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Progress in the Treatment of Lung Cancer

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Learn about:

- How lung cancer is diagnosed
- New treatment options
- Managing treatment side effects
- How CancerCare can help



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We have entered a new and hopeful era in the treatment of lung cancer.

Each year, nearly 220,000 Americans are diagnosed with lung cancer. About 85 percent of people who develop lung cancer either are or have been smokers. Yet some people who have never smoked still get the disease. Scientists are not sure why this is. It could be due to secondhand smoke, a gas called radon that occurs naturally, or other cancer-causing substances.

In recent years, there have been some exciting developments in lung cancer treatment. Doctors now can prescribe

medications that are targeted to specific types of lung cancer cells. This advance has made lung cancer treatment more effective and safer. These and other treatments are described in this booklet.



Diagnosing Lung Cancer

Unlike mammography for breast cancer or colonoscopy for colon cancer, there is no widely accepted screening tool for early-stage lung cancer. Regular chest x-rays are not

reliable enough to find lung tumors in their earliest stages, when many doctors believe the tumors are at their smallest and most curable.

Studies have suggested that another technique can detect tumors as small as 5 mm—less than a quarter of an inch.

Called helical (or spiral) computed tomography (or CT scanning), this technique has been tested in a number of clinical trials to see if it can find lung cancer early enough to improve survival.

When lung cancer is suspected, a small piece of tissue from the lung must be examined under a microscope to look for cancer cells. Called a biopsy, this procedure can be performed in different ways. In some cases, the doctor passes a needle through the skin into the lungs to remove a small piece of tissue; this procedure is often called a “needle biopsy.” In other cases, a biopsy may be done during a bronchoscopy. For this procedure, the doctor inserts a small tube through the mouth or nose and into the lungs. The tube, which has a light on the end, allows the doctor to see inside the lungs and to remove a small tissue sample.



TYPES OF LUNG CANCER

Doctors determine the type of lung cancer by looking at a biopsy of tumor cells under the microscope. It's important to know the specific type because it helps doctors recommend the best treatment. There are two major types of lung cancer:

Non-small cell lung cancer accounts for about 85 percent of lung cancers. Among them are these types of tumors:

- **Adenocarcinoma** is the most common form of lung cancer in the United States among both men and women. *Bronchioalveolar carcinoma*, or BAC, is a very rare type of adenocarcinoma. It forms near the lungs' air sacs.

- **Epidermoid carcinoma** (also called *squamous cell carcinoma*) forms in the lining of the bronchial tubes.
- **Large cell carcinomas** This name refers to non-small cell lung cancers that are neither adenocarcinomas nor epidermoid cancers.

Small cell lung cancer accounts for the remaining 15 percent of lung cancers in the United States. As a rule, small cell lung cancer has spread—at least in tiny amounts—by the time doctors find it.

LUNG CANCER STAGES

When lung cancer is diagnosed, it's important to know what stage it is in. The stage helps determine treatment, taking into account the size of the tumor and whether the cancer has spread from the lungs to lymph nodes or other organs. (Lymph nodes are small, bean-shaped structures that act as filtering stations for the body, removing waste and fluids and helping fight infection.) When cancer cells spread to the lymph nodes, they can travel throughout the body and form tumors far from their original site.

The stages of non-small cell lung cancer and small cell lung cancer are different.

Non-Small Cell Lung Cancer

Stage I The cancer is located only in the lungs and has not spread to any lymph nodes.

Stage II The cancer is in the lung and nearby lymph nodes.

Stage III Cancer is found in the lung and in the lymph nodes in the middle of the chest, or there is a tumor in the lung plus fluid in the chest cavity. Stage III has two subtypes:

- If the cancer has spread only to lymph nodes on the same side of the chest where the cancer started, it is called stage IIIA.

- If the cancer has spread to the lymph nodes on the opposite side of the chest or caused fluid to form in the chest, it is called stage IIIB.

Stage IV Stage IV is the most advanced stage of lung cancer. This is when the cancer has spread to another part of the body, such as the liver or other organs.

Because the lungs are large, tumors can grow in them for a long time before they are found. Even when symptoms do occur—such as coughing and fatigue—people think they are due to other causes. For this reason, early-stage lung cancer (stages I and II) is difficult to detect. Most people with lung cancer are diagnosed at stages III and IV.



Small Cell Lung Cancer

Limited stage In this form, cancer is found on one side of the chest, involving just one part of the lung and nearby lymph nodes.

Extensive stage Here, cancer has spread to other regions of the chest or other parts of the body.

Treatment Options

Surgery, radiation, chemotherapy, and targeted treatments—alone or in combination—are used to treat lung cancer. (Unlike chemotherapy, targeted treatments attack specific molecules and cell mechanisms thought to be important for cancer cell survival and growth. This specific targeting helps spare healthy tissues and causes less severe side effects.)

Each one of these treatments may cause side effects, which we discuss further on page 10.

SURGERY

Most stage I and stage II non-small cell lung cancers are treated with surgery to remove the tumor. For this procedure, called a lobectomy, a surgeon removes the lobe, or section, of the lung containing the tumor.

Some surgeons use video-assisted thoracoscopic surgery (VATS). For this procedure, the surgeon makes a small incision, or cut, in the chest and inserts a tube called a thoracoscope. The thoracoscope has a light and a tiny camera connected to a video monitor so that the surgeon can see inside the chest. A lung lobe can then be removed through the scope, without making a large incision in the chest.

CHEMOTHERAPY AND RADIATION

For people with non-small cell lung tumors that can be surgically removed, evidence suggests that chemotherapy after surgery, known as adjuvant chemotherapy, may help prevent the cancer from returning. Still, questions remain about whether adjuvant chemotherapy is best for all patients and how much people with different stages of lung cancer will benefit. Research continues on this topic.

For people with stage III lung cancer, doctors may recommend chemotherapy possibly followed by radiation treatments to shrink the tumor or surgery to remove what remains of the tumor.

In stage IV lung cancer, chemotherapy is typically the main treatment. It is often combined with radiation.

The chemotherapy treatment plan for lung cancer often consists of a combination of drugs. Among the drugs most commonly used are:

- *Either cisplatin (available under the trade name Platinol as well as generically) or carboplatin (Paraplatin or generic carboplatin)*

- Plus docetaxel (Taxotere), gemcitabine (Gemzar), paclitaxel (Taxol and others), vinorelbine (Navelbine and others), or pemetrexed (Alimta).

There are times when these treatments may not work. Or, after these drugs work for a while, the lung cancer may come back. In such cases, doctors often prescribe a second course of drug treatment referred to as second-line chemotherapy.



Recently, the findings from an important clinical trial showed significant benefits to starting second-line chemotherapy right after a first course of chemotherapy, rather than waiting for lung cancer to recur. In this clinical trial, people were treated with the chemotherapy drug pemetrexed immediately after a first course of chemotherapy—even if there were no signs that the cancer had come back. In these people, it took much longer for lung cancer

to recur than in people who were not treated with a second course of chemotherapy right away.

For people with small cell lung cancer, chemotherapy, rather than surgery, is usually the treatment of choice right from the start. Radiation treatment is used as well.

CHEMOTHERAPY BEFORE OTHER TREATMENTS

Research shows that receiving chemotherapy before radiation or surgery may also help people with lung cancer. Chemotherapy may:

- Shrink the tumor enough to make it easier to remove with surgery;
- Increase the effectiveness of radiation;

- Destroy hidden cancer cells at the earliest possible time.

And if a tumor doesn't shrink with chemotherapy, the medication can be stopped right away, allowing the doctor to try a different treatment. In addition, research shows that people with lung cancer are much more able to cope with the side effects of chemotherapy when it is given before surgery.

Another reason chemotherapy may be given before surgery is to see if it will be beneficial after surgery. Sometimes, a short trial period of treatment with the drug shrinks the tumor before surgery. If that is the case, then longer treatment with the same drug after surgery is more likely to benefit the patient.

Because many lung cancer specialists around the world are giving chemotherapy to their patients before surgery, it is something well worth discussing with your doctor.

TARGETED TREATMENTS

One of the most exciting developments in lung cancer medicine is the introduction of targeted treatments. These treatments for lung cancer include:

Erlotinib (Tarceva) A targeted treatment called erlotinib has been shown to benefit some people with non-small cell lung cancer. This drug blocks a specific kind of receptor on the cell surface—the epidermal growth factor receptor (EGFR). Receptors such as EGFR act as doorways, allowing substances in that can encourage a cancer cell to grow and spread. The more receptors on a cell, the more signals the cell receives to grow and multiply. In lung tumors with many EGFRs, treatment with erlotinib can sometimes slow or block the cancer's growth.

Bevacizumab (Avastin) Just like normal tissues, tumors need a blood supply to survive. Blood vessels grow in several ways. One way is through the presence of another substance called vascular endothelial growth factor (VEGF). This substance stimulates blood vessels to penetrate tumors

The Importance of Clinical Trials

There's no question that clinical trials have led to advances in cancer treatment, creating a brighter future for people with cancer. Clinical trials are the standard by which we measure the worth of new treatments and quality of life as patients go through those treatments. For this reason, doctors and researchers urge people with cancer to take part.

Your doctor can guide you in making a decision about whether a clinical trial is right for you. Here are a few things you should know:

- Often, patients who take part in clinical trials gain access to and benefit from new treatments.
- Before you participate in a trial, you will be fully informed as to the risks and benefits of the trial.
- No patient receives a placebo (inactive pill or liquid) if there is a standard treatment available for the disease. Most clinical trials are designed to test a new treatment against a standard treatment to find out whether the new treatment has any added benefit.
- You can stop taking part in a clinical trial at any time for any reason.

and supply oxygen, minerals, and other nutrients to feed the tumor. When tumors spread throughout the body, they release VEGF to create new blood vessels.

Bevacizumab works by stopping VEGF from stimulating the growth of new blood vessels. (Because normal tissues have an established blood supply, they are not affected by the drug.) When combined with chemotherapy, bevacizumab has been shown to improve survival in people with certain types of non-small lung cancer such as adenocarcinoma and large cell carcinoma.

Cetuximab (Erbix) Another targeted treatment still in clinical trials, cetuximab has shown promise in treating stage IV lung disease. Like erlotinib, cetuximab blocks EGFR. The findings from a recent clinical trial showed that combining cetuximab with chemotherapy was more effective in treating people with stage IV lung cancer than chemotherapy alone. Although cetuximab has not been approved for use in treating lung cancer, research with the drug is ongoing.

Managing Treatment Side Effects

Although cancer treatments can cause side effects, your doctor can help you manage these symptoms. Managing side effects, which can affect your quality of life, is an important part of your overall care. Talk with your doctor if you experience any of the following:

Pain A variety of pain-relieving drugs are available to help people with cancer. In addition, pain can sometimes be relieved by physical therapy, relaxation therapy, meditation, biofeedback, or acupuncture.

Nausea and vomiting Today, doctors do a much better job of preventing and easing these symptoms. A number of medications are available, and new research shows that taking ginger supplements can be an effective way to prevent nausea.

Fatigue A simple blood test can help doctors determine the cause of fatigue in order to better treat it. Aside from medication, research shows that light amounts of exercise can help too.

Mouth sores (mucositis) Sores inside the mouth and on the mucous lining of the throat and digestive tract can result from radiation treatments and from some types of chemotherapy. Before you begin treatment, it's important to work closely with your health care team, including your dentist, to help ease this side effect.

Nerve damage Some people on chemotherapy experience numbness or tingling in their hands and feet, what doctors call peripheral neuropathy. It's important to tell your doctor as soon as possible if you experience these types of side effects. He or she may want to adjust some of your medicines or chemotherapy.

Skin reactions Clinical trials appear to confirm that an acne-like skin rash is a sign that targeted treatment with an EGFR inhibitor is working. Steroid creams and special moisturizers can help with skin rashes and some of the other skin reactions, such as blistering, itchiness, or cracking. Changes in the hair can also occur: it may become fine, brittle, or curly.

CancerCare® Can Help

When you are being treated for lung cancer, you may have many concerns about the process. It's perfectly normal to feel confused or nervous. But the more you learn about what's involved and what to expect, the better you'll feel about your treatment. Help is available to you as you consider your options. Your most important support will come from your health care team, family members, and friends. But CancerCare offers these free resources as well:

Counseling Often, when people are coping with lung cancer, they need someone to talk with who will help them sort through the emotional and practical concerns that come up. Oncology social workers provide emotional support, help you find ways to stick with treatment and cope with side effects, and guide



you to resources. CancerCare® offers free counseling from professional oncology social workers on staff.

Support groups Talking with other people who have cancer can help reduce the feeling that you are going through it alone. These groups provide reassurance, suggestions, insight—a safe and supportive place where people can share similar concerns. At CancerCare, people with cancer and their families take part in support groups in person, online, or on the telephone.

Connect® Workshops In these workshops you can hear about the latest research on lung cancer directly from leading medical experts in one-hour presentations. You can listen live by telephone or download podcasts of past workshops from our website.

Publications Free booklets and fact sheets from CancerCare provide up-to-date, easy-to-read information about the latest on lung cancer, treatments, managing side effects, and coping.

Financial help For those who qualify, CancerCare can provide financial assistance to help with some costs that might arise during treatment, such as transportation and child care. Social workers and case managers are knowledgeable about financial issues and will work closely with you to get you the help you need.

Referrals to resources CancerCare can help you learn about other organizations in your community and nationwide that can assist you in finding information and help.

To learn more about how we help, call 1-800-813-HOPE (4673) or visit www.cancercare.org.

Frequently Asked Questions

Q My grandmother was just diagnosed with non-small cell lung cancer. I'm the one who's going to be seeing the doctor with her, and I'm wondering what questions I should ask about her diagnosis and treatment.

A First, find out what type of lung cancer your grandmother has. Is it a particular subtype of non-small cell lung cancer that may need to be managed differently than another type of lung cancer might be?

Second, find out what stage of disease she has. Treatment for lung cancer depends in large part on the stage. Then, based on that answer, discuss the treatment options with the doctor. Is this a case for surgery? Is this stage usually treated with chemotherapy? What are the different chemotherapy options? Why are you recommending this treatment, and what do you hope it will achieve? Is your grandmother likely to handle this treatment well? What are the likely side effects of the treatment? What effect will it have on her quality of life? Where will the treatment take place? How often will your grandmother have to go in for appointments? How long will they take? Will somebody have to accompany her?

Third, ask whether there are any additional resources available for your grandmother. Is there a clinical trial in this institution or a nearby institution that might benefit her? Is there a program in this institution that allows her to be cared for by a pain specialist, social workers, psychologists, dietitians, and so on?

Q Have we made significant advances in lung cancer treatment in recent years?

A Researchers feel we have entered a new era, with personalized medicine and biological treatments that one could not have dreamt of 10 years ago—or even five years ago. Unfortunately, these advances have not yet translated into a substantial improvement in overall survival for people with lung cancer. When we look at cure rates for lung cancer today, which reflect data gathered a few years ago, the numbers don't seem to have changed much. However, as research moves forward and we continue gathering data using the new treatments now available, these numbers are expected to get better.

Q My breathing has been affected by surgery and first-line chemotherapy. Is that common?

A Many people with lung cancer have shortness of breath. Sometimes it's due to the underlying lung disease and sometimes it's a direct effect of chemotherapy. Some drugs can change lung function and cause inflammation. Sometimes the shortness of breath is caused by an unrelated condition such as heart disease or a low blood count. Shortness of breath is something that you should discuss with your doctor and other health care providers to find the source and the best solution.

Q My mother was diagnosed with stage IV lung cancer, and she has developed blood clots in her legs. Is there anything she can do to manage this side effect?

A Blood clots are a common complication of cancer. Sometimes they are caused by the cancer itself and sometimes by its treatment. Doctors prescribe blood thinners to prevent

further clots. If the blood clots caused some damage to the vein, your mother may want to ask her doctor for a referral to a vascular specialist—an expert in the treatment of circulation and blood vessels. Another option for your mother might be to wear elastic stockings to help manage any pain, discomfort, or swelling. For many people, treatment is highly effective, and the symptoms of the blood clots tend to go away over time. Encourage her to speak with her doctor for additional recommendations on managing this side effect.

Q I've had numbness and tingling in my fingers and toes since I've been undergoing chemotherapy. Is there anything I can do about it?

A You're most likely experiencing a fairly common side effect of chemotherapy called neuropathy. The pain results from nerve damage, and it can lead to a burning sensation, a feeling of "pins and needles," or numbness. Neuropathy usually fades over time and may go away once you stop chemotherapy. But it's important to tell your doctor or nurse *immediately* about your symptoms so that they can be treated effectively. Another reason this is so important is that your health care team may need to re-evaluate your treatment by changing the dose, for example. There are also a number of medications that offer relief from a burning or prickly sensation. These drugs are prescribed "off label" because they were designed to treat other medical conditions. In addition, your medical oncologist may refer you to a doctor of rehabilitation medicine or a neurologist.

Resources

CancerCare®

1-800-813-HOPE (4673)
www.cancercares.org

American Cancer Society

1-800-227-2345
www.cancer.org

Cancer.net

Patient information from the American Society of Clinical Oncology
www.cancer.net

LungCancer.org

1-800-813-HOPE (4673)
www.lungcancer.org

National Cancer Institute

Cancer Information Service
1-800-422-6237
www.cancer.gov

The Wellness Community

1-888-793-9355
www.thewellnesscommunity.org

To find out about clinical trials:

Coalition of Cancer Cooperative Groups
www.CancerTrialsHelp.org

National Cancer Institute
www.cancer.gov/clinicaltrials



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The information presented in this patient booklet is provided for your general information only. It is not intended as medical advice and should not be relied upon as a substitute for consultations with qualified health professionals who are aware of your specific situation. We encourage you to take information and questions back to your individual health care provider as a way of creating a dialogue and partnership about your cancer and your treatment.

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When one word changes your world,

CANCER*care*[®]

makes all the difference



With CancerCare,
the difference comes from:

- Professional oncology social workers
- Free counseling for you and your loved ones
- Education and practical help
- Up-to-date information

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