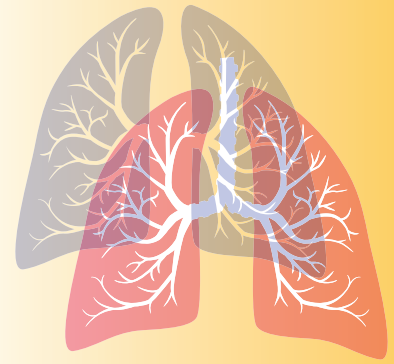


Treatment of Lung Cancer

Lung Cancer Mini Series #3

There are several types of treatment for lung cancer. You and your health care team will determine which choice is best for you after reviewing the type of lung cancer, the stage of your disease, your symptoms, and other health problems you may have. Lung cancer treatments are continuing to improve as new discoveries are made so it is important to thoroughly discuss all your options with your clinicians.



How does the type of my lung cancer affect my treatment?

There are two main types of lung cancer: Non-Small Cell Lung Cancer-NSCLC and Small Cell Lung Cancer-SCLC (see ATS Patient Information Series Fact Sheet *Lung Cancer Mini-Series #1* at <http://patients.thoracic.org/information-series/index.php>). The main sub-types of non-small cell lung cancer include: adenocarcinoma, squamous cell, and large cell lung cancer. Most (but not all) cases of NSCLC can be sub-typed. Treatment is different depending on the type or sub-type of lung cancer you have.

Small cell lung cancer (SCLC) is a much different cancer than NSCLC. The treatment approach and the staging with SCLC are different so treatments will be described separately.

Non-Small Cell Lung Cancer (NSCLC)

NSCLC is the most common type of lung cancer and adenocarcinoma is the most common sub-type. NSCLC can be treated with surgery, radiation therapy, chemotherapy, and/or in some cases, targeted therapy. The type of treatment recommended by your health care team will depend on the stage and type of your cancer, as well as any other health conditions you may have. It is important for you to be involved with your health care team in the decision about the type of treatment you receive.

How does the stage of my cancer determine the treatment I receive?

Staging is a measure of how far your lung cancer has spread (see ATS Patient Information Series: What is Lung Cancer Staging? <http://patients.thoracic.org/information-series/en/resources/ATSLungCancerStaging.pdf>). Usually, cancers that are limited to a small area and have not spread very far are best treated with a local treatment to remove or kill the entire tumor. Surgery and radiation are forms of local treatment. Surgery generally is more effective than radiation in removing all of the cancer, but as discussed below, not all patients can safely tolerate surgery.

If the cancer has spread, chemotherapy and/or targeted therapy are often used, as these treatments can kill cancer

cells throughout the body. Sometimes, chemotherapy is given before or after local treatments. Chemotherapy after surgery is called *adjuvant therapy*. It is given to help kill any remaining cancer cells not removed by surgery. When chemotherapy is given before surgery it is called *neoadjuvant therapy*. Chemotherapy can also be given as the only treatment.

Targeted therapy refers to medicines, unlike traditional chemotherapy, that target a specific mechanism or pathway in the cancer cells to slow or stop the growth of the cancer cells. Currently, targeted therapies are only available for a few types of advanced stage NSCLC. New medicines are in development for specific genetic mutations so it is very important to discuss whether testing your cancer cells for genetic or protein changes (molecular testing) is right for you.

Which treatments are used for which stage of NSCLC?

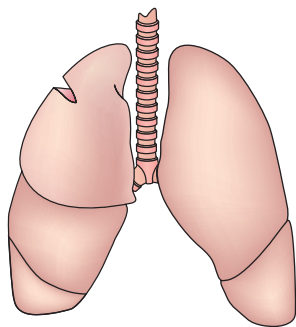
The following table lists the usual treatment for each stage of NSCLC. Each person with lung cancer has different circumstances, so what may be the best for one person may not be best for you.

NSCLC Stage	Treatment
I	Surgery Radiation (if individual cannot have surgery)
II	Surgery Radiation (if individual cannot have surgery) Adjuvant Chemotherapy (usually after surgery)
IIIA	Surgery when possible Chemotherapy Radiation
IIIB	Surgery (only rarely) Chemotherapy Radiation
IV	Chemotherapy or targeted therapy Palliative Radiation (for symptom relief)

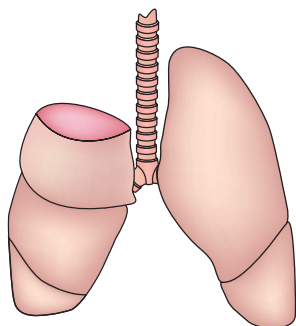
Types of Lung Surgery

The lungs are divided into sections, or **lobes**, with three lobes on the right and two on the left. Each lobe is broken down further into **segments**.

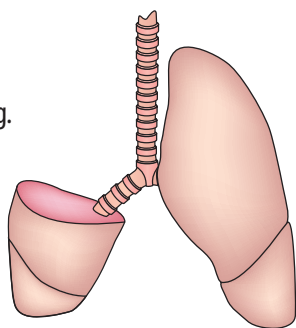
Wedge Resection:
Removal of less than a lobe of the lung. Wedge resection refers to removal of a small pie-shaped piece of lobe, of the lung.



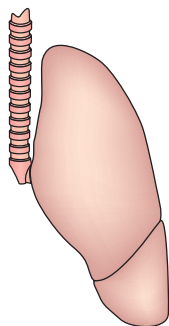
Segmentectomy:
Removal of a larger portion of lung, but not an entire lobe. Picture shows part of the upper lobe removed.



Lobectomy:
Removal of a lobe of the lung.



Pneumonectomy:
Removal of the entire right or left lung.



How will my health care team decide if I should have surgery for NSCLC?

The stage and location of your cancer helps determine if surgery (see figure for example of types of surgery in the lung) may be useful. Next, your clinicians will decide if you are “fit” enough for surgery. Surgery is stressful on the body and can be risky for patients who have other lung and heart diseases. This might make lung cancer surgery impossible to perform safely. You and your clinicians will need to discuss the risks compared to the benefits of having surgery.

For those being considered for surgery, additional tests may be needed to check your lungs and heart to find out if you can safely tolerate the surgery. These tests often include breathing tests, a study looking at blood flow to the lungs with a ventilation-perfusion scan (V/Q scan), and a stress test of the heart and/or an ultrasound of your heart (echocardiogram).

How will my health care team decide if I should have radiation, chemotherapy or targeted therapy for NSCLC?

Similar to the decision to perform surgery, your clinicians will use the stage and sub-type of your cancer to recommend a treatment for you. They will then review your other symptoms and health problems to make sure you can safely tolerate the treatment. You and your health care team should discuss the risks and benefits of all options presented to you.

Small Cell Lung Cancer SCLC

What are the stages of SCLC?

SCLC is divided into limited and extensive stages. Limited stage means the cancer appears to be confined to one area of the chest. Extensive stage means the cancer has spread into both lungs, or into other areas outside of the lung, such as the liver, bones or brain.

Which treatments are used for which stage of SCLC?

In rare occasions, SCLC is caught at an early enough stage (that is, it is localized) to be surgically removed. However, because SCLC tends to grow quickly, surgery is generally not an option, and a combination of chemotherapy and radiation is recommended for most limited stage SCLC patients. Chemotherapy alone is usually recommended for extensive stage SCLC. Radiation is sometimes helpful for extensive stage cancer, to decrease symptoms caused by the cancer, such as localized bone pain. Prophylactic (preventative) radiation to the brain may be recommended to prevent the spread of cancer to the brain, if the original cancer has appeared to shrink after treatment.

Types of treatment for NSCLC and SCLC

Type of treatment	Purpose
Surgery	Removes the lung cancer and some surrounding lung tissue, such as lymph nodes. The amount of lung removed depends on the size and spread of the tumor and how much lung can be safely removed. (See figure for a description of types of lung surgery.)
Radiation	Uses high energy x-rays or other types of radiation to kill cancer cells. Radiation is targeted to a specific area of the body where there is cancer.

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Chemotherapy	These drugs kill cells that are rapidly growing and multiplying (including the cancer cells) but also other fast growing cells such as in the hair, intestines, and blood. Usually these drugs are given in the bloodstream (intravenously-IV), however some chemotherapy drugs are now available in pill form.
Targeted Therapy	Some newer medicines, called targeted therapies, are able to focus on the specific genetic changes that make tumor cells grow and divide. Often these drugs can be taken by mouth. Some work best in specific patients as determined by genetic testing of the cancer cells. So far, targeted therapy is most commonly used in the adenocarcinoma sub-type of NSCLC.

What are the side effects of lung cancer treatments?

Your health care team will discuss the specific side effects of each therapy you receive. In general, the complications of surgery include infections, damage to areas near the surgical site, bleeding, and shortness of breath. Other risks include heart attack, stroke or a blood clot to the lungs. The side effects of radiation involve damage to tissues close to the tumor, usually lung and esophagus (difficulty or painful swallowing), damage to skin, tiredness (fatigue), and loss of appetite. Hair loss will occur in the areas receiving radiation directly. Chemotherapy's side effects may include fatigue, hair-loss, nausea and vomiting, anemia (low red blood cell count), increased risk of infection, kidney damage and nerve damage. The side effects will vary depending on the specific chemotherapy drug used. Targeted therapy side effects can include skin rash, diarrhea, and rarely severe scarring in the lungs (pulmonary fibrosis). Mild visual disturbances have also been reported with some targeted therapies. Most side effects can be managed very well by additional medications and changes in rest and exercise schedules. Your care team will do their very best to make side effects as manageable as possible for you.

What about research centers or clinical trials?

Many of the treatments available for lung cancer patients today are the result of previous patients participating in clinical trials. Research studies allow doctors to learn the very best treatment options for people with the disease. Many of the newest treatment options are available only by participating in clinical trials. Speak with your health care team about what research is being done to treat your type of cancer and whether you'd be a good candidate for a clinical trial. The National Cancer Institute allows you to search for clinical trials in your area (<http://www.cancer.gov/clinicaltrials>).

What is palliative care and what is its role in lung cancer treatment?

Palliative care refers to treating symptoms that are caused by the cancer and the therapies used to treat the cancer. The goals of palliative care are to decrease symptoms, such as shortness of breath, pain, distress, and fatigue (tiredness), help you with anxiety or depression, and help you with any spiritual issues. You and your health care team should frequently and openly discuss all your symptoms and

feelings in order to find ways to treat them. It is important to discuss the risks and benefits of every therapy you consider and how that therapy will affect your quality of life and your chance of living longer. Many facilities have palliative care teams who are experienced in helping people with cancer.

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Resources:

American Cancer Society

1-800-227-2345 <http://www.cancer.org/docroot/home/index.asp>

American Society of Clinical Oncology

Cancer.net

National Cancer Institute

1-800-422-6237 <http://www.cancer.gov/cancertopics/wyntk/lung/page9> <http://www.cancer.gov/cancertopics/treatment/lung>

National Lung Cancer Partnership

1-608-833-7905 www.NationalLungCancerPartnership.org

Rx Action Steps

- ✓ If you smoke, get help to quit. It is never too late! (Treatments for lung cancer are more successful for people who don't smoke)
- ✓ Discuss enrolling in a research study with your clinicians
- ✓ Avoid second hand smoke
- ✓ Bring family or a friend with you to all your visits to have another "set of ears" to hear what is being told to you
- ✓ Ask to audio record your visit so that you can go back and listen to what was discussed
- ✓ Keep a notebook with all of your treatment information and questions for your health care team
- ✓ Stay away from people who have a cold/flu/other illnesses
- ✓ Eat a healthy diet (check for reliable web sites like those listed above)
- ✓ Drink plenty of fluids to stay hydrated
- ✓ Consider meeting with a member of the palliative care team early in the course of your care, to help you deal with the many emotions you may feel and decisions you may face.

Doctor's Office Telephone: