiation. This will be done either before (neoadjuvant) or after (adjuvant), or before and after the surgery.

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 this case, chemotherapy is administered after surgery. In some cases of brain metastases, surgery may be used.

A board-certified thoracic surgeon who is experienced in lung cancer should determine whether the tumor(s) can be successfully removed. The 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. Open surgery options include:

- 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.

Neurosurgery may be an option for treating brain metastases. Finding a surgeon with extensive training and experience is highly recommended.

Drug therapy is systemic treatment that travels throughout the body (see Figure 1).

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 some people with Stage III, a combination of chemotherapy and radiation therapy may be used and followed by immunotherapy. For metastatic NSCLC, chemotherapy may be combined with immunotherapy

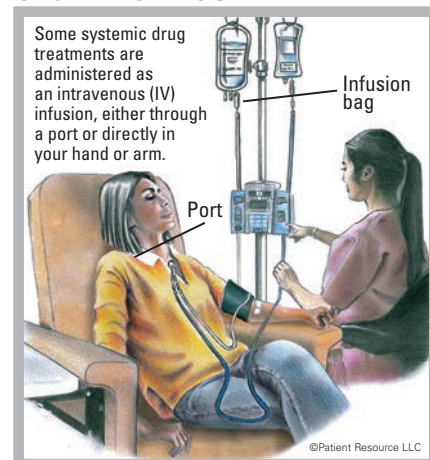
(chemoimmunotherapy) or targeted therapy.

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.

Immunotherapy uses drugs to stimulate 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 unre-

FIGURE 1 SYSTEMIC DRUG THERAPY



sectable 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. Immunotherapies that are PD-L1 antibodies are now indicated in addition to chemotherapy and radiation therapy for limited-stage as well as extensive-stage SCLC. A new type of immunotherapy was recently approved for extensive-stage SCLC with disease progression on or after platinum-based chemotherapy.

Many of the immunotherapies approved for lung cancer are immune checkpoint inhibitors, which 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 checkpoint 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. This treatment allows the immune cells to 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. Tumors that have a high level are considered good candidates for treatment with immunotherapy.

A bispecific T-cell engager, which is a type of immunotherapy, was recently approved for SCLC that targets the protein DLL3, which is commonly found on SCLC cells. Because DLL3 is so prevalent in SCLC, biomarker testing is not required to receive this new drug.

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 (biomarkers) and if the PD-L1 score is less than 50.

This therapy is currently the preferred first-line treatment option for the majority of patients with advanced NSCLC without driver genetic alterations and is the preferred treatment for extensive-stage SCLC.

Molecular therapy is personalized treatment that may be used if the tumor contains a known biomarker. Most of these therapies are given orally as a pill and are 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.

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.

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

COMMONLY USED TERMS

You will hear a lot of new information as you learn about your treatment options. Some of the terms your medical team uses may be confusing. These explanations may help you feel more informed as you make the important decisions ahead.

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 that target *KRAS* mutations are available for second or later lines of therapy.

Continued on page 10



SOME COMMON DRUG THERAPIES FOR LUNG CANCER

TARGETED THERAPY

EGFR inhibitor

- ▶ necitumumab (Portrazza)

HER2 mutations

- ▶ fam-trastuzumab deruxtecan-nxki (Enhertu)

VEGF inhibitors (angiogenesis inhibitors)

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

IMMUNOTHERAPY

Immune checkpoint inhibitors

- ▶ atezolizumab (Tecentriq)
- ▶ atezolizumab and hyaluronidase-tqjs (Tecentriq Hybreza)
- ▶ cemiplimab-rwlc (Libtayo)
- ▶ durvalumab (Imfinzi)
- ▶ ipilimumab (Yervoy)
- ▶ nivolumab (Opdivo)
- ▶ pembrolizumab (Keytruda)
- ▶ tarlatamab-dlle (Imdelltra)
- ▶ tremelimumab-actl (Imjudo)

MOLECULAR THERAPY

ALK fusion

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

BRAF V600E mutation

- ▶ dabrafenib (Tafinlar)/trametinib (Mekinist)
- ▶ encorafenib (Braftovi)/binimetinib (Mektovi)

EGFR mutation

- ▶ afatinib (Gilotrif)
- ▶ amivantamab-vmjw (Rybrevant)
- ▶ dacomitinib (Vizimpro)
- ▶ erlotinib (Tarceva)
- ▶ gefitinib (Iressa)

- ▶ lazertinib (Lazcluze)
- ▶ 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)
- ▶ repotrectinib (Augtyro)

RET fusion

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

ROS1 fusion

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

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 10/3/24

For some possible combination therapies your doctor might suggest, go to [PatientResource.com/Lung_Cancer_Treatment](https://www.patientresource.com/Lung_Cancer_Treatment)

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

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 approved to treat NSCLC. An angiogenesis inhibitor is approved for certain SCLC diagnoses.

- 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. Solid tumors need a blood supply if they are going to grow beyond a few millimeters. But 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) mutation. 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(s) 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(s).

For NSCLC, radiation therapy 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, including the brain, 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 preventive ap-

proach 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.

MONITORING FOR RESISTANCE

Despite an initial response to treatment, many lung cancer patients develop resistance to some forms of therapy, which decreases the response and success of treatment. The most well-known treatments that can develop resistance in lung cancer are molecular and targeted therapies. However, resistance can also happen with chemotherapy, radiotherapy and immunotherapy.

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.

Throughout treatment, patients will be monitored to watch for their treatment becoming less effective and to monitor for cancer progression. This may indicate that the cancer has developed resistance. For those with a genetic alteration whose cancer later progresses, they will need to be retested to determine whether there is a new actionable genetic alteration for which treatment is available.

Talk with your doctor about the possibility of developing resistance to treatment, specifically molecular and targeted therapies. For some cases of NSCLC, another drug therapy option may be available.

KEEPING FOLLOW-UP APPOINTMENTS

As you go through treatment, your doctor and health care team will also monitor your symptoms, side effects, possible metastases to the brain or other sites and health status. Regular follow-up appointments are crucial to your care. They offer you the opportunity to discuss any issues you are having with treatment, address new symptoms or concerns and manage ongoing treatment side effects. Tell your doctor how you feel physically, mentally and emotionally, or between appointments if something changes.

Your doctor also uses follow-up appointments to watch for resistance as well as a recurrence. In either case, your doctor may be able to change your treatment regimen.

Never hesitate to reach out, especially now that online portals are widely available. ■



Taking your medication as directed is crucial for success

Some lung cancer patients now have the option of taking molecular and targeted therapy medications in the comfort of their home. These new therapies are typically oral medications that you are responsible for taking on time, every time, also known as medication adherence. Correctly taking your medication is important because it can influence the effectiveness of the therapy and the management of side effects.

Most cancer therapies are designed to maintain a specific level of drugs in your system for a certain time based on your cancer type and stage, your overall health, previous therapies and other factors. 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. To be fully effective, every treatment dose must be taken with the same kind of accuracy, precise timing and safety precautions, for as long as prescribed.

Talk with your doctor before treatment begins about how and when to take your medication. It can be challenging to remember to take your medications, especially if you feel overwhelmed or confused by your treatment plan. Don't be afraid to ask for help managing your treatment at home.

Download the Patient Resource Medication Journal to keep track of your medications at [PatientResource.com/Medication_Journal](https://www.patientresource.com/medication-journal)

Be proactive at managing physical side effects with your health care team

Most cancer treatments cause some type of side effect. Fortunately, the advances in treatment strategies also include ways to prevent and minimize the effects of treatment. Supportive care services can help you with the physical and emotional side effects that accompany your lung cancer diagnosis and treatment. These valuable resources are available from diagnosis through survivorship. Ask your health care team about the services offered at your cancer facility and in your area.

Also referred to as comfort care and symptom management, supportive care can also address the practical, spiritual, financial and family-related challenges associated with cancer. Many people use it to manage physical side effects, but other resources available include assistance with nutrition, fitness, mental health and physical/occupational therapy. Your family members, caregivers and others close to you can also benefit from this support.

As you discuss treatment options with your doctor, ask about the potential side effects of each. Keep in mind that how you respond to those side effects will depend on many factors, including your specific diagnosis, health history, age and other characteristics. Ask whether telehealth appointments or an online portal are available for reporting symptoms or complications between follow-up visits.

The following are some common side effects in alphabetical order:

- **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 as 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

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.

therapy that make it challenging to eat, or because your body isn't absorbing the nutrients needed to maintain weight

POTENTIALLY SEVERE SIDE EFFECTS

The drug therapies used for treating cancer are powerful. Some can even be accompanied by side effects that may become serious and potentially life-threatening. If any of your therapies have the potential to cause a severe effect, it is critical to discuss with your doctor what to watch for before treatment begins.

Not all potentially severe side effects are ones you can recognize. Some are only identifiable on lab work and imaging results, so it is crucial to stay on schedule with your follow-up appointments for monitoring.

Cytokine release syndrome (CRS) can occur if the immune cells affected by treatment release too many cytokines into the bloodstream that can result in a cytokine storm, which can send the immune system into overdrive. A cytokine is a type of protein that is made by certain immune and non-immune cells. CRS can lead to high fever, inflammation, fatigue and nausea that can be severe and can damage multiple organs. Without swift medical treatment, CRS can be fatal.

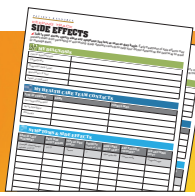
Immune effector cell-associated neurotoxicity syndrome (ICANS) is a clinical and neuropsychiatric syndrome that can occur in the days to weeks following treatment with certain types of immunotherapy, especially immune effector cell and T-cell engaging therapies. ICANS affects a person's nervous system. Symptoms include confusion; behavioral changes; inability to speak or understand speech; attention, thinking and memory problems; muscle weakness, muscle jerks and twitching; headaches; and seizures.

Immune-related adverse events (irAEs) are associated with certain immunotherapy drugs. They can occur if the immune system becomes overstimulated by treatment and causes inflammation in one or more organs or systems in the body (see Table 1, page 12).

Some irAEs can develop rapidly, becoming severe and even life-threatening without quick 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.

Keep Track of Your Side Effects

Download this FREE resource at PatientResource.com/Tracker



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 painful 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 can occur when your body has a strong adverse immune response to a cancer treatment that is given intravenously (IV), through a port or by injection into a vein. 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. ■

Managing the Emotional Effects of Cancer

Receiving a cancer diagnosis can bring up a range of emotions. This is completely normal. Feelings may include fear, anxiety, anger, depression, loneliness, guilt, etc. Just as you will need to treat physical side effects, it is important to manage emotional concerns and side effects that you may experience as well.

No one should go through cancer alone, and lung cancer can feel especially isolating. Regardless of whether you have smoked in the past or not, facing a lung cancer diagnosis can be complicated by the stigma surrounding it. Draw on the support of your family, friends, and community. Do not hesitate to ask for a referral to a patient counselor or mental health professional to help you work through your feelings. Many mental health professionals are especially trained to help people with a cancer diagnosis.

Maintaining your mental health and staying positive will be crucial during treatment. Studies have found that adopting a positive outlook during treatment can lead to a better quality of life.

Even with adopting the suggestions on this page, it is important to realize that some days will be more emotionally difficult than others. Allow yourself to have bad days. When they happen, try to be gentle with yourself and try any of the suggestions listed here to help bring some comfort. Be sure to contact your health care team immediately if you are unable to follow your treatment regimen due to extreme emotional distress, and seek immediate medical attention if you are experiencing suicidal thoughts. ■

Suggestions to boost your emotional health

- ▶ Talk with other people who have experienced lung cancer.
- ▶ Educate yourself on your diagnosis.
- ▶ Try gentle exercise, such as walking or yoga.
- ▶ Avoid limiting yourself from things you enjoy.
- ▶ Create a schedule for your days to offer structure.
- ▶ Spend time in nature.
- ▶ Read survivor stories.
- ▶ Call a friend or family member.
- ▶ Take time to journal or read.
- ▶ Practice breathing deeply to calm your anxiety.
- ▶ Sleep at least 8 hours per night and avoid screen time before bed.
- ▶ Find activities that bring you happiness (e.g. knitting, cooking, coloring, etc.).

Choose to live each day to the fullest

Trying to “stay healthy” after receiving a lung cancer diagnosis may sound a little odd until you realize what it means and what a difference it makes. Your daily habits have a direct effect on how you feel physically and emotionally, and they can even influence the effectiveness of your treatment. At a time when many things feel out of your control, make the decision to maintain your quality of life by leading a healthy lifestyle.

CREATE A NUTRITION PLAN

Many things about your daily diet will change once you begin cancer treatment, so it helps to have a plan and resources. For example, your nutritional needs may increase, but you may also lose your appetite, making it feel impossible to give your body the fuel it needs to keep up your strength. You will also be at risk for dehydration, a common side effect from certain treatments that can be dangerous and even life-threatening. A registered dietitian can help you understand how to get plenty of fluids and follow a nutritious, well-balanced diet.

EXERCISE THE RIGHT WAY

Exercise does not have to mean running a marathon or even breaking a sweat. It may include taking a short walk, getting the mail or doing low-impact stretching (see Figure 1). Your goals should be to avoid inactivity and do something every day. Daily exercise can help maintain muscle, reduce fatigue and improve your emotional well-being. Talk with your doctor about the right type of exercise for you.

REDUCE THE STRESS ON YOUR LUNGS

Your lungs are vulnerable to further damage and discomfort, such as wheezing and shortness of breath, caused by inflammation from environmental sources. So, while your treatment plan focuses on eliminating or managing the cancer, you can do the following:

- Practice breathing exercises to strengthen muscles used to breathe.
- Stop smoking, vaping and using tobacco products. Studies show that smoking can make certain cancer treatments less effective.
- Sign up for air quality alerts online or watch your local weather report. Know the appropriate action to take if air pollution and ozone are particularly high, such as avoiding exercising outside. Some days

might warrant staying home with doors and windows closed, making sure to have good air flow to prevent overheating. If you must go out, use an N95 mask from a supply that you are encouraged to keep at home. Use the “recirculate” setting on your home and car air conditioners.

- Steer clear of harmful fumes, including secondhand smoke, smoke from forest fires, chemical scents from cleaning products, motor engine exhaust and factory pollution.
- If you use oxygen, have your electricity provider place you on the priority list for restoring power after an outage.

SLEEP

Ideally, you should have 7 to 9 hours of quality sleep a night. Even if you have never had a problem getting good sleep, you may find that treatment disrupts your sleep pattern. If these suggestions don't offer some relief, talk with your doctor:

- Limit daytime naps to no more than 30 minutes.
- Avoid snacking, drinking caffeine and exercising too late into the evening.
- Get into the habit of going to bed and waking up at the same time every day.
- Develop a “wind down” routine before bed. Shut down your screens, including your TV and phone, and turn on relaxing music.

REDUCE YOUR STRESS LEVEL

Stress relief is vital for your emotional and physical well-being. Rely on the activities that have always helped you relax, or try something new. You have many options, such as reading, listening to music, reaching out to a friend, journaling, meditating, yoga, practicing mental imagery or visualization and relaxed breathing.

ENJOY A HEALTHY SEX LIFE

Lung cancer treatment can present intimacy challenges. It may affect how you feel about

yourself, reduce your energy level, decrease your sex drive and your ability to achieve or maintain arousal, delay or prevent orgasms and even cause pain. However, don't be discouraged. With open and honest communication with your partner and your health care team, it is possible to maintain or recapture the intimacy that is so important to your relationship. First, talk with your doctor to make sure your cardiopulmonary system is healthy enough for sexual activity.

GET INVOLVED IN THE LUNG CANCER REGISTRY

The Lung Cancer Registry is a database of insights and experiences provided by patients and loved ones of people who faced lung cancer. This first-hand knowledge helps improve the future of lung cancer treatment, and it is easy to participate. No medical visits, biopsies or specimens are required. Simply answer the provided questions from a home computer or mobile device. Join for free at www.lungcancerregistry.org. ■

FIGURE 1 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.



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Preparing for the new role of caregiver



Caring for someone who has lung cancer may be one of the most rewarding things you will ever do, but it could also be one of the most challenging. It requires patience, perseverance and flexibility. Every day can bring a new hurdle. Knowing how and when you are needed will help you be the most effective caregiver possible.

Start by taking care of some administrative items. Introduce yourself to the health care team, and get approved to receive and share HIPAA-protected information. This includes discussing medical information about your loved one in person, by phone, using the online portal, via telehealth (if available) or in other ways. Also, ask the team how they prefer to be contacted. Being proactive will set the stage for good communication and a strong relationship.

THE ROLES OF A CAREGIVER

Learn about lung cancer. Because every diagnosis is unique, it is important to research your loved one's specific diagnosis and recommended treatments, including molecular testing results and potential clinical trials. Use this guide and the resources on page 16 and 17. Ask your health care team about things you'd like to learn more about and anything that you don't understand.

Be the medical liaison, which includes the following:

- Attending medical appointments in person or by phone or telehealth, if necessary. Ask questions and take notes. It's difficult for one person to remember everything that is discussed. Provide transportation to appointments, if needed.
- Tracking and giving medications or treatments. Note side effects and symptoms, and share this information with the health care team. Know the serious situations that warrant contacting the team.
- Understanding how to operate breathing equipment, such as an incentive spirometer, inhaler or supplemental oxygen. Learn to use a backup oxygen tank in case of a power outage.
- Building a relationship with the pharmacist. These specialists are an excellent source of information.

Encourage activity. Even light exercise can help reduce fatigue and improve your emotional well-being (see *Exercises for People with Lung Cancer*, page 14).

Manage household tasks, such as laundry, cleaning, grocery shopping, cooking and lawn care. That may mean performing tasks yourself or asking others for help. Keep in mind your loved one may want to continue certain tasks, especially as a form of light exercise. It's important not to "over-help" because that can take away their sense of independence.

Update family and friends. Ensuring everyone hears the same information at the same time avoids inconsistencies and hurt feelings. Email or online updates are an easy solution.

Provide personal care. At times, your loved one may need assistance with bathing, dressing and other personal needs. Incorporate tools, such as shower bars, a shower chair or a handheld shower head, to help you both.

Organize insurance bills and paperwork using a system that is simple and easy to maintain. Additionally, work with your loved one to prepare an Advance Directive, Living Will, Will and Power of Attorney. Don't let this alarm you. These are documents everyone should have, regardless of health status.

Assist your loved one with medication adherence especially when the doctor has prescribed several oral medications and schedules. Managing multiple medications and the timing can be challenging, so set up a system of reminders, calendars or checklists to help your loved one take the right dose of the medication at the right time. ■

SELF-NEGLECT ...

A COMMON PITFALL FOR CAREGIVERS

A primary reason this role is so challenging is because caregivers are selfless and often overlook their own needs. Although that is noble, you must be kind to yourself or you will experience caregiver burnout, and you won't be any good to your loved one.

Post this list where you will see it every morning – on the bathroom mirror or refrigerator – as a reminder to take care of your important, wonderful self.

How will I reduce my stress today? Keep up with your favorite hobby. Try journaling, crafting or deep breathing. Take a brisk walk, or just have some alone time to clear your head.

What is on the menu today? When you prepare nutritious meals and snacks for your loved one, make the same for yourself. If cooking brings you joy, get creative in the kitchen. For help planning meals, ask the health care team to refer a nutritionist.

Do I feel well-rested? Getting a good night's sleep is important for your mind and body.

Is it time to make or go to any health care appointments? This includes your medical appointments and preventive screenings. You won't be an effective caregiver if your own health suffers.

Who can help with a task today? Create a list of jobs that can be done by others, such as grocery shopping, meal preparation, house cleaning, lawn mowing, snow shoveling, pet care and carpooling.

What type of exercise will I do today? Try yoga, stretching or using a treadmill. Even a 10-minute walk can rejuvenate your mind and your body.

Which friend should I connect with today? Though your schedule will likely be less flexible, make time to check in with friends and keep up relationships.

What advice can I get or give today? You can learn a lot from others who are in similar situations, and you have options: in-person support groups, online support, a therapist who has experience working with people who care for loved ones with cancer and your friends and family. Don't forget to share your own wisdom!

Am I ready for something special? Pamper yourself occasionally. Get a massage, manicure or pedicure, or splurge with time away.

Support and financial resources available for you

CANCER EDUCATION

American Cancer Society	www.cancer.org, 800-227-2345
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 ₂ for Lung Cancer	www.go2.org, 800-298-2436
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 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 ₂ for Lung Cancer	www.go2.org, 800-298-2436
Guide Posts of Strength, Inc.	www.cancergps.org, 336-883-4483
Imerman Angels	www.imermanangels.org, 866-463-7626
Livestrong Foundation	www.livestrong.org, 877-236-8820
Living Hope Cancer Foundation	www.getupandlive.org
Lotsa Helping Hands	www.lotsahelpinghands.com
LUNgevity Caregiver Resource Center	www.lungevity.org/for-patients-caregivers/caregiver-resource-center, 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, 424-258-4628
Walk with Sally	www.walkwithsally.org, 310-322-3900
Well Spouse Association	www.wellspouse.org, 732-577-8899

Discover the advantages of stopping smoking

A common misconception is that once you have been diagnosed with lung cancer, quitting smoking or tobacco of any type is unnecessary. However, it is never too late to stop. Quitting nicotine will have immediate and long-term benefits, even if you are currently undergoing cancer treatment. In fact, only 12 hours after you quit smoking, the carbon monoxide levels in your blood will return to normal. The most important benefit, though, is the impact quitting will have on your treatment. For example, your radiation therapy or chemotherapy will most likely be more effective, and you may experience fewer side effects once you stop smoking.

Quitting can be scary, considering that nicotine is an addictive substance. Do not be discouraged from trying again if you have attempted to quit before. Remember, you are not alone. Your multidisciplinary team can help you determine what strategies may work best, and you may be surprised to learn that you now have additional resources available to you that you may not have had before. The best approach will likely be a combination of several strategies.

Some options you may consider include nicotine replacement therapy (NRT), medications and local support groups. Many FDA-approved smoking cessation products can double your chances of quitting successfully. NRT helps you quit smoking by gradually weaning the body off nicotine without exposure to toxic chemicals present in cigarette smoke. Several NRTs are available without a prescription including, transdermal nicotine patches, nicotine gum and nicotine lozenges.

Some people mistakenly believe they can use e-cigarettes to help them quit. Although these do not contain the same harmful chemicals that tobacco does, they come with their own dangers. Vaping can cause many lung diseases. With a cancer diagnosis, it is beneficial to avoid both smoking and vaping.

While in the process of quitting, try to find alternative stress relief methods and stay away from anyone or anything that tempts you to smoke. Make a plan, starting with selecting a specific day to quit. Tell friends and family your quit date to help hold yourself accountable. ■



Instant benefits:

- Easier breathing
- Improved wound healing for faster recovery
- Stronger immune system
- May reduce risk of cancer progression by reducing lung inflammation
- Lower risk of your loved ones developing disease or cancer due to secondhand smoke

Long-term benefits:

- Better sense of smell and taste
- Lower risk of developing secondary cancers
- Better blood circulation and lowered blood pressure
- Improved survival post-treatment

WeSPARK Cancer Support Center www.wespark.org, 818-906-3022
Wigs & Wishes www.wigsandwishes.org, 856-582-6600

CLINICAL TRIALS

Cancer Support Community www.cancersupportcommunity.org/find-clinical-trial, 888-793-9355
Center for Information & Study on Clinical Research Participation www.searchclinicaltrials.org, 877-633-4376
ClinicalTrials.gov www.clinicaltrials.gov
GO₂ for Lung Cancer LungMATCH go2.org/lungmatch, 800-298-2436
Lazarex Cancer Foundation www.lazarex.org, 877-866-9523, 925-820-4517
LUNGevity Clinical Trial Search https://app.emergingmed.com/lccta/home/, 877-769-4834
National Cancer Institute www.cancer.gov/research/participate/clinical-trials-search, 800-422-6237
NCI Cancer Information Service 800-422-6237
WCG CenterWatch www.centerwatch.com, 888-838-5578

LUNG CANCER

A Breath of Hope Lung Foundation abreathofhope.org
American Lung Association www.lung.org
Caring Ambassadors Lung Cancer Program caringambassadors.org/lung-cancer
Free ME from Lung Cancer www.freemefromlungcancer.org
GO₂ for Lung Cancer www.go2.org
International Association for the Study of Lung Cancer www.iaslc.org
Lung Cancer Action Network www.lungcan.org
Lung Cancer Foundation of America www.lcfamerica.org
Lung Cancer Registry www.lungcancerregistry.org
Lung Cancer Research Foundation www.lungcancerresearchfoundation.org
LUNGevity Foundation www.lungevity.org

MENTAL HEALTH SERVICES

American Psychosocial Oncology Society Helpline 866-276-7443

NUTRITION

American Cancer Society www.cancer.org, 800-227-2345
CancerCare www.cancercares.org, 800-813-4673
Cancer Support Community www.cancersupportcommunity.org, 888-793-9355
LLS Nutrition Education Services Center llsnutrition.org, 877-467-1936

REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

Alecensa Access Solutions genentech-access.com/patient/brands/alecensa, 877-436-3683
Alunbrig SMART Free Trial Program www.alunbrig.com/smart-free-trial-program, 833-618-2786
Amgen Safety Net Foundation amgensafetynetfoundation.com, 888-772-6436
Amgen SupportPlus Co-Pay Program www.amgensupportplus.com/patient, 866-264-2778
AstraZeneca Access 360 myaccess360.com/patient, 844-275-2360
AstraZeneca Patient Savings Programs for Specialty Products astrazenecaspecialtsavings.com, 844-275-2360
Avastin Access Solutions www.avastin.com/patient/nsclc.html, 888-249-4918
Bayer US Patient Assistance Foundation patientassistance.bayer.us, 866-228-7723
BI Cares Patient Assistance Program www.boehringer-ingenheim.us/our-responsibility/patient-assistance-program, 855-297-5904
Bristol Myers Squibb Access Support bmsaccesssupport.bmscustomerconnect.com/patient, 800-861-0048
Bristol Myers Squibb Patient Assistance Foundation bmspaf.org, 800-736-0003
Cyranza Financial Support www.lillyoncologysupport.com/cyranza-financial-support, 866-472-8663
Daiichi-Sankyo Access Central https://dsiaccesscentral.com/patient/home, 866-437-4669
Enhertu4U www.enhertu4u.com/patient, 833-364-3788
Gavreto Financial Assistance rigelonecare.com/gavreto/patients, 833-744-3562
Genentech Access Solutions genentech-access.com/patient, 877-436-3683
Genentech Oncology Co-pay Assistance Program copayassistanancenow.com, 855-692-6729
Genentech Patient Foundation gene.com/patients/patient-foundation, 888-941-3331
Gilotrif Co-pay Assistance Program www.gilotrif.com, 877-546-5349
Imdelltra Patient Support imdelltra.com/patient-support-and-resources/access-and-support, 866-264-2778
Imfinzi Access 360 myaccess360.com/patient/imfinzi-durvalumab, 844-275-2360
Imjudo Access 360 myaccess360.com/patient/imfinzi-durvalumab, 844-275-2360
Iressa Access myaccess360.com/patient/iressa-gefitinib, 844-275-2360
Janssen CarePath www.myjanssencarepath.com, 877-227-3728
Johnson & Johnson Patient Assistance Foundation www.jjpf.org, 800-652-6227
Keytruda KEY+YOU 855-398-7832, press 2
Keytruda Merck Access Program merckaccessprogram-keytruda.com/hcc/, 855-257-3932
Krazati Mirati & Me www.krazati.com/n/support, 844-647-2842
Libtayo Surround www.libtayo.com/nsclc/libtayo-surround, 877-542-8296
Lilly Cares Foundation Patient Assistance Program lillycares.com, 800-545-6962

Lilly Oncology Support Center www.lillyoncologysupport.com, 866-472-8663
Merck Access Program www.merckaccessprogram-keytruda.com/hcc/, 855-257-3932
MerckHelps www.merckhelps.com, 800-727-5400
myAbbVie Assist abbviefap.org, 800-222-6885
Novartis Oncology Universal Co-pay Program copay.novartisoncology.com, 877-577-7756
Novartis Patient Assistance Foundation www.novartis.us/our-products/patient-assistance/patient-assistance-foundation-enrollment, 800-277-2254
Novartis Patient Assistance NOW Oncology (PANO) www.novartis.com/us-en/patients-and-caregivers/novartis-patient-support-oncology, 800-282-7630
Opdivo BMS Access Support bmsaccesssupport.com/patient/co-pay-financial-support, 800-861-0048
Pfizer Oncology Together www.pfizeroncologytogether.com/patient, 877-744-5675
Regeneron Pharmaceuticals www.libtayo.com/nsclc/patient-support-program, 877-542-8296
Rigel OneCare www.rigelonecare.com/gavreto/patients, 833-744-3562
Rozlytrek Access Solutions genentech-access.com/patient/brands/rozlytrek, 877-436-3683
Tafinlar + Mekinist Financial Resources www.us.tafinlarmekinist.com/metastatic-nsclc, 800-282-7630
Tagrisso Access 360 myaccess360.com/patient/tagrisso-osimertinib, 844-275-2360
Takeda Oncology Co-Pay Assistance Program www.takedaoncologycopay.com, 844-817-6468, option 2
Takeda Oncology Here2Assist www.here2assist.com, 844-817-6468, option 2
Tecentriq Access Solutions genentech-access.com/patient/brands/tecentriq, 877-436-3683
Tepmetko CoverOne www.coverone.com/en/home.html, 844-662-3631
Vitakvi Access Services by Bayer www.vitakvi-us.com/patient-assistance-program, 800-288-8374
Yervoy BMS Access Support bmsaccesssupport.bmscustomerconnect.com/patient/financial-support, 800-861-0048
Zykadia Co-pay Program www.copay.novartisoncology.com/?name=zykadia, 877-577-7756

STOPPING TOBACCO USE

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

SURVIVORSHIP

13thirty Cancer Connect www.13thirty.org
A Time to Heal Cancer Foundation www.atimetohelcancerfoundation.org, 402-401-6083
American Cancer Society www.cancer.org/cancer/survivorship.html, 800-227-23458
Cactus Cancer Society www.cactuscancer.org
Cancer ABCs www.cancerabcs.org, 516-445-2026
Cancer and Careers www.cancerandcareers.org, 646-929-8032
Cancer Hope Network www.cancerhopenetwork.org, 877-467-3638
Cancer Support Community www.cancersupportcommunity.org, 888-793-9355
Cancer Survivors Network csn.cancer.org, 800-227-2345
CancerCare www.cancercares.org, 800-813-4673
Centers for Disease Control and Prevention (CDC) www.cdc.gov/cancer/survivors, 800-232-4636
Global Resource for Advancing Cancer Education (GRACE) www.cancergrace.org
Hope for Two... The Pregnant with Cancer Network www.hopefortwo.org, 800-743-4471
Imerman Angels www.imermanangels.org, 866-463-7626
Indian American Cancer Network www.iacanetwork.org, 713-370-3489
Law Enforcement Cancer Support Foundation www.lawenforcementcancer.org
Livestrong Foundation www.livestrong.org
National Cancer Survivors Day ncsd.org, 615-794-3006
National Coalition for Cancer Survivorship www.canceradvocacy.org, 877-622-7937
National LGBT Cancer Network www.cancer-network.org, 212-675-2633
National LGBT Cancer Project www.lgbtcancer.org, 917-301-1913
Reel Recovery www.reelrecovery.org, 800-699-4490
River Discovery riverdiscovery.org, 208-303-0040
Stupid Cancer www.stupidcancer.org, 212-619-1040
Survivor's Outdoor Experience www.survivorsoutdoorexperience.org, 360-477-1619
Triage Cancer www.triagecancer.org, 424-258-4628
True North Treks www.truenorthtreks.org
Walk With Sally www.walkwithsally.org, 310-322-3900

➔ For more resources, go to PatientResource.com

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