



Canadian
Cancer
Society

Lung Cancer

Understanding your diagnosis



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Lung Cancer

Understanding your diagnosis

When you first hear that you have cancer, you may feel alone and afraid. You may be overwhelmed by the large amount of information you have to take in and the decisions you need to make.

“ *All I could hear was ‘cancer.’ I heard my doctor say something like, ‘We’re going to start your treatment as soon as possible.’ I didn’t hear one word after that.* ”

The information in this brochure can help you and your family take the first steps in learning about lung cancer. A better understanding may give you a feeling of control and help you work with your healthcare team to choose the best care for you.

For more information

You can find more in-depth information about lung cancer on cancer.ca. Or call us at 1-888-939-3333 to learn more about cancer, diagnosis, treatment, support and services near you.

Check out our video series on common cancer topics. These short, simple videos cover subjects like *What is cancer?* and *Coping when you’re first diagnosed*.

Find the series at cancer.ca/cancerbasics.

What is cancer?

Cancer is a disease that starts in our cells. Our bodies are made up of trillions of cells grouped together to form tissues and organs such as muscles, bones, the lungs and the liver. Genes inside each cell tell it when to grow, work, divide and die. Normally, our cells follow these instructions and we stay healthy.

But sometimes the cells grow and divide out of control. After a while, a group of abnormal cells forms a lump (called a tumour).

Tumours can be either non-cancerous (benign) or cancerous (malignant). Non-cancerous tumour cells stay in one place in the body and are not usually life-threatening. Cancerous tumour cells can grow into nearby tissues and spread to other parts of the body. It's important to find and treat cancerous tumours as early as possible. In most cases, finding cancer early increases the chances of successful treatment.

Cancers are named after the part of the body where they start. If cancer spreads to other parts of the body (called metastasis), the cancer still has the same name. For example, cancer that starts in the lung but spreads to the liver is called lung cancer with liver metastases.

What is lung cancer?

Lung cancer starts in the cells of the lung. The lungs are in the chest, one on each side of the heart. The right lung has 3 main parts, called lobes. The left lung is a bit smaller and has 2 lobes. The lungs have a thin covering called the pleura that cushions and protects them. The pleura has 2 layers of tissue - one layer covers the lungs and the other lines the inside wall of the chest. There is a small amount of fluid (pleural fluid) between the layers of the pleura.

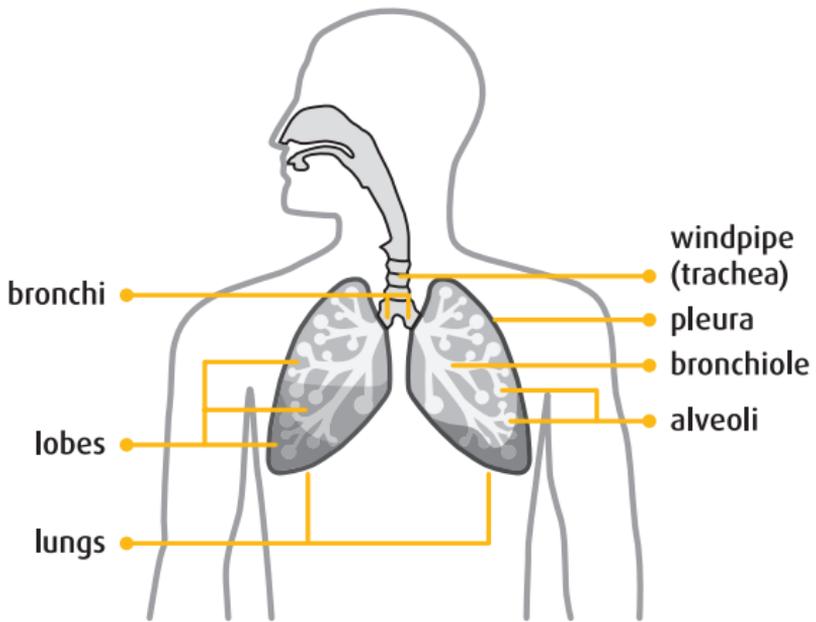
You use your lungs when you breathe. The air you take in through your nose or mouth flows down the windpipe (trachea). The windpipe divides into 2 tubes called the left and right bronchi. They carry air to each lung. Inside the lung, the bronchi divide into smaller and smaller tubes called bronchioles. Each bronchiole ends in a group of tiny air sacs called alveoli. The alveoli take oxygen from the air and pass it into the blood. The blood circulates the oxygen to all parts of your body. The alveoli also remove carbon dioxide from the blood, which is pushed out of the lungs when you exhale.

There are 2 main types of lung cancer, which start in the different cells of the lung:

- Non-small cell lung cancer is the most common type of lung cancer. It grows more slowly than small cell lung cancer.
- Small cell lung cancer grows quickly and often spreads to other parts of the body.

Because each type of lung cancer behaves differently, they are treated differently.

Location of the Lungs



Diagnosing lung cancer

Your doctor may suspect you have lung cancer after hearing about your symptoms, taking your medical history and doing a physical exam.

Symptoms: The most common signs and symptoms of lung cancer include:

- a cough that gets worse or doesn't go away
- breathing problems, like shortness of breath or wheezing
- chest pain that doesn't go away and gets worse when you cough or breathe deeply
- coughing up blood
- chest infections, like bronchitis or pneumonia, that don't get better or keep coming back
- fatigue (feeling very tired all the time, no matter how much rest you get)
- hoarseness or other changes to your voice
- problems swallowing
- unexplained weight loss
- larger than normal lymph nodes in the neck or above the collarbone

You may feel frustrated that it's taking a long time to make a diagnosis, but other health problems can also cause these symptoms. To find out for sure if you have lung cancer, your doctor will do one or more of the following tests. These tests may also be used to help plan treatment.

Imaging tests: The healthcare team uses x-rays, ultrasounds, CT scans, MRIs or bone scans to look at your tissues, organs and bones in more detail. They can see the size of the tumour and if it has spread. The tests may also show an abnormal buildup of fluid around the lungs or swollen lymph nodes. These tests are usually painless, so you don't need a local anesthetic (freezing).

Sputum tests: Mucus that is coughed up from the lungs (sputum) may be checked for cancer cells.

Biopsy: A biopsy is usually needed to make a definite diagnosis of cancer. Cells are removed from the body and checked under a microscope. If the cells are cancerous, they will be studied to see how fast they are growing. There are different ways to do a biopsy.

- A bronchoscopy uses a thin, flexible tube with a light at the end (called a bronchoscope) to look inside the large airways of the lungs (the windpipe and bronchi). The tube is inserted through the nose or throat and passed down to the lungs. You will be given a mild sedative (a drug to relax) and an anesthetic (a drug to numb your throat). If an abnormal area is found, the doctor can take samples of tissue through the

bronchoscope. You may have a sore throat for a couple of days after the test.

- A mediastinoscopy looks at the tissues and lymph nodes in the area between the lungs (called the mediastinum). Lymph nodes and other tissue samples near the windpipe may be removed during a mediastinoscopy. The doctor makes a small cut at the base of the neck and passes a thin, flexible tube through it to take tissue samples. You will be given a general anesthetic (a drug that puts you into a deep sleep so you don't feel pain).
- A thoracoscopy is used if other tests can't reach parts of the lung or if a biopsy of the pleura is needed. A small cut is made through the chest wall and an instrument called a thoracoscope is inserted into the chest between 2 ribs. The doctor can look right inside the chest cavity through the thoracoscope. Tissue samples can be taken through more small cuts in the chest wall. You will need a general anesthetic.
- A thoracentesis removes pleural fluid that has built up in the area between the lungs and the chest wall. The doctor inserts a long needle between the ribs and removes the fluid. You will have an anesthetic to numb an area of the chest. The fluid is checked for cancer cells.
- A fine needle aspiration removes a small amount of fluid, cells or tissue from the lung or nearby lymph nodes. The doctor may use an ultrasound or a CT scan to guide a long, thin needle to the area to remove the fluid.

- A thoracotomy looks at the organs in the chest if other tests can't get enough tissue to make a diagnosis. The surgeon opens the chest with a long cut. You will need a general anesthetic.

Molecular tissue tests: Molecular tissue tests look for certain changes (mutations) in the genes of lung cancer cells. These changes may affect the type of treatment you have because some chemotherapy drugs may work better on cancer cells that have these changes.

Immunohistochemistry: These tests look for antigens, which are a type of protein found on the surface of cells. The results of the tests help doctors decide which treatment is the best option.

Blood tests: Blood is taken to see if the blood cells are normal. Blood tests can also show how well your organs are working and may suggest whether you have cancer and if it has spread.

Pulmonary function tests: These tests check how well your lungs are working and whether they will work well enough if a lung or part of a lung is removed.

Further testing: Your doctor may order other tests to diagnose the cancer, see if it has spread or help plan your treatment.

Will I be OK?

Most people with cancer want to know what to expect. Can they be cured?

A prognosis is your doctor's best estimate of how cancer will affect you and how it will respond to treatment. It looks at many factors including:

- the type of cancer
- the size of the tumour and whether the cancer has spread
- your age, sex and overall health

Even with all this information, it can still be very hard for your doctor to say exactly what will happen. Each person's situation is different.

Your doctor is the only person who can give a prognosis. Ask your doctor about the factors that affect your prognosis and what they mean for you.

Staging

Once a diagnosis of cancer has been made, the cancer is given a stage. Staging is different for each type of lung cancer. This information helps you and your healthcare team choose the best treatment for you.

Staging is a way to describe or classify the cancer. Staging of lung cancer describes how large the tumour is and if it has grown into the nearby tissues. Staging also describes whether cancer cells are found in any lymph nodes and if the cancer has spread to other parts of the body.

For non-small cell lung cancer, each stage is given a number from 0 to 4. It may also have the letters A, B or C to divide the stages. Generally, the higher the number or letter, the more the cancer has spread.

For small cell lung cancer, there are only 2 stages. Limited stage means the cancer is only found in and around one lung. Extensive stage is cancer that has spread outside the chest and to other parts of the body.

Treatments for lung cancer

Your healthcare team considers your general health and the type and stage of the cancer to recommend the best treatments for you. You'll work together with your healthcare team to make the final treatment choices. Talk to them if you have questions or concerns.

You might receive one or more of the following treatments.

Surgery: A decision to have surgery depends on the size and stage of the cancer. If it has spread outside the lung where the cancer started, you won't be able to have surgery. During the operation, all of the tumour and some healthy tissue around the tumour are removed. Surgery is done under a general anesthetic. You may stay in the hospital for several days or longer after the surgery. Surgery is not done if the cancer can't be completely removed.

You will need to be as healthy as possible to have surgery and to recover from it. It can take many weeks to recover fully from a lung operation. You will have tests to check your overall health and find out if you are well enough for surgery.

Surgery is most commonly used for non-small cell lung cancer that is still small and has not spread. Surgery is not usually done for small cell lung cancer unless the cancer is found very early, before the cancer has started to spread.

Surgery for non-small cell lung cancer can be done in different ways:

- For a lobectomy, the surgeon removes the lobe of the lung that has the tumour. This is the most common surgery for lung cancer.
- For a wedge resection, the surgeon removes the tumour and a small part of the lung.
- For a pneumonectomy, the surgeon removes the entire lung. You will be able to breathe with your other lung.

After surgery, you will have a tube inserted to drain fluid or air that may collect in the chest. You may have some pain and a cough, and you may find it hard to breathe. These side effects are temporary and can be controlled. You will likely be given coughing and breathing exercises to do several times a day.

Endobronchial therapies: Endobronchial therapies use different ways to remove or shrink a tumour that is blocking an airway. They can also treat non-small cell lung cancer that has not spread outside the airways of the lungs. These therapies are used if you can't have surgery or radiation therapy.

Chemotherapy: Chemotherapy uses drugs to treat cancer. Chemotherapy drugs may be given as pills or injected with a needle into a vein. They damage cancer cells, but they also damage some normal cells. Although normal cells usually recover over time, you may experience side effects from your treatment, like nausea, vomiting, loss of appetite, fatigue, hair loss or an increased risk of infection.

Chemotherapy is the main treatment for lung cancer that can't be removed with surgery. It is usually given along with radiation therapy for people with small cell lung cancer. It may also be used before or after surgery for non-small cell lung cancer.

Radiation therapy: In external beam radiation therapy, a large machine is used to carefully aim a beam of radiation at the tumour. The radiation damages cells that are in the path of the beam - both cancer cells and normal cells. In brachytherapy (internal radiation therapy), radioactive material is placed directly into the tumour or close to it.

Radiation therapy is usually offered to people who can't have surgery for lung cancer. It is usually given along with chemotherapy for small cell lung cancer. It may also be used after surgery to treat non-small cell lung cancer. Brachytherapy may be used to shrink a tumour that is blocking an airway.

The side effects of radiation therapy depend on what part of the body receives the radiation. You may feel more tired than usual or have breathing or swallowing problems, a sore throat or changes to the skin (it may be red or tender) where the treatment was given.

Targeted therapy: Targeted therapy uses drugs to target specific molecules (such as proteins) on the surface of cancer cells. These molecules help send signals that tell cells to grow or divide. By targeting these molecules, the drugs stop the growth and spread of cancer

cells while limiting harm to normal cells. Targeted therapy is only used for non-small cell lung cancer.

The type of targeted therapy drug used will depend on the changes to the molecules found on the cancer cells. These changes are found with molecular tissue tests and immunohistochemistry tests used to diagnose the cancer.

Because targeted therapy doesn't usually damage normal cells, it tends to cause fewer and less severe side effects than other treatments. Flu-like symptoms and fatigue are common side effects of many targeted therapy drugs.

For more information on treatment, you may want to read our booklets *Chemotherapy and Other Drug Therapies* (including targeted therapy) and *Radiation Therapy*.

Immunotherapy: Immunotherapy uses your immune system to fight cancer or control side effects of cancer treatments. Natural body substances, or drugs made from natural body substances, boost the body's own defences against illness. Immunotherapy drugs are only used for metastatic (advanced) non-small cell lung cancer.

Like targeted therapy, immunotherapy doesn't usually damage normal cells. Flu-like symptoms, fatigue and skin problems are common side effects of immunotherapy.

Clinical trials: Clinical trials test new ways to treat cancer, such as new drugs, types of treatments or combinations of treatments. They provide information about the safety and effectiveness of new approaches to see if they should become widely available. Ask your doctor if any clinical trials are available as a treatment option for you.

Our brochure *Clinical Trials* has more information, including how to find a clinical trial.

Complementary therapies: Complementary therapies – for example, massage therapy or acupuncture – are used *together with* conventional cancer treatments that are widely used in Canada. Complementary therapies are often used to help ease tension, stress and other side effects of treatment. They don't treat the cancer itself. More research is needed to understand if these therapies are effective and how they work.

If you're thinking about using a complementary therapy, learn as much as you can about the therapy and talk to your healthcare team. It's possible that the therapy might affect other treatments or test results.

Alternative therapies are used *instead of* conventional cancer treatments. Alternative therapies haven't been tested enough for safety or effectiveness. Using only alternative treatments for cancer may have serious health effects. Talk to your healthcare team before you try an alternative therapy.

Side effects of treatments

Some cancer treatments cause side effects, such as fatigue, hair loss or nausea. Because treatments affect everyone differently, it's hard to predict which side effects - if any - you may have.

Side effects can often be well managed and even prevented. If you're worried about side effects, tell your healthcare team about your concerns and ask questions. They can tell you which side effects you should report as soon as you can and which ones can wait until your next visit.

If you notice any side effects that you didn't expect, talk to a member of your healthcare team as soon as possible. They'll help you get the care and information you need.

Living with cancer

Many sources of help are available for people with cancer and their caregivers.

Our booklet *Coping When You Have Cancer* has more detailed information and resources.

Your healthcare team: If you need practical help or emotional support, members of your healthcare team may be able to suggest services in your community or refer you to cancer centre staff or mental health professionals.

Family and friends: People closest to you can be very supportive. Accept offers of help. When someone says, "Let me know how I

can help,” tell them what they can do. Maybe they can run errands, cook a meal or drive you to your doctor’s office.

People who’ve had a similar experience: Talking with and learning from others who’ve had similar experiences can be helpful. Consider visiting a support group or talking with a cancer survivor in person, over the telephone or online. Try more than one option to see which one works best for you.

Yourself: Coping well with cancer doesn’t mean that you have to be happy or cheerful all the time. But it can mean looking after yourself by finding relaxing, enjoyable activities that refresh you mentally, spiritually or physically. Take some time to find ways to cope. You may also want to talk to a counsellor for more help.

Talking to someone who’s been there

If you would like to talk to someone who’s had a similar cancer experience, you can connect by phone with a trained volunteer who will listen, provide hope and suggest ideas for coping – all from the unique perspective of someone who’s been there.

Register for this free program at match.cancer.ca or call us at 1-888-939-3333.

Want to connect with people online?

If you’d like to join our online community, visit CancerConnection.ca. You can read news, join discussion groups, get support and help others at the same time. You’ll find caring, supportive people there.

After treatment

Follow-up care helps you and your healthcare team follow your progress and your recovery from treatment. At first, you may see one of the specialists from your healthcare team for follow-up care. Later on, you may see your family doctor.

The schedule of follow-up visits is different for each person. You might see your doctor more often in the first year after treatment and less often after that. You should tell your doctor as soon as you can about new symptoms or symptoms that don't go away. Don't wait for your next scheduled visit.

The end of cancer treatment may bring mixed emotions. You may be glad the treatments are over and look forward to returning to your normal activities. But you could feel anxious as well. If you're worried about your treatment ending, talk to your healthcare team. They can help you through this transition period.

Eating well: After treatment for lung cancer, you may need to make changes to your diet and your eating habits. Lung cancer and its treatments can affect the way food tastes, and you may not feel like eating. But eating properly can help you stay strong. Getting enough calories and protein will help you stay at a healthy weight and maintain your strength during and after your cancer treatments.

Your doctor or dietitian can give you more information about supplements and how to keep a healthy diet.

Self-esteem, body image and sexuality: It's natural to worry about how lung cancer and its treatment may affect your self-esteem, body image and sexuality. You may be worried about how your body looks after treatment, about having sex with a partner or that you may be rejected. It may help to talk about these feelings with someone you trust. Your doctor can also refer you to specialists and counsellors who can help you with the emotional side effects of lung cancer treatment.

What causes lung cancer?

There is no single cause of lung cancer, but some factors increase the risk of developing it. Some people can develop cancer without any risk factors, while others have some of these factors but do not get cancer.

Risk factors for lung cancer include:

- smoking tobacco
- breathing second-hand smoke
- breathing in radon, asbestos, outdoor air pollution, arsenic, or smoke from coal or wood used for cooking or heating
- breathing in chemicals at work such as diesel engine exhaust, silica dust or cadmium
- a personal or family history of lung cancer
- radiation
- a weakened immune system
- lupus

Some of these risk factors – asbestos, radon, arsenic, air pollution and other chemicals – are even greater if you're a smoker.

Canadian Cancer Society

We're here for you.

When you have questions about treatment, diagnosis, care or services, we will help you find answers.

Call our toll-free number 1 888 939-3333.



Ask a trained cancer information specialist your questions about cancer. Call us or email info@cis.cancer.ca.



Connect with people online to join discussions, get support and help others. Visit CancerConnection.ca.



Browse Canada's most trusted online source of information on all types of cancer. Visit cancer.ca.

Our services are free and confidential. Many are available in other languages through interpreters.

Tell us what you think

Email cancerinfo@cancer.ca and tell us how we can make this publication better.



What we do

The Canadian Cancer Society helps people live their lives to the fullest.

- We do everything we can to help prevent cancer.
- We fund groundbreaking research on many types of cancer.
- We empower, inform and support Canadians living with cancer.
- We advocate for public policies to improve the health of Canadians.
- We unite people to help achieve our vision of a world where no Canadian fears cancer.

Contact us for up-to-date information about cancer and our services or to make a donation.



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