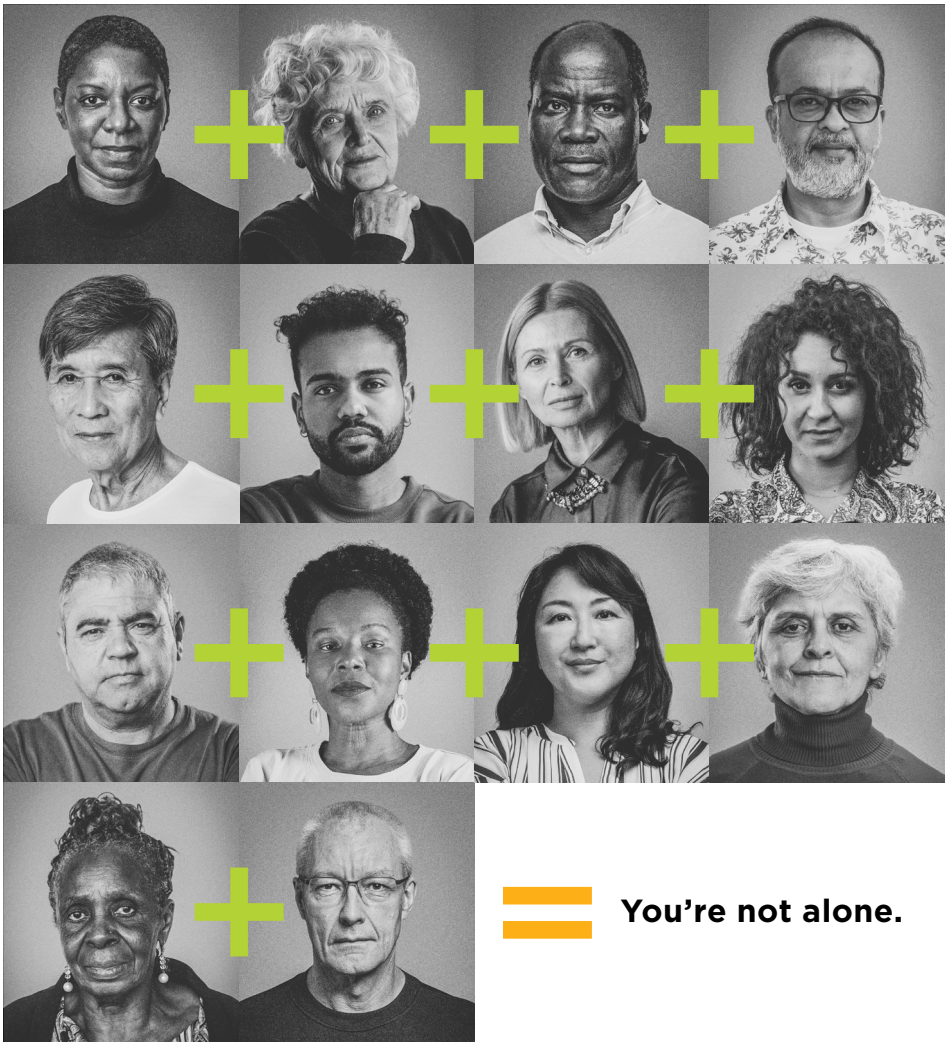
LUNG CANCER CANADA
CANCER PULMONAIRE CANADA



Your Comprehensive Guide to Lung Cancer

Developed by Lung Cancer Canada for those living with lung cancer, caregivers and healthcare professionals

GIVE A BREATH 5K

LUNG CANCER CANADA

CANCER PULMONAIRE CANADA

GIVE A BREATH 5K

Give a Breath 5K is Canada's premier fundraising event dedicated to supporting the lung cancer community.

Funds raised provide support and education, advance awareness efforts, fuel investigative studies and get much needed resources into the hands of those that need them.

Join us and be a part of the movement!

www.giveabreath.ca

Forward

A cancer diagnosis has far reaching effects on the person diagnosed and their loved ones, often leaving people feeling a sense of helplessness, fear and urgency. Those living with a lung cancer diagnosis also face the added burden of stigma due to its association with smoking, when the truth is - it can happen to anyone, whether they've smoked or not. Everyone living with lung cancer deserves optimal care and support and should be treated with dignity, respect, and compassion.

Learning as much as you can about the disease, treatment options, and supports available, can help you make informed decisions to live well. Significant advances in new treatments, such as targeted therapies and immunotherapy, as well as promising research, are helping to improve survivorship and extend the lives of those living with lung cancer. You will read the stories of Lorne, Terry and Lori, who are proof that there is hope after a diagnosis.

It is our goal that by reading this guide you will have a better understanding of how to navigate a lung cancer diagnosis, seek support should you need it, and know that Lung Cancer Canada is here to help!

Patient Stories

Lorne Cochrane

Lorne Cochrane is 64 years old, having had multiple family members diagnosed with lung cancer, his mother, grandfather, two aunts and twin brother; he realized getting screened was a necessary step in being proactive in his health.

The test results were shocking to say the least, stage IV lung cancer, showing several tumours in both lungs, adrenal gland, kidney and pancreas. Lorne was offered chemotherapy and given only 12-13 months to live.

After chemotherapy stopped working, Lorne discussed with his oncologist the possibility of other treatments such as clinical trials. Luckily, he qualified for one of the first immunotherapy clinical trials in Canada, and began treatment soon after. Only 15 weeks after he started immunotherapy, Lorne's tumours were completely gone, and he was declared cancer-free. Lorne's twin brother, Lloyd, was not fortunate enough to be on the same clinical trial, and passed away in November 2016 due to complications from his lung cancer.

Lorne's story highlights the importance of persistence and hope. Science and innovation changed life for him and his family. It has been more than 12 years since his diagnosis and Lorne credits his wife, his doctor and all of the researchers for saving his life.

"A lung cancer diagnosis can be paralyzing, you need an ally who can go along the journey with you, no one person can battle lung cancer alone", says Lorne.

Read Lorne's full story at www.lungcancercanada.ca

Lori Cadrin

Lori Cadrin, a 45-year-old, mother of three, was shocked to say the least when she was diagnosed with Stage IV lung cancer in 2019.

As with many lung cancer patients, Lori had never smoked, ate fairly well (for a busy mom of three) and exercised regularly. Lori had a persistent cough that she attributed to an allergy of some sort and thought it would go away with a change of scenery once on vacation, but instead it only worsened and led to pain in her lower right side. Turns out Lori was carrying nearly 2 litres of fluid in her pleural space just below her right lung. This investigation led to her diagnosis of lung cancer.

Lori has Non-Small Cell Lung Cancer EGFR Exon 19 deletion biomarker and was a candidate for targeted therapy. After three months, results were positive, the large tumour had shrunk nearly half its size and after 6 months the smaller tumours had disappeared. Nearly five years later, Lori finds her treatment manageable and stresses the importance of working with your care team to find options best for you, that make the life you are living as good as it could possibly be.

Since her diagnosis, she has seen two of her children graduate from high school and is determined to watch her youngest walk the stage as well. Lori is focused on being the best mom and wife she could be, sharing experiences and advice with her children and not wasting any moments.

“I don’t know why I got cancer. I don’t deserve to have it. No one does. I don’t want it, but I don’t have a choice. So, I have embraced the better person it has helped me to become. I have lived despite this diagnosis, and I have lived well. I have made everyday count, even the ones where I am struggling. Cancer has changed me, it made me realize that life is fragile, but such a gift.”

Read Lori’s full story at www.lungcancercanada.ca

About this guide

Disclaimer

This Guide was written and produced by Lung Cancer Canada to meet the information needs of those impacted by lung cancer. It is up-to-date and represents current practices in Canada. This guide is not intended to replace medical information or advice offered by your doctor. Talk to your healthcare team with any questions or concerns.

Lung Cancer Canada

Lung Cancer Canada is a national charity serving the lung cancer community through education, support, research, and advocacy. A member of the Global Lung Cancer Coalition, Lung Cancer Canada is the only national charity focused exclusively on lung cancer in Canada.

How to use this guide

If you or a loved one has recently been diagnosed with lung cancer, this guide is a vital resource. It will help you understand the condition, diagnostic procedures, available treatments, and your care journey. Remember, you're not alone: We're here to help you navigate the many decisions you'll need to make.

This Guide will help empower you and direct you to reliable and credible resources. You'll find insights, advice, and tools to help you:

- Navigate your cancer care journey
- Gather essential information for informed treatment decisions
- Manage symptoms and potential side effects
- Handle different aspects of life with lung cancer

Look for these icons

Tips and tricks Additional resources Questions to ask

Acknowledgements

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Table of Contents

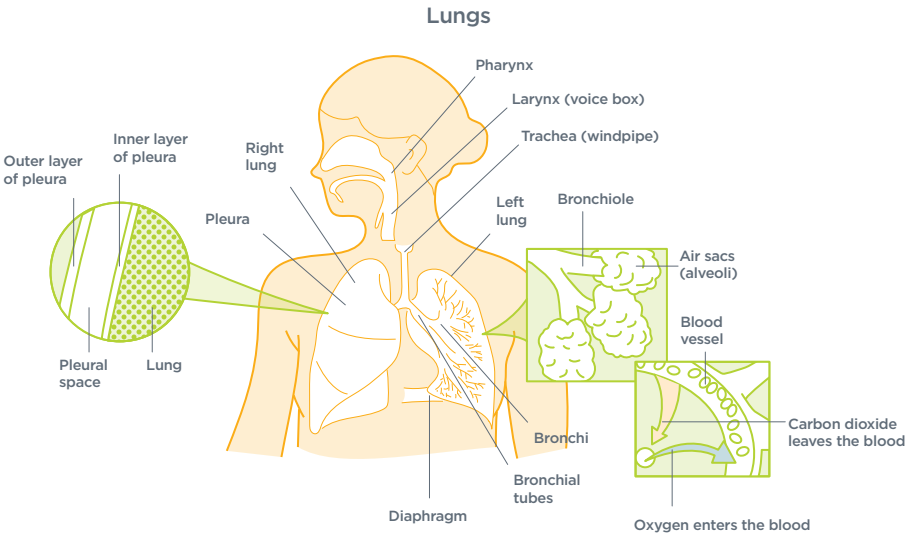
Chapter 1: Understanding Lung Cancer

Lungs

Lungs are part of the respiratory system that you use to breathe. You have two lungs that are located on either side of your heart. Your right lung has three main parts, called lobes. Your left lung has two lobes.

Lungs are covered by a membrane called pleura. Pleura has two layers. The inner layer wraps around the lung, tightly sticking to it. The outer layer lines inside the ribcage and the diaphragm. Between these two layers is a small space called the pleural space, which contains a small amount of fluid called the pleural fluid. This fluid lubricates the two layers of the pleura to glide smoothly over each other when you breathe in and out. Under your lungs, there's a thin muscle called the diaphragm that helps you breathe.

Lungs and the respiratory system



The respiratory system

The respiratory system has several components: the nose, mouth, windpipe (trachea), the bronchi, and the lungs. The bronchi are two large tubes (airways) that branch from the trachea and enter each lung.

When you breathe in, air flows through your nose and mouth, past your voice box (larynx), and travels down your trachea. From there, it enters the bronchi, which further split into smaller tubes called bronchioles. Each bronchiole ends in tiny air sacs known as alveoli. This is where the oxygen you breathe in enters your blood. In exchange, carbon dioxide shifts from your blood to the alveoli. You then breathe out the carbon dioxide.

The lymphatic system

The lymphatic system is part of your immune system that helps protect you from infection and disease. It consists of a network of tubes called lymphatic vessels and lymph nodes. Lymph nodes are little bean-shaped lumps of tissue that contain white blood cells. They filter bacteria and other germs from the lymph fluid.

Sometimes, cancer cells from a tumour break away and end up in the lymphatic system. When this happens, the lymph nodes try to stop and filter them out. But if too many of these cancer cells reach the lymph nodes, they can grow and form a new tumour, and from there, the cancer can spread throughout the body.

Lung cancer

Lung cancer occurs when the normal cells of the lungs change and grow uncontrollably. These abnormal cells then pile up and form a lump known as a tumour. A tumour can be non-cancerous (benign) or cancerous (malignant).

Benign tumours, such as hamartoma and papilloma, grow slowly and don't spread to other parts of the body. However, malignant tumours continue to grow and invade nearby tissues. They can also spread to other parts of the body via blood and lymph vessels. The spread of cancer to other organs is called metastasis. When cancer starts in the lung, it's called primary lung cancer.

Signs and symptoms

In its early stages, lung cancer might not cause any symptoms. But as the cancer progresses, you might notice these signs and symptoms:

- Pain in the chest, shoulder, back, or arms
- Frequent lung infection
- A new cough that doesn't go away or worsens over time
- Always feeling tired (fatigue)
- Shortness of breath
- Coughing up blood
- Hoarseness
- Loss of appetite or unintentional weight loss
- Whistling sound when breathing (wheezing)
- Swelling in the face or neck
- Blood clots
- Dizziness or weakness
- Bone pain or fractures

Risk factors

A risk factor is anything that increases your chance of developing a disease like lung cancer. Some risk factors, such as smoking, can be changed, while others, such as your genes and family history, are unchangeable. Although risk factors raise the chances of developing a disease, having them doesn't mean you will get it. For example, some people with lung cancer may not have many, or any, of the known risk factors.

It is important to note, that anyone with lungs can get lung cancer.

Risk factors for lung cancer include the following:

Tobacco smoke

Smoking is the number one risk factor for lung cancer. In Canada, it's estimated that 72% of lung cancers are caused by smoking.[1]

When you smoke, harmful chemicals called carcinogens enter the lungs. These toxic chemicals can damage cells, and over time, this damage can lead to cancer. Inhaling tobacco smoke also destroys the lung's natural defence system, which keeps harmful chemicals out of the lungs. This is why the risk of lung cancer is significantly higher in people who smoke than those who don't. The more packs you smoke daily and the longer you've been smoking, the greater your risk of lung cancer.

The most effective way to reduce your risk of lung cancer is to quit smoking. When you stop smoking, you give your lungs a chance to repair and regain their health.

If you or someone you know is thinking of quitting smoking, there are smoking cessation resources available. Visit bit.ly/CCSQuitSmoking

1. Poirier AE, Ruan Y, Grevers X, Walter SD, Villeneuve PJ, Friedenreich CM, et al. Estimates of the current and future burden of cancer attributable to active and passive tobacco smoking in Canada. Prev Med. 2019;122:9–19.

Studies have also shown that smokeless tobacco and waterpipe smoking (also known as Hookah) increase the risk of lung cancer.[2]

In addition, e-cigarettes (vaping) might affect the risk of lung cancer. According to Health Canada, vaping may be harmful to the body. However, e-cigarettes are new, and more research is needed to identify their long-term effects and possible increased risk of lung cancer.[3]

Secondhand smoke

Even if you don't smoke, breathing in someone else's smoke can hurt your lungs and raise your risk of lung cancer. People who've never smoked but live with someone who smokes have a 30% increased risk of lung cancer.[4]

Radon

Radon is a natural radioactive gas that emerges from the breakdown of uranium in soil and rock. You can't see, smell, or taste it. Outdoors, the open air dilutes radon, so it poses no concern. But inside homes and enclosed spaces, especially those with poor ventilation, it can accumulate to unsafe levels.

Breathing in radon exposes the lungs to a small amount of radiation. This can damage cells and increase the risk of lung cancer. Exposure to radon increases the risk of lung cancer in both smokers and non-smokers.

For more information on radon and how to purchase a test kit for your home, visit **https://bit.ly/RadonTestingCAN** or call 1-833-723-6600.

2. Rogers I, Memon A, Paudyal P. Association between Smokeless Tobacco Use and Waterpipe Smoking and the Risk of Lung Cancer: A Systematic Review and Meta-Analysis of Current Epidemiological Evidence. Asian Pac J Cancer Prev APJCP. 2022;23(5):1451-1463.

3. https://www.canada.ca/en/health-canada/services/smoking-tobacco/vaping/risks.html

4. U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centres for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006.

Asbestos

Asbestos is a mineral with long, thin, and fine fibres. When inhaled, these fibres can become trapped in the lungs and lead to cell damage.

People exposed to asbestos in their workplace have an increased risk of developing lung cancer. These work environments include mines, shipyards, or factories that produce cement, insulation, or textiles. Smokers who work with asbestos face an even greater risk.

Beyond lung cancer, asbestos exposure can also increase the risk of mesothelioma, a specific cancer of the pleura. This risk intensifies for smokers.

For more information on asbestos, visit lungcancercanada.ca

Personal or family history of lung cancer

Having an immediate family member—such as a parent, sibling, or child—who has had lung cancer also increases a person's risk.

This increased risk could be because of shared genes among family members, similar behaviour (like smoking), or living in environments with the same exposure to carcinogens (like radon).

Previous radiation therapy to the lungs

People who've had radiation therapy to the chest for other cancers, such as Hodgkin's lymphoma or breast cancer, have an increased risk of lung cancer. This risk is even higher for those who smoke and have received chest radiation.

Air pollution

Air pollution contains harmful chemicals and particles at levels unsafe for health. The specific pollutants associated with a higher risk of lung cancer vary depending on local sources of emissions. Strong evidence suggests that prolonged exposure to air pollution is linked to an increased risk of lung cancer. The more polluted air you breathe, the higher your risk.

For more information on air pollution and lung cancer, visit **lungcancercanada.ca**

Types of lung cancer

There are two main types of lung cancer: non-small cell lung cancer (NSCLC) and small-cell lung cancer (SCLC). “Small” and “non-small” refer to the size of the cells in the tumour under a microscope, not the size of the tumour itself.

Non-small cell lung cancer

Non-small cell lung cancer is the most common type of lung cancer, accounting for 80 – 85% of all cases. It has three main subtypes, each determined by the specific cell from which the cancer starts:

Adenocarcinoma: This type of cancer usually starts in the cells of mucus-producing glands in the outer part of the lungs. Adenocarcinoma is the most common type of lung cancer, affecting active smokers, former smokers, and non-smokers alike. It’s also more common in women than men.

Squamous cell carcinoma (SCC): This type of cancer usually starts in the flat cells lining the large and medium-sized airways. Squamous cell carcinoma is often found in the central parts of the lung. It is more common in smokers. It is also more common in men than women.

Large cell carcinoma (LCC): This type of cancer can start in cells anywhere in the lungs but is usually found near the surface and outer edges of the lungs. Large cell carcinoma is the fastest-growing subtype of non-small cell lung cancer, but it is less common than adenocarcinoma and squamous cell carcinoma.

Small cell lung cancer

Small cell lung cancer accounts for about 15% of all lung cancer cases. It usually begins in cells lining the airways at the center of the lung. Small cell lung cancer grows and spreads faster than non-small cell lung cancer.

Its rapid growth can lead to large tumours that invade nearby tissues and lymph nodes and can often spread elsewhere in the body before being diagnosed.

Other types of cancer affecting the lungs

Pleural mesothelioma: Pleural mesothelioma is a rare form of cancer that starts in the cells of the pleura. This type of cancer is more common in people exposed to asbestos. Pleural mesothelioma is not technically a form of lung cancer, but it is treated by lung cancer specialists.

Carcinoid tumours: Carcinoid tumours arise from the hormone-producing cells lining the large and medium-sized airways. These tumours are also rare and grow slowly.

Cancers that spread to the lungs: Cancer from other parts of the body—such as the breast, colon, prostate, kidney, skin, or pancreas—can spread to the lung, called lung metastasis. Lung metastasis is different from primary lung cancer (cancer that starts in the lung) and is treated differently.

+ Complications of lung cancer

Shortness of breath

Lung cancer can sometimes grow into the lung's airways, narrowing or blocking them. This reduces the air entering the lungs, causing shortness of breath.

Lung cancer can also cause fluid to accumulate in the pleural space around the lung. This extra fluid doesn't allow the lungs to expand fully during inhalation, making breathing more difficult.

Pain

About 20% to 40% of people with lung cancer may feel chest pain. This happens when the tumour pushes on nerves in the chest or tightens the chest area. The pain can feel like a constant dull ache in the area of the lung tumour. The pain might worsen when you cough, laugh, or breathe deeply. Lung cancer can also cause bone pain if it spreads to the bones.

If you feel pain, consult your doctor. Treatments are available to help manage your pain and make you feel better.

Coughing up blood

Lung cancer can sometimes damage the airways and cause bleeding in them. This can make you cough up blood. If bleeding is severe, a large amount of blood can lead to choking.

If you cough up any amount of blood, visit your doctor immediately. Treatments are available to help control the bleeding.

Fluid in the chest

Lung cancer can cause fluid to build up in the space between the surface of your lungs and your ribcage (the pleural space). This is called pleural effusion. The extra fluid does not allow the lung to fully expand and contract during breathing, causing shortness of breath. Pleural effusion usually happens in advanced stages of lung cancer.

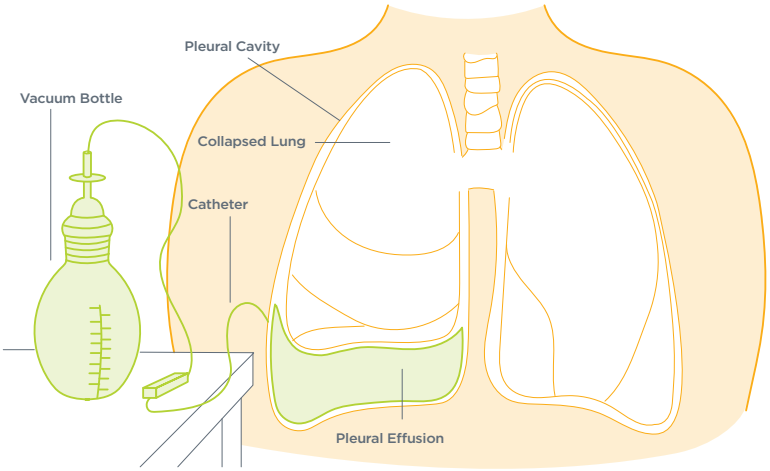
Several ways exist to treat pleural effusion:

Thoracentesis: In this procedure, your doctor will use a needle to drain the fluid from your chest.

Pleurodesis: In this procedure, after fluid has been drained, your doctor will put a special powder or drug into the pleural space. The powder makes the two layers of pleura stick together, leaving no room for fluid to accumulate again.

Indwelling Tunnelled Pleural Catheter (ITPC): The ITPC is a long, flexible tube used to manage repeated pleural effusion. One end of the tube sits in the pleural space, while the other end comes out through a small opening on the chest.

Placement of the ITPC is a simple procedure and can be done in an outpatient office or during a short hospital stay. After it's placed, a nurse will teach you how to drain the fluid at home using special vacuum bottles connected to the catheter.



Blood clots

Having cancer can elevate your risk of blood clots. This increased risk might stem from the cancer, the cancer treatments, or other factors like prolonged bed rest.

A thrombus is a blood clot that forms inside one of your veins. When the clot occurs deep within your body, such as in your leg, it's called **deep vein thrombosis (DVT)**. DVT can lead to symptoms like swelling, warmth, and a cramp-like feeling in the affected leg. You might also notice a change in the skin colour of your leg, and the veins may become more prominent and visible.

Sometimes, a piece of the blood clot can break away and move through your bloodstream. This moving piece is called an embolus. If this embolus becomes lodged in the blood vessels of your lungs, it results in a condition known as **pulmonary embolism (PE)**. Symptoms of PE include sudden shortness of breath, chest or upper back pain (especially when coughing or taking a deep breath), feeling dizzy or fainting, a rapid heartbeat, and coughing up blood. PE is a serious condition; if you experience these symptoms, visit your doctor immediately.

To treat blood clots, doctors often prescribe blood thinners. These medications can help your blood remain fluid and prevent the formation of new clots.

Spread of cancer to other parts of the body

Lung cancer can metastasize to other parts of the body, such as the brain and bones. The symptoms that arise from metastasis vary depending on which organ is affected. For instance, when the cancer spreads to the brain, symptoms might include nausea, headaches, and feeling unsteady. On the other hand, if the cancer reaches the bones, it can cause bone pain or even fractures.

Metastasis occurs in the advanced stages of lung cancer. That's why early detection and treatment of lung cancer are crucial to minimize the risk of metastasis. Even if metastasis occurs, your diagnosis remains as lung cancer, and the goal will be to treat the lung cancer.

Chapter 2: Screening for Lung Cancer

Lung cancer screening

Screening means testing people for a disease before any symptoms occur. It is an effective way to detect the disease early. This early detection is particularly important for lung cancer.

Lung cancer is one of the most common cancers in Canada. It is also the leading cause of death due to cancer. Many people die from lung cancer because it is often detected at later stages when it has already spread to other parts of the body or has grown too large. By this point, treatments may not be as effective. However, screening can identify lung cancer early on when treatments are more likely to be successful. This early detection can significantly increase the chances of effective treatment or even a cure.

How screening is done

The only recommended method for lung cancer screening is a low-dose CT scan, or LDCT. LDCT helps find areas in the lung that may be cancerous. Studies have shown that yearly LDCT scans in high-risk people can lead to early detection of lung cancer, which can save lives.

Other tests, such as chest X-rays and sputum tests, are not recommended for lung cancer screening because they cannot effectively detect lung cancer early.

During an LDCT, you lie down on a table. Then, a camera goes around your body and takes images from different angles. A computer then processes these images and combines them to create detailed pictures of your lungs. LDCT uses a low dose (amount) of radiation, less than a standard CT scan, and the scan only takes a few minutes and is painless.

Who should be screened?

Lung cancer screening primarily targets high-risk individuals. Canadian lung cancer screening programs calculate the chance of a person developing lung cancer over the next six years, and generally recommend screening for those whose risk is 1.5%-2% or more. Most programs calculate lung cancer risk using a model from the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO model), or a modified version from 2012 (PLCOm2012). The most important factors in these models are a person's age and their history of using tobacco products, but education level, ethnicity, family history of lung cancer, personal history of cancer, body mass index (BMI), and if they have a diagnosis of chronic obstructive pulmonary disease (COPD) are all considered.

Lung Cancer Canada also strongly recommends that people who go for screening receive support to help them quit smoking.

Benefits and risks of lung cancer screening

The main benefit of screening is **to decrease the chance of dying from lung cancer**, especially for current or former smokers, who have a higher risk of death due to lung cancer.

Lung cancer screening is not recommended for everyone. It has three possible risks:

- **False positive:** An LDCT can sometimes suggest that someone has lung cancer when they actually do not. This is called a false positive result and might lead to additional tests, such as more CT scans or even biopsies. While these tests have risks, serious complications are rare.
- **Overdiagnosis:** Sometimes, screening detects lung cancer that may not have caused any health problems for the person. This is called overdiagnosis and can lead to unnecessary treatments.
- **Radiation exposure:** LDCT uses a low dose of radiation that is less than a standard CT but more than a chest X-ray. But if someone needs further CT scans after the screening, the amount of radiation can add up.

Because of these risks, only those with a high risk of lung cancer should consider screening. If you're uncertain, talk to your doctor to understand your risks and decide if screening is right for you.

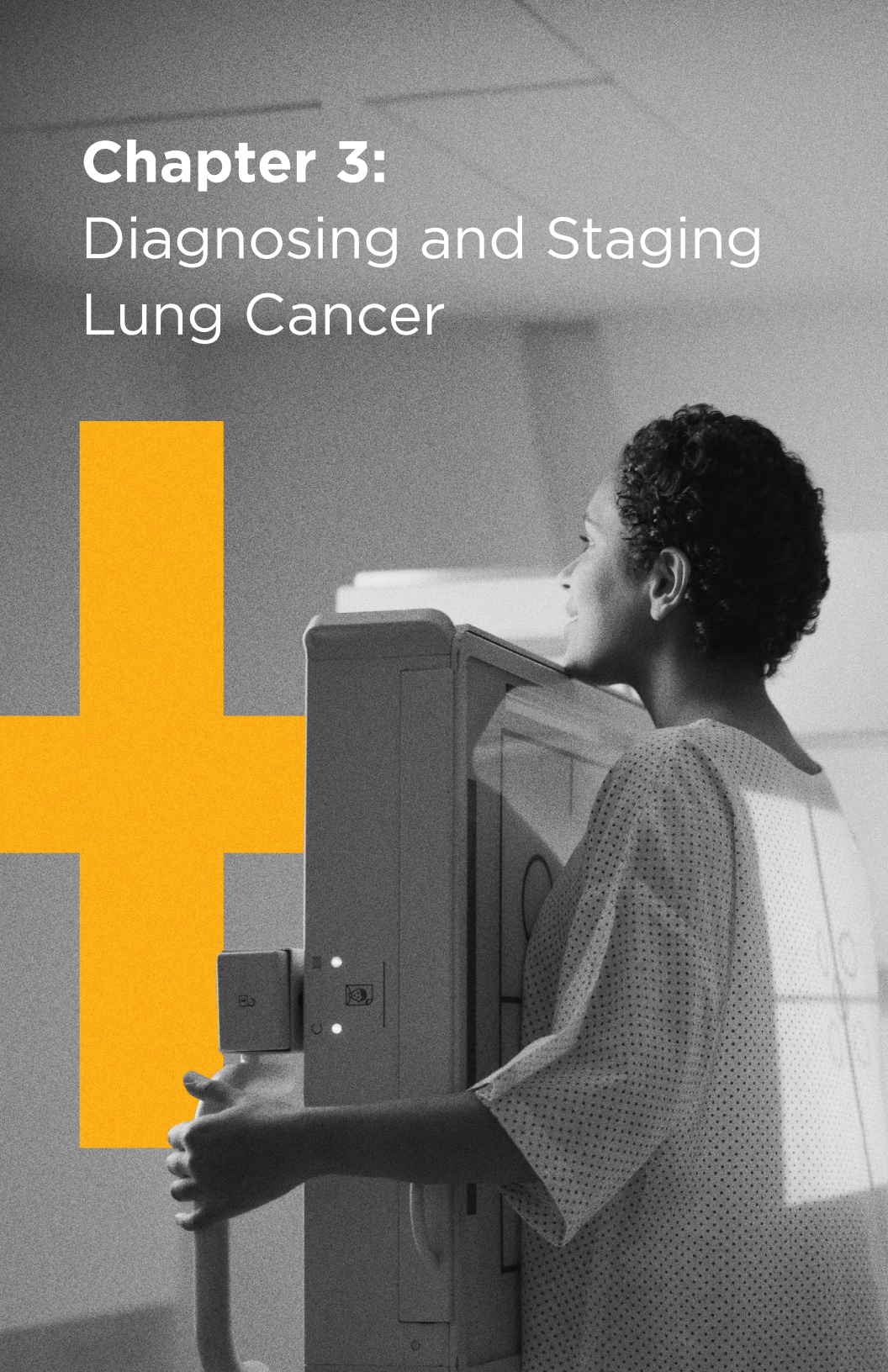
Lung cancer screening in Canada

Lung cancer screening in Canada is in its early stages, with programs starting and expanding across the country. Different provinces have different programs.

With organized lung cancer screening programs shown to reduce lung cancer mortality, Lung Cancer Canada continues to advocate for more equitable access to screening across the country.

To learn about available screening centers in your area, talk to your doctor or visit lungcancercanada.ca.

Chapter 3: Diagnosing and Staging Lung Cancer



Diagnosing lung cancer

Diagnosis is the process of identifying the disease that is causing someone's symptoms. Diagnosing lung cancer can start with visiting your doctor for a symptom or being referred to a doctor because of abnormal screening results. Based on your symptoms and a physical examination, your doctor may refer you to a specialist or order further tests to check for lung cancer.

The diagnosis process can be lengthy, stressful, and frustrating. It's natural to worry or feel anxious about your test results. However, it's important to remember that conditions other than lung cancer can cause your symptoms. Therefore, your medical team will conduct various tests to rule out other illnesses before confirming a lung cancer diagnosis.

The tests listed below are used to detect lung cancer, confirm the diagnosis, and determine if it has spread to other parts of the body. Some of these tests also assess your overall health and help tailor your treatment plan.

Imaging tests

Imaging tests use X-rays, magnetic fields, nuclear imaging, and sound waves to create detailed images of what's happening inside your body. Imaging tests are used to:

- Check areas that might be cancer
- See how far the cancer has spread in the body
- Check how well the cancer is responding to treatment
- Follow up after treatment to see if the cancer is returning

In the following section, we'll go over each imaging test used for lung cancer in detail.

Chest X-ray

A chest X-ray creates an image of your lungs and other organs in your chest. It is often the first test your doctor orders to see if your symptoms are related to lung cancer.

A chest X-ray is quick and painless and only uses a small amount of radiation. If your chest X-ray is abnormal, your doctor will order more tests.

Computed tomography (CT) scan

Computed tomography, or a CT scan, also uses X-rays to take images of your lungs. During a CT scan, a camera goes around your body and takes images from different angles. A computer then processes these images and combines them to create cross-sectional images of the organ scanned. To visualize a cross-sectional image, imagine a loaf of bread. If you were to cut that loaf into several slices and then look at each individual slice, you would see a cross-sectional view of the bread.

A CT scan produces more detailed and clearer images than a regular chest X-ray. This enhanced clarity enables doctors to identify even small tumours in their early stages. The scan can also show if cancer has spread to nearby lymph nodes, large blood vessels, or the rib cage. Your doctor might also order CT scans of other organs like the kidneys, liver, adrenal glands, or brain to check if the cancer has spread there.

A CT scan can be done with or without contrast. Contrast is a dye, taken by mouth or injected into a vein, that improves the clarity of the images.

In a **CT-guided needle biopsy**, doctors use a CT scan as a map to guide the biopsy needle into a tumour. They then extract a small piece (biopsy sample) to check for cancer.

Magnetic resonance imaging (MRI) scan

MRI scans use strong magnets and radio waves to create cross-sectional images and 3D models of your tissues and organs.

MRIs are rarely used to examine abnormalities in the lungs. Instead, their primary purpose is to detect whether cancer has spread to the brain, spinal cord, nerves, or large blood vessels.

Positron emission tomography (PET) scan

A positron emission tomography (PET) scan is a test that uses nuclear imaging to reveal how tissues or organs in your body are working. For this scan, a small amount of a radioactive chemical, known as a tracer, is injected into a vein in your arm or hand. This tracer is essentially a sugar solution that glows. A special camera then takes pictures based on where this glowing sugar travels within your body. Since cancer cells consume a lot of sugar due to their rapid growth, they light up more and appear as brighter spots on a PET scan.

Often, a PET scan is combined with a CT scan, known as a **PET/CT scan**. The CT scan provides detailed images of the body's structure, while the PET scan highlights areas with unusual metabolic activity.

Bone scan

A bone scan is a test that uses nuclear imaging to help detect the spread of cancer to the bones. If you're experiencing bone pain or have blood tests that suggest possible bone metastasis, your doctor may order this scan.

During the test, a small amount of a radioactive tracer is injected into a vein in your arm or hand. A special camera then captures images to see where the tracer travels in the body. Areas of the bones changing due to cancer absorb more of this tracer than healthy parts. These affected regions appear as hot spots on the bone scan image.

Ultrasound

Ultrasound, or sonography, uses high-frequency sound waves to produce images of structures inside your body. Your doctor may use an ultrasound to detect excess fluid in the pleural space or to check the spread of cancer to the liver.

Biopsy

The imaging test results guide your doctor to the location of the suspected cancer. However, the definitive diagnosis is confirmed when the lab finds cancer cells in the tumour sample.

A biopsy is a procedure where doctors extract a small tissue sample from a tumour to examine it for cancer cells. Various methods can be used to perform a biopsy, including the following:

Fine needle aspiration (FNA)

Fine needle aspiration is a type of needle biopsy that does not require a surgical incision. During this procedure, the doctor numbs your skin and then uses a very thin needle to extract a small amount of tissue or fluid.

Core biopsy

Core biopsy is performed under local anesthesia. In this procedure, the doctor uses a hollow needle to extract a long, thin piece of tissue, known as a core, from the tumour. Multiple core samples may be taken.

Liquid biopsy

Liquid biopsy is a non-invasive method, which means no surgery or major procedure is required. It uses blood, pleural fluid, or urine samples to check for DNA from cancer cells. This method also allows pathologists to check for mutations that can help determine the best therapy.

Thoracocentesis

Thoracocentesis is a procedure to drain extra fluid from the pleural space. In thoracocentesis, the skin is numbed, and then a needle is inserted into the pleural space through the chest wall (usually from the back and between the ribs) to remove the fluid. This fluid can then be checked for the presence of cancer cells.

Surgical biopsy

In a surgical biopsy, surgeons make an incision between the ribs to extract a small piece of lung tissue or, in some cases, an entire lump. This tissue is then checked for cancer cells.

Endoscopy

Endoscopy is a procedure where doctors use a thin, flexible tube with a tiny camera on the end, called an endoscope, to look inside the body. The tube can also have an open channel that allows doctors to slide in small tools to take out biopsy samples or do other surgical procedures.

Various endoscopic procedures help diagnose lung cancer and determine its spread. These include:

Bronchoscopy

A bronchoscopy allows a doctor to view the airways of the lungs using a bronchoscope. The bronchoscope is inserted through the nose or mouth. In most cases, a flexible bronchoscope is used, and a medicine is given to numb the throat and help you relax. If a rigid bronchoscope is used, you'll be given a general anesthetic to put you to sleep, ensuring you don't feel discomfort.

In **endobronchial ultrasound (EBUS)**, the bronchoscope has an ultrasound device. This device displays images that assist your doctor in detecting cancer in the airways, lungs, or nearby lymph nodes. Additionally, using EBUS, the doctor can take tissue samples more accurately for testing.

Mediastinoscopy and mediastinotomy

Mediastinoscopy and mediastinotomy are ways to get tissue samples from the mediastinum. The mediastinum is the area between the lungs that contains lymph nodes and other structures.

For mediastinoscopy, a surgeon uses a tool called a mediastinoscope. While under general anesthesia, they make a small incision at the base of your neck above the breastbone. Through this incision, they can take samples from lymph nodes in the mediastinum.

For mediastinotomy, a larger incision (about 4 cm long) is made between the ribs. This method allows the doctor to access lymph nodes that are hard to reach with mediastinoscopy. Recently, these methods have been replaced by endobronchial ultrasound (EBUS).

Thoracoscopy

In thoracoscopy, doctors use a thoracoscope to look inside the chest cavity. They check if cancer has spread between the lungs and the chest wall. They also look at the lining of the lungs, the ribcages, the diaphragm, and the lymph nodes in the chest to see if cancer has spread there.

Thoracoscopy is typically performed when other tests haven't provided enough tissue for diagnosis.

Evaluation of your samples

Tissue samples taken during biopsies and endoscopic procedures are sent to a lab. There, a pathologist examines these samples for cancer cells. If they find any, they determine the type of cancer. They also assess how the cancer cells look. More normal-looking tumour cells mean the cancer is less aggressive. However, the more abnormal-looking cells suggest a more aggressive cancer that grows and spreads quickly.

The pathologist puts all this information in a report. This report helps your doctor confirm the diagnosis and plan the treatment.

If a sample is too small or doesn't show the tumour well, the pathologist cannot run all the necessary tests. In such cases, you may need another biopsy.

Biomarker testing

Biomarker testing, also known as molecular testing, assesses the genetic makeup of lung cancer cells to identify specific gene changes (mutations). The presence of specific mutations can guide treatment choices, as there are now targeted therapy drugs specifically designed for tumours with these gene mutations. Biomarker testing for lung cancer checks for numerous mutations, including:

- **KRAS:** KRAS is a gene that plays a crucial role in regulating cell division and growth. When it functions normally, KRAS ensures cells grow and divide in an orderly way. However, mutations in the KRAS gene can disrupt this balance, leading to uncontrolled growth and cancer. KRAS mutations are the most common mutations in lung cancer.
- **EGFR:** This protein is found on the surface of cells, and at certain times, such as when we are growing or healing, the protein becomes turned on and helps cells grow and proliferate. When a mutation occurs in the EGFR gene, the protein is constantly "on," which leads to uncontrolled cell growth and cancer. The two most common EGFR mutations in lung cancer include the EGFR exon 19 and exon 21 L858R mutations.
    - **T790M Mutation**: This is a mutation in the EGFR gene that can happen after targeted therapy. If an EGFR-positive cancer stops responding to targeted therapy, your tumour is tested for this mutation.
    - **EGFR Exon 20 Insertion Mutation**: This mutation happens when a small segment of the gene gets added (inserted) to an area of the EGFR gene called exon 20. This is a rare mutation that does not respond to targeted therapy for EGFR mutations. Newer medications have been developed targeting this form of mutation, which may become available soon.

- **ALK:** The ALK gene can sometimes merge with another gene (fusion), which leads to the production of a protein that can lead to uncontrolled growth.
- **BRAF:** This is a signalling protein involved in cell growth. A mutation in the BRAF gene, called BRAF V600E, can lead to abnormal proteins and uncontrolled cell growth.
- **ROS1:** This also is a signalling protein involved in cell growth. A fusion involving the ROS1 gene can lead to abnormal proteins and uncontrolled cell growth.
- **NTRK Gene Fusions:** This mutation happens when a segment of the NTRK gene breaks off and combines with a different gene. The mutated gene can lead to abnormal proteins called TRK fusion proteins. These proteins can promote cancer cell growth.
- **RET Gene Fusions:** This mutation changes the RET gene, creating abnormal RET proteins. These proteins increase cell growth.
- **METex14 Skipping Mutations:** This mutation results in the loss of exon 14 in the MET gene, creating abnormal MET proteins. These proteins can lead to cell growth.

Biomarker testing can also identify specific proteins on the surface of cancer cells. Tumours with these proteins may be more receptive to immunotherapy. Tests looking for these proteins include:

- **PD-L1:** This protein affects how the immune system interacts with cancer cells. Cancer cells with high levels of PD-L1 on their surface can hide from the immune system – our natural defence against cancer. Certain immunotherapy drugs are designed to block PD-L1, helping the immune system recognize and attack the cancer cells.

Access to biomarker testing

Biomarker testing comes in different types. Some tests check for specific mutations in one gene (single-gene testing), while others check for mutations in several genes at once.

Next-generation sequencing (NGS) has revolutionized molecular testing. Unlike older tests that check a few DNA pieces at once, NGS tests can check millions of DNA pieces for multiple mutations at the same time. This comprehensive testing gives doctors a detailed picture of all the genetic changes. Compared to single-gene testing, NGS requires less tissue, can detect multiple mutations, and offers quicker test results.

Access to biomarker testing varies across Canada. It depends on where you live, even down to the specific hospital. Some newer tests might only be available if you participate in a clinical trial.

If you want to learn about which tests you can get, ask your doctor. If a test isn't available locally, your doctor might be able to send your samples to a lab outside your region. You might also have a chance to participate in a clinical trial.

Pulmonary Function Tests

Pulmonary Function Tests (PFTs) check the health of your lungs. They determine how much air they can hold and how well you can let air out of the lungs. Based on these tests, your doctor can decide whether surgery is the right treatment for you. If surgery is deemed suitable, PFTs guide how much of the lung can be safely removed, ensuring you can breathe comfortably afterward.

Sometimes, an **arterial blood gas** test might be performed with a PFT. In this test, blood is taken from a small artery to measure oxygen and carbon dioxide levels. It helps determine how effectively your lungs add oxygen to and remove carbon dioxide from your blood.

Blood tests

Blood tests are used to assess your overall health. For example, they can determine if you're a candidate for surgery. They are not used to diagnose lung cancer.

Complete blood count (CBC)

Complete blood count, or a CBC, measures the number and quality of cells in the blood, including red blood cells, white blood cells, and platelets. It also shows your hemoglobin levels.

A CBC provides information about your overall health. It can also reveal underlying medical conditions, such as anemia, clotting or bleeding problems, or increased risk of infections. Your doctor must have this information before starting your treatment.

If your treatment affects the formation of blood cells in the bone marrow, you might need regular CBC tests during your treatment.

Blood chemistry tests

Blood chemistry tests measure the levels of certain chemicals in the blood, which are made by various organs in the body. These tests show how well certain organs are working.

Abnormal results might suggest that cancer has spread to other parts of the body. For instance, if the cancer has spread to the bones, these tests might show elevated levels of alkaline phosphatase (ALP), calcium, or phosphorus. Or, if liver function tests are abnormal, it could suggest that the cancer has spread to the liver.

Other tests

Based on your health history, your doctor might order other tests. For example, your doctor might order **heart function tests** like echocardiogram and electrocardiogram (ECG) before surgery. These tests check your heart's health to ensure it is strong enough for surgery and recovery.

Questions to ask your medical team following a diagnosis

- What type of lung cancer do I have?
- Where is the cancer located in my body? Has it spread beyond where it's started?
- How was my diagnosis confirmed?
- What's the stage of my cancer? How does that affect the treatment?
- Do I need any more tests before we decide about my treatment?
- Are the tests I need to do covered by my health insurance? How long do they take? Can I do them in a private clinic?
- If I'm concerned about the costs related to my diagnosis and treatment, who can I ask for help?
- Based on this diagnosis, am I a candidate for surgery?
- Has a sample of my tumour been sent for molecular testing? Am I a candidate for targeted therapy?
- Has a sample of my tumour been sent for PD-L1 testing? Am I a candidate for immunotherapy?
- Do I need to see any other doctor or health professionals?
- Is this type of cancer hereditary? Is my family at risk?

Diagnosed with lung cancer

A lung cancer diagnosis often comes with a whirlwind of emotions and challenges. This section outlines the various facets of navigating these emotions and ways to communicate with people around you.

Asking for a second opinion

Some people may need reassurance upon diagnosis. It is okay to ask for a second opinion before deciding on a treatment plan. Be honest with your doctor about how you feel.

Your feelings

Receiving a lung cancer diagnosis can be a deeply emotional and unsettling experience. You may find the news shocking and feel scared, sad, angry, or numb. In the days and weeks that follow your diagnosis, it's crucial to share your feelings with someone you trust, such as a close family member, friend, therapist, social worker, or counsellor. Also, engaging in activities you love can offer solace and help you cope with overwhelming emotions. Some people find solace in staying active at work to divert their focus from their diagnosis, while others may take time off work. Whatever approach you choose, remember to prioritize self-care, reach out for support when needed, and hold onto hope.

Telling your loved ones

Talking about your cancer diagnosis with loved ones can be a way to process your feelings. When you're ready to share, consider what details you want to disclose and how. You might personally inform close family and friends while delegating the task of telling others to a trusted person.

Remember, this news can be overwhelming for them, too, and they'll need time to process their own emotions.

> **"Always try to see the big picture and remain hopeful. It's easier said than done, but it can make a significant difference in your journey."**
>
> *- Jenny, living with stage 4 non-small cell lung cancer*

While open dialogue is crucial, it's okay if you choose not to discuss your health constantly or with everyone. Sometimes, focusing on activities or keeping busy can be therapeutic. If you're not in the mood to talk, it's fine to say so. You can also provide brief updates and then shift the conversation. This journey is uniquely yours, and you decide when and how to share it. However, it's important to distinguish between using distraction as a healthy coping mechanism and intentionally suppressing your feelings.

Lung Cancer Canada has support programs and resources to support you following your diagnosis. Contact info@lungcancercanada.ca to learn more.

> **"Understand that a lung cancer diagnosis doesn't mean the end of your journey. Many live fulfilling lives after being diagnosed."**
>
> *- Laura, living with stage 1 non-small cell lung cancer*

Staging lung cancer

After diagnosing lung cancer, your medical team will perform a series of tests (see pages 20 to 30) to determine the extent of the cancer in your body. This process is called staging. The stage of lung cancer indicates how large the tumour is, its location within the lung, if it has invaded nearby tissues, and if it has spread to other parts of the body.

Staging informs your treatment plan. It also provides valuable information about the likely progression and outcome of the disease (your prognosis).

Non-small cell lung cancer stages

The most widely used system for staging non-small cell lung cancer is the TNM staging system. In this system:

- **T** describes the size of the **tumour (T)**
- **N** indicates whether the cancer has spread to the lymph **nodes (N)** and to what extent
- **M** indicates whether the cancer has spread or **metastasized (M)** to other organs

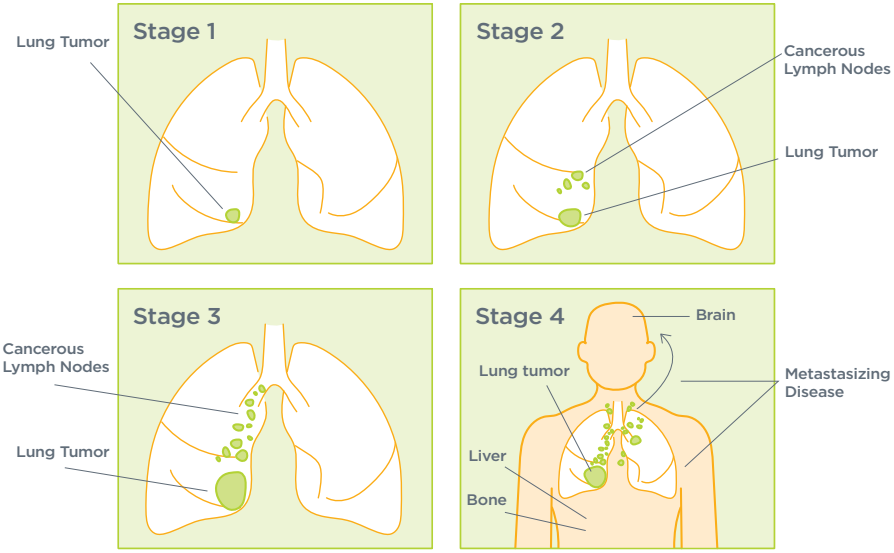
Based on the tumour characteristics (size, spread to lymph nodes, and metastasis), each tumour is assigned a TNM score, which determines its stage. Non-small cell lung cancer is categorized into five stages, from stage 0 to stage 4. Stages 1-4 are often written using Roman numerals: I, II, III, and IV. A higher stage number means the cancer is more advanced or has spread more extensively. An overview of non-small cell lung cancer stages is as follows:

- **Stage 0:** In this stage, cancer cells are only found in the lining of the bronchi, and they have not invaded surrounding tissues. The cancer has not spread to the lymph nodes or other locations. Stage 0 is also known as *carcinoma in situ.*

- **Stage 1:** In this stage, the tumour is up to 4 cm or smaller and is contained within the lung. The cancer has not spread to lymph nodes or other organs.
- **Stage 2:** In this stage, the tumour is 3-7 cm. It may have grown into the surrounding tissues and spread to the lymph nodes close to the tumour. However, the cancer has not metastasized to other organs.

Stages 1 and 2 are called *early-stage non-small cell lung cancer*.

- **Stage 3:** In this stage, the tumour size can vary from 3 cm to larger than 7 cm, and it has grown into the surrounding tissues and other tissues and structures in the chest. It also has spread to at least one lymph node in the chest area but has not metastasized to other organs. Stage 3 is called *locally advanced non-small cell lung cancer*.
- **Stage 4:** In this stage, the tumour is of any size. The cancer may or may not have invaded other tissues, structures, and lymph nodes in the chest. The cancer has metastasized to one or more organs outside of the chest. The most common site of spread is the bone, followed by the lungs, brain, liver, and adrenal glands. Stage 4 is called *metastatic non-small cell lung cancer*.



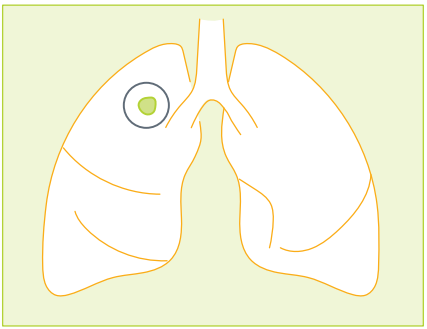
Each of these stages is divided into sub-stages. For detailed information on the characteristics of the sub-stages and their TNM scores, visit bit.ly/LCStaging

Small cell lung cancer stages

For treatment purposes, doctors categorize small cell lung cancer into two main stages.

Limited-stage small cell lung cancer: In this stage, the tumour is typically present in only one lung and may also be found in the lymph nodes in the chest and those near the collarbones.

Extensive-stage small cell lung cancer: In this stage, the cancer has spread to both lungs, distant lymph nodes, and other organs.

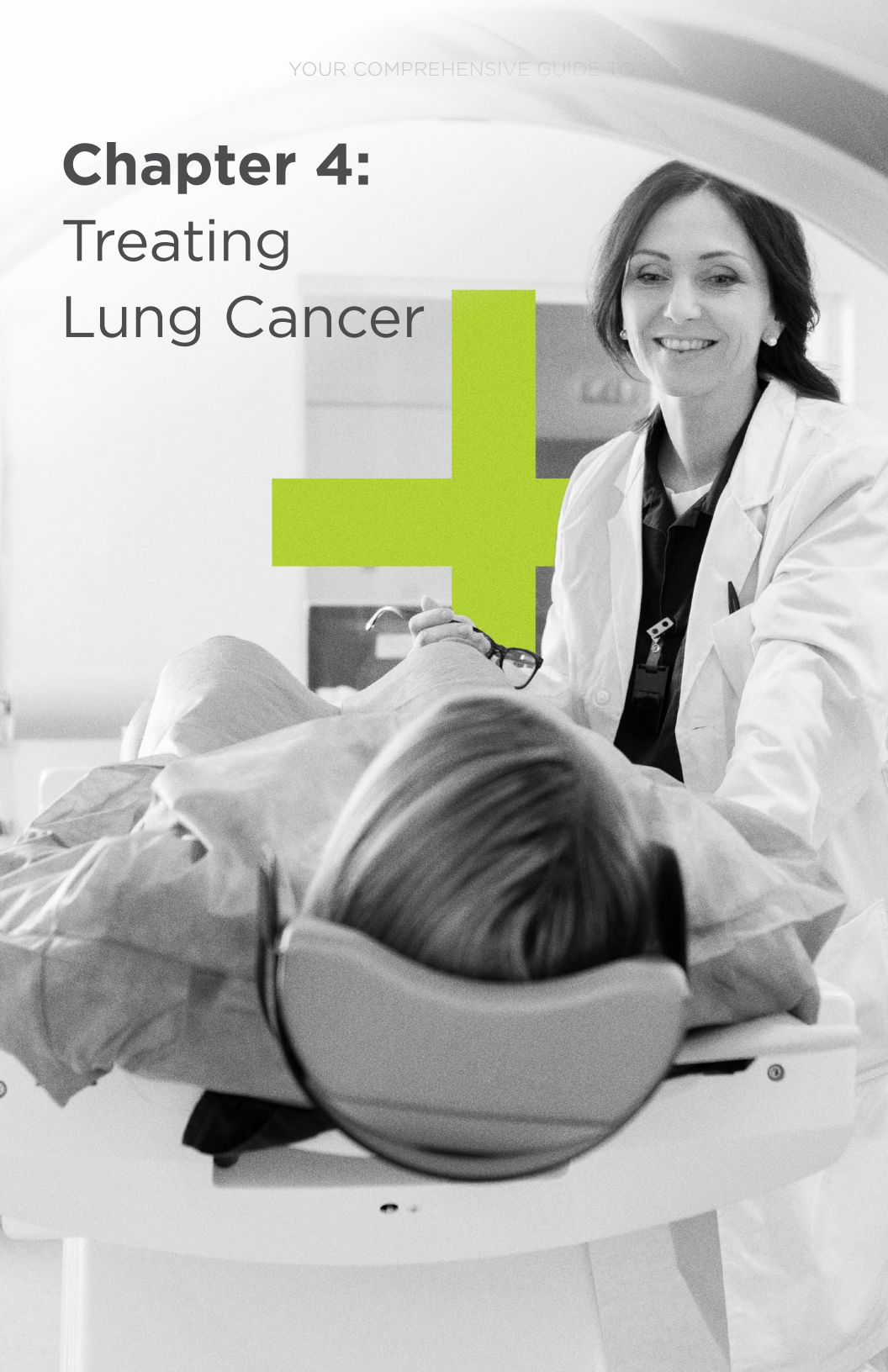


Limited stage

Extensive stage

For detailed information on characteristics of small cell lung cancer stages, visit **bit.ly/SCLCTreatment**

Chapter 4:
Treating Lung Cancer



Lung cancer treatments

After the type and stage of your lung cancer have been determined, your medical team will develop a treatment plan. Your treatment will depend on several factors, including the type of lung cancer you have, its location, spread, and genetic makeup of the tumour. Your lung health and overall well-being also affect your treatment options. Your treatment plan is unique to you, and the goal is to achieve the best possible outcomes for your particular type and stage of lung cancer.

Cancer treatments are categorized into local and systemic.

Local treatments for lung cancer

Local treatments are directed at a specific part of the body. They are used when the cancer is limited to a particular area, like the lungs. Surgery and radiation therapy are examples of local treatments.

Surgery removes part of the lung affected by the tumour. Lymph nodes on the same side of the body as the tumour are also often removed during lung cancer surgery and then checked for cancer.

Radiation therapy directs radiation at the tumour to shrink or destroy it.

Systemic treatments for lung cancer

Systemic treatments affect your entire body. They are often used to treat cancer that has spread throughout the body or to reduce the chance of the cancer returning. Chemotherapy, targeted therapy, and immunotherapy are examples of systemic treatments.

- **Chemotherapy** uses special drugs to kill cancer cells and prevent their further growth. These drugs affect all fast-growing cells, both cancerous and normal.

- **Targeted therapy** is a group of drugs designed to target specific cancer cells with certain genetic changes. Because these drugs specifically attack cancer cells, they have less effect on normal cells.
- **Immunotherapy** is a group of drugs that neutralize the defence mechanisms of cancer cells. By doing this, they help the person's immune system to detect and kill cancer cells.

Many people with lung cancer receive more than one type of treatment. Your medical team will determine which treatment or combination of treatments is best for you.

In this chapter, we will first explain important terms you may hear during discussions with your medical team. We'll look at treatment options for non-small cell lung cancer, followed by small cell lung cancer. Finally, we will briefly discuss clinical trials and palliative care.

Important treatment terms

First-line therapy: The first treatment given for a disease.

Second-line therapy: Treatment given when the first-line treatment doesn't work, stops working, or causes side effects that are not tolerated.

Third-line therapy: Treatment given when both first-line and second-line therapy don't work or stop working.

Maintenance therapy: Ongoing treatment given after the first-line therapy. It is used to prevent the cancer from returning or delay its growth in advanced stages.

Primary treatment: The main treatment used to treat a disease. It can be any kind of treatment, but surgery is the most common type of primary treatment for most cancers.

Neoadjuvant therapy: Treatment given before the primary treatment to shrink the tumour.

Adjuvant therapy: Treatment given after the primary treatment to kill any remaining cancer cells. Adjuvant therapy helps prevent the tumour from returning.

Curative therapy: Treatment given to cure the cancer.

Palliative therapy: Treatment given to relieve symptoms, provide comfort, and improve quality of life.

Treatment of non-small cell lung cancer

Surgical removal of the tumour can potentially cure early-stage non-small cell lung cancer (stages 1 and 2). Radiation and systemic chemotherapy can also be used. They can be given before surgery to shrink the tumour or after surgery to kill the remaining cancer cells and reduce the risk of cancer returning.

Treatment plans for advanced non-small cell lung cancer (stage 3) often involve a combination of chemotherapy, radiation therapy, and surgery. But, depending on the unique characteristics of the cancer, only one or two of these treatments might be used.

The treatment plan for metastatic non-small cell lung cancer (stage 4) usually includes systemic chemotherapy and radiation. In certain situations, targeted therapy and immunotherapy might also be considered.

In the following section, we'll explain each of these treatments in detail.

Surgery

Surgery is the primary treatment for early-stage non-small cell lung cancer (stages 1 and 2). It's less commonly used for advanced lung cancer and rarely for metastatic lung cancer.

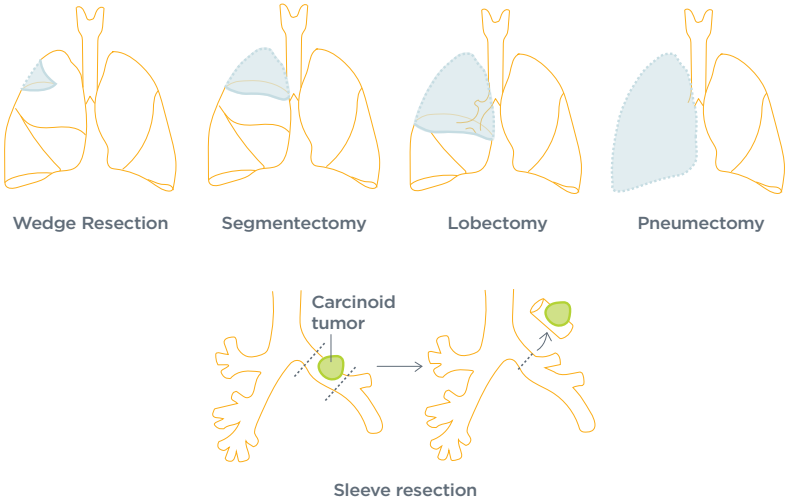
Various techniques exist for lung cancer surgery. Traditionally, lung cancer surgery was performed through an open incision between the ribs, but with advances in technology, lung cancer surgery is now most commonly performed using a minimally invasive technique: either video-assisted thoracic surgery (VATS) or robotic-assisted thoracic surgery (RATS). Your surgeon will tell you which type of surgery you'll have.

Types of surgery for lung cancer

Types of surgery for lung cancer include:

- **Wedge resection:** A small part of a lobe is removed.
- **Segmentectomy:** An anatomic section of a lobe is removed.
- **Lobectomy:** A complete lobe of the lung is removed. If two lobes of the right lung are removed, it is called bilobectomy.
- **Pneumonectomy or pneumectomy:** An entire lung is removed. This surgery is performed when the tumour has grown close to the center of the chest or affects all lobes of a lung.
- **Sleeve resection:** A portion of a diseased bronchus and the adjacent lung tissue are removed, and the healthy ends of the bronchus are stitched together. This procedure allows for removing the tumour while preserving as much of the healthy lung tissue as possible. This surgery is performed when the tumour involves large airways like the bronchi.

Types of surgery for lung cancer



The possibility and type of surgery depend on factors such as the tumour's size and location, how well your lungs work, how healthy your heart is, and your overall health.

Ways to do thoracic surgery

- **Thoracotomy:** In thoracotomy, the surgeon makes a large incision between your ribs on one side of your chest to access the affected lung.
- **Video-assisted thoracic surgery (VATS):** In a VATS procedure, you'll receive general anesthesia, and then the surgeon makes small incisions in the chest to insert a thoracoscope (a tube with a camera) and other surgery tools to perform the surgery. VATS is less invasive than a thoracotomy, often resulting in less pain after surgery and a quicker recovery.
- **Robotic-assisted thoracic surgery (RATS):** During RATS, the surgeon performs the operation by controlling robotic arms equipped with surgical tools. RATS is a minimally invasive technique for lung cancer surgery.

What to expect in lung cancer surgery

Before surgery

Your surgeon will discuss the procedure, potential risks and benefits, and alternatives. They'll address any questions or concerns you have. Your doctor will also order some or all the following tests to determine the type and stage of lung cancer:

- Biopsy
- PET scan
- Brain imaging
- Mediastinal lymph node sampling

In addition, some or all of the following tests are required to assess your fitness for surgery:

- Pulmonary function tests (PFTs) to determine how much lung can be safely removed
- Tests to evaluate the health of your heart and other organs, ensuring they can tolerate the surgery
- Tests to see if the tumour has spread to the lymph nodes between the lungs and other structures in the chest cavity

To learn more about these tests, see Chapter 3 of this guide.

During surgery

A specialist known as an anesthesiologist will give you a general anesthetic to put you to sleep. Once you're asleep, they'll insert a breathing tube into your airway to support your breathing during the procedure.

The surgeon will perform a standard lung cancer operation using the technique discussed before your surgery.

Once the surgery is completed, your surgeon will close your incisions with staples or stitches (sutures). They may also place surgical tape or glue over your incisions and cover them with bandages. Your breathing tube is usually taken out while you're still in the operating room.

When you wake up, you will have a chest tube that drains fluid and air from around your lungs. The tube is placed between your ribs and goes into the space between your chest wall and lung.

After surgery

The chest tubes will remain in place after your surgery, and will be removed when your lung is no longer leaking air. It's common to feel pain and discomfort after the procedure, but you'll receive pain medications.

As you start to feel stronger, the medical team will encourage light activities like walking to help promote blood circulation and prevent complications. They might also guide you through specific breathing exercises to help your lungs recover sooner.

Your discharge time depends on your situation, but the average length of stay is 3-5 days. Once you're ready to go home, you'll receive:

- Pain medications
- Instructions on how to care for your wound at home
- Information about adjusting your activities and exercise
- Schedule of follow-up appointments with your surgeon
- Instructions about when to seek medical attention

Your recovery will be overseen by a multidisciplinary team comprising specialized nurses, physiotherapists, respiratory therapists, and social workers. They'll ensure your well-being, assist in your rehabilitation, and monitor your progress.

Recovery from lung cancer surgery can take weeks to months, depending on the surgery and your health. To help your recovery, consider joining a pulmonary rehabilitation or a physiotherapy program. You can find such programs in hospitals, health centers, or clinics. Ask your doctor for recommendations and the options available to you.

Risks and side effects of lung cancer surgery

Lung cancer surgery, like all medical procedures, can lead to various side effects due to the operation and the anesthesia used during the procedure.

Effects of anesthesia

Common side effects of anesthesia include hoarseness from the breathing tube, nausea, vomiting, temporary confusion, muscle aches, and itchiness. The severity of these effects can vary between individuals.

Effects of surgery

What you may experience after the surgery is unique to you. But most people feel pain and swelling, especially right after the surgery. But these symptoms usually lessen over the following weeks.

You will have visible scars from the surgical incisions. There might be numbness near the surgery area, which could be short-term or long-lasting. If you had lung issues before surgery, you might feel shortness of breath during some activities.

Potential complications

Surgery is generally safe, but it has some potential risks, including:

- Pneumonia (lung infection)
- Wound infection
- Excessive bleeding
- Pneumothorax (collapsed lung due to air leakage)
- Heart issues, from irregular heartbeats to heart attacks
- Blood clots in legs or lungs
- Urinary problems, like retention or infections

Tell your doctor if you experience any symptoms after surgery. Addressing them early can improve your quality of life.

Questions to ask your medical team about surgery

- Am I a good candidate for surgery?
- What type of surgery do you recommend for me?
- How is the surgery performed? Will it be open surgery, VATS, or robotic-assisted?
- What are the potential benefits of having the surgery?
- What are the risks and possible complications of the surgery?
- How long will the surgery take?
- What are the long-term implications of the surgery?
- How does surgery compare to other treatments like radiation or systemic therapy in my case?
- How long will I need to stay in the hospital after the surgery?
- What kind of pain should I expect, and how will it be managed?
- Will I need physical therapy or pulmonary rehabilitation?
- How long will it take for me to resume normal activities?
- What kind of follow-up care will I need?
- Will I have any permanent restrictions or changes in my lifestyle after the surgery?
- How will the surgery affect my ability to breathe or do physical activities?
- Will I need to make dietary or lifestyle changes after surgery?
- Will I need additional treatments like chemotherapy or radiation after the surgery? If so, how soon after surgery will these treatments begin?

- How will these treatments affect my overall prognosis?
- Do I need any tests before the surgery?
- How do I prepare for the day of surgery?
- Will I need assistance at home after being discharged?
- How often will I need check-ups after the surgery? What kinds of tests will I have at these check-ups?
- Can you provide resources on understanding and managing life after the surgery?

Radiation therapy

Radiation therapy uses high-energy beams of radiation to cause damage to the DNA of cancer cells. This damage either kills the cells or stops them from making new cells. Depending on the stage, radiation therapy can be used in different ways to treat non-small cell lung cancer:

- As the **main treatment** (sometimes with chemotherapy) to treat tumours that cannot be removed surgically due to several reasons, such as being too close to vital organs, poor overall health, or decreased lung or heart function
- As **neoadjuvant therapy** before the surgery to shrink the tumour
- As **adjuvant therapy** after the surgery to kill the remaining cancer cells or prevent the cancer from returning
- To **treat cancer spread** to other organs, such as the brain
- As **part of palliative treatment** to relieve symptoms such as cough, shortness of breath, and bone pain

Radiation therapy has two main forms: external beam radiation therapy and brachytherapy.

External beam radiation therapy

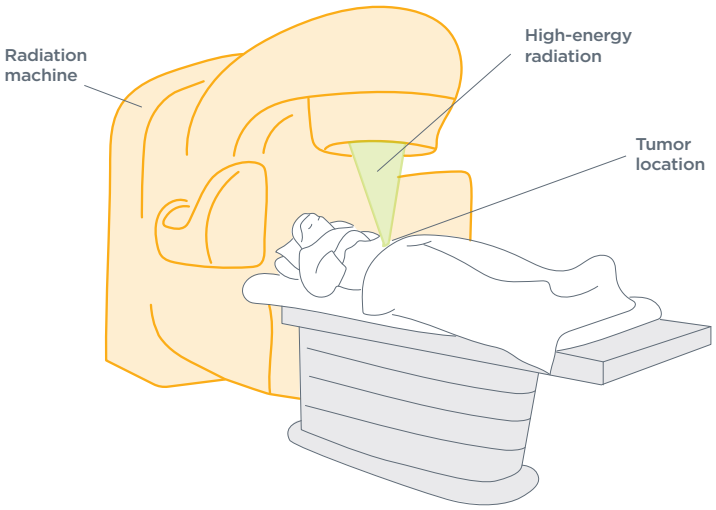
External beam radiation therapy (EBRT) focuses a beam of radiation on a tumour from outside the body. Among the two forms of EBRT, stereotactic body radiation therapy (SBRT) and conventional radiotherapy, SBRT is the most commonly used.

Stereotactic body radiation therapy (SBRT) is also known as stereotactic ablative radiotherapy (SABR) or radiosurgery. SBRT uses a very large but very focal/precise dose of radiation on the tumour. It takes a short time (about 1-5 days) and is usually well-tolerated.

Conventional radiotherapy is given in smaller doses over a longer duration (5-30 days, depending on whether it is for cure or symptom management). It can treat the primary tumour, lymph nodes and organs/tissues that cancer has spread to.

External beam radiation therapy is the standard treatment for patients with stage 1 and 2 non-small cell lung cancer who decline or cannot undergo surgery. Conventional radiotherapy with chemotherapy (chemoradiation) is the standard treatment for stage 3 non-small cell lung cancer for most patients. The role of radiotherapy for stage 4 non-small cell lung cancer is mainly for metastases, combined with a systemic treatment. It can be used to treat small tumours that have spread to the brain, bones, adrenal glands, or spine.

External beam radiation therapy for lung cancer



External Beam Radiation Therapy (EBRT)

What to expect in stereotactic body radiation therapy

Before radiotherapy begins

Before your SBRT treatment begins, you will do a simulation session. In this session, your doctor designs your treatment and precisely determines where the radiation beam should hit. To achieve this, they may do high-resolution CT scans and, at times, MRI or PET scans to accurately define the size, shape, and location of your lung tumour. The doctor will also place some marks on your skin that help put you in the right position for each radiotherapy session.

Because SBRT delivers radiation with extreme accuracy, you must remain completely still during the treatment. An immobilization mask or device will be used to keep you still in the same position for each treatment. The mask is made of a special material that molds to your face and upper chest and then hardens. Your doctor will ensure the mask fits and you can breathe comfortably through it in the simulation session.

After the simulation session, your medical team will design a treatment plan tailored for you. They will use the simulation images to determine the exact radiation dose and the optimal angles to target the tumour.

During the treatment sessions

You'll lie on the treatment table, and then the immobilization mask will be used to keep you in a consistent position, as you did in the simulation session. Then, the radiation machine will rotate around you and hit the tumour from different angles. The procedure is painless and usually takes a short time. However, duration can vary based on specific equipment and tumour location.

Your radiotherapy schedule depends on your situation. You might receive radiation daily for several days or weeks, or once a week over several weeks.

After treatment

After the treatment, you may experience fatigue, cough, or localized skin irritation. Talk to your medical team if any symptoms occur.

What to expect in conventional radiation therapy

The process begins with a simulation session in conventional radiotherapy, similar to SBRT. However, unlike the highly targeted and fewer sessions of SBRT, conventional radiotherapy usually involves more treatment sessions spread out over several weeks to allow your tissue to recover between doses. The immobilization devices may be less restrictive, as the precision required is not as high as in SBRT.

Side effects may be more pronounced with conventional radiotherapy due to the larger areas of tissue exposed to radiation. As such, you may need a more extended recovery period and closer monitoring by your medical team.

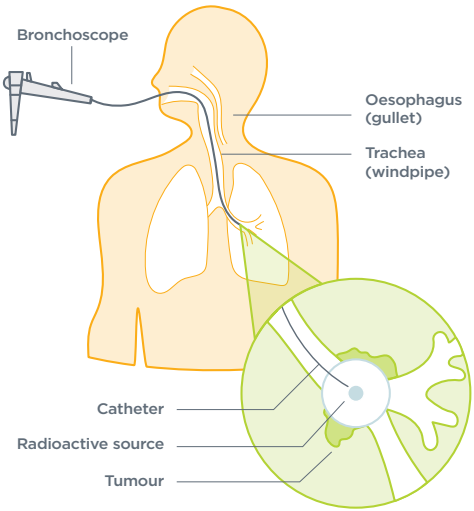
Brachytherapy

Brachytherapy, or endobronchial radiation, uses internal radiation to treat tumours. Instead of directing radiation from outside the body, brachytherapy radiates the tumour from within using a radioactive source placed into or around the tumour.

Brachytherapy can be used in different situations for treating non-small cell cancer:

- To treat tumours that obstruct the airways
- As adjuvant therapy to kill the remaining cancer after surgery
- As primary treatment (though rarely) if EBRT cannot be done due to poor lung function

Internal radiation therapy for lung cancer



Internal Radiation Therapy (Brachytherapy)

What to expect in brachytherapy

This procedure is done by a team of doctors, including a thoracic surgeon, a respirologist, and a radiation oncologist.

Your doctor first will administer a local anesthetic to numb the upper airways. Then, using a bronchoscope, a catheter (a tiny, hollow tube) is placed at the tumour site. The radiation oncologist will pinpoint and mark the exact locations for treatment. Then, they will place radioactive seeds near or in the tumour. These seeds emit a high radiation dose.

In most scenarios, the radiation treatment lasts several minutes. After this, the seeds are extracted through the catheter. Rarely, the seeds might be left inside for a short time.

Side effects of radiation therapy

Radiation therapy can cause some side effects, depending on its type. The side effects of external beam radiation therapy include the following:

- A sunburn-like irritation of the skin in the treatment area (the skin will look red and can feel dry and painful)
- Hair loss in the treatment area
- Fatigue
- Loss of appetite
- Nausea
- Pain while swallowing
- Cough
- Shortness of breath due to lung inflammation (may occur during, immediately following, or long after the completion of radiation therapy)

If you experience any of these symptoms, speak to your medical team because treatments are available to manage them.

The side effects of brachytherapy (internal radiation therapy) include:

- Infection
- Fever
- Cough
- Shortness of breath due to inflammation
- Swelling of the airways

Questions to ask your medical team about radiation therapy

- What is the main goal of radiation therapy for my specific case?
- Are there other treatment options available to me? How does radiation compare to these?
- Which type of radiation therapy do you recommend for me: external beam radiation therapy (EBRT) or brachytherapy?
- If EBRT is recommended, which specific type do you suggest and why?
- What is the expected total dose of radiation I will receive?
- How many sessions will I need, and how long will each last?
- Will I need to take special precautions, like avoiding exposure to others?
- Will I require an immobilization mask or device during my treatment?
- How should I care for my skin in the treated area?
- What are the common short-term and long-term side effects of radiation therapy? How can they be managed?
- What kind of follow-up will I need after completing radiation therapy?
- How will you monitor the effectiveness of the radiation therapy?

- How soon can I expect to see improvements or results?
- Will I be able to continue working or performing my regular activities during radiation treatment?
- Are there resources or support groups you recommend for patients undergoing radiation therapy?

Chemotherapy

Chemotherapy (or chemo) refers to drugs that destroy cancer cells. These drugs are either injected through the vein or taken by mouth. Chemotherapy can be used as part of your treatment for different situations:

- **Early-stage non-small cell lung cancer:** Other than stage 1, chemotherapy can be given either before the surgery (neoadjuvant therapy) or after the surgery (adjuvant therapy).
- **Locally advanced non-small cell lung cancer:** Sometimes chemotherapy in combination with radiation (chemoradiation) can be the main treatment for patients at this stage, when surgery is not advisable.
- **Metastatic non-small cell lung cancer:** Chemotherapy can be given to treat cancer that has spread to other organs.

The type of chemotherapy drugs depends on the timing of chemotherapy in your treatment plan and the type and stage of your cancer.

Chemotherapy drugs

Chemotherapy drugs kill cancer cells by damaging their DNA or disrupting key processes the cancer cells need to stay alive and grow.

Often, a combination of two chemotherapy drugs is given to treat non-small cell lung cancer. This combination is called doublet chemotherapy. Platinum doublet is a common doublet chemotherapy, which is a combination of a platinum-containing chemotherapy drug and a second chemotherapy drug.

A different chemotherapy drug may be tried if combination chemotherapy doesn't work, stops working, or is not tolerated. These subsequent treatments are usually a single chemotherapy drug.

What to expect in chemotherapy

Typically, you will receive chemotherapy at an outpatient clinic, allowing you to go home on the same day without an overnight stay.

Chemotherapy is given in cycles. These cycles consist of treatment days, during which you receive the chemotherapy drugs, followed by rest days to allow your body to recover. The length and frequency of these cycles vary depending on the drug and your treatment plan.

Most of the chemotherapy drugs are injected into a vein, but some may be available in capsule form that can be taken orally.

Your medical team will closely monitor your response and overall health throughout chemotherapy. They may ask you to do regular blood tests, X-rays, or scans to track your treatment progress.

Side effects of chemotherapy

You may experience some side effects while receiving chemotherapy. These side effects vary depending on the type of the drug, the duration of treatment, the lengths of each session, and your overall health.

Chemotherapy drugs attack all the cells that rapidly grow, including normal cells in your hair, digestive tract, and blood, resulting in the following side effects:

- Hair loss
- Nausea and vomiting
- Mouth sores
- Loss of appetite
- Diarrhea or constipation

- Fatigue
- Increased risk of infection
- Numbness or tingling of the finger and toe tips
- Muscles and joints ache
- Low red blood cell counts
- Easy bruising or bleeding due to low platelet counts

If you experience any of these symptoms, speak to your medical team because treatments are available to manage them.

The severity and duration of these side effects vary from person to person. Often, they go away when the treatment is finished. Also, different ways are available to prevent or lessen these side effects. For example, medications are available to prevent or reduce nausea or diarrhea.

One of the most serious side effects of chemotherapy is lower numbers of neutrophils (a type of white blood cell in your blood) that can increase your risk of infection. If you develop a fever during treatment, visit an emergency room immediately.

Some chemotherapy drugs can damage kidneys, nerves, and hearing. Moreover, some chemotherapy drugs may cause permanent side effects, such as premature menopause or infertility.

Questions to ask your medical team about chemotherapy

- In my case, what is the main goal of chemotherapy: to cure the cancer, to help other treatments work better, or to relieve symptoms?
- What are the chances that chemotherapy will be effective for my type of lung cancer?
- Which chemotherapy drugs will I be receiving?
- How often will I receive chemotherapy, and for how long?

- How will the chemotherapy be administered (injected into a vein or a capsule)?
- What should I expect on the day of treatment? How long will each session last?
- How will we know if the chemotherapy is working?
- Will I need other treatments, like radiation or surgery, in addition to chemotherapy?
- What are the common side effects of the chemotherapy drugs I'll be receiving?
- Are there any long-term side effects I should be aware of? What can I do to manage or reduce these side effects?
- Should I report side effects, even if they are mild? And if so, how do I do that?
- How often will I need blood tests or imaging studies during my chemotherapy?
- Can I continue working or attending school during chemotherapy?
- Are there any activities I should avoid while undergoing treatment?
- Are there dietary recommendations or restrictions I should follow during chemotherapy?
- Can I speak with a nutritionist, therapist, or counsellor as part of my treatment plan?
- Will my insurance cover the cost of chemotherapy?
- Are there patient assistance programs or financial counsellors I can speak to about managing the costs?
- What follow-up care will I need after completing chemotherapy?
- How often will I need check-ups after my treatment is complete?

Immunotherapy

Immunotherapy refers to medications that help your immune system detect and destroy cancer cells. These medications are used to treat non-small cell lung cancer in different stages. They can be given alone or in combination with chemotherapy.

How does immunotherapy work?

The immune system is your natural defence against infections and diseases. Cells of the immune system, like T-cells, continuously check cells throughout your body to determine if they belong in the body or are potential threats. To do this effectively, the immune system must tell the difference between normal and harmful cells.

Every cell has specific proteins on its surface. Harmful invaders, like viruses or bacteria, display proteins called antigens. These antigens signal to the immune system that they are threats. On the other hand, the body's own cells have different proteins, known as self-antigens. This self-antigen signals the immune system that they're friendly and should not be attacked.

Some cancer cells, however, have found a way to hide from this detection. They create specific proteins on the surface that bind to proteins on T-cells. This interaction prevents T-cells from identifying the cancer cells as harmful. These proteins are called checkpoints. Common ones are PD-L1 on cancer cells and PD-1 or CTLA-4 on T-cells.

A group of immunotherapy drugs called checkpoint inhibitors target these checkpoints. By blocking them, these drugs help the immune system recognize and attack cancer cells.

Based on what they block, checkpoint inhibitors are categorized as follows:

- **PD-1/PD-L1 inhibitors:** PD-1/PD-L1 inhibitors prevent the interaction between PD-1 and PD-L1, helping the immune cells recognize and destroy the cancer cells. These drugs can treat different stages of non-small cell lung cancer. Initially, they were only used for advanced or metastatic lung cancer. But recently, few of them have been studied

and approved for early-stage lung cancer. Depending on the drug and stage of cancer, they can be given alone or with chemotherapy or chemoradiation.

Before using these drugs, you may need to do biomarker testing to assess the amount of PD-L1 protein in the tumour, as some checkpoint inhibitors may work better on tumours with higher levels of PD-L1.

- **CTLA-4 inhibitors:** CTLA-4 inhibitors block CTLA-4 on T-cells and boost the immune response.

Side effects of immunotherapy

Immunotherapies stimulate your immune system, which can lead to side effects. The most common side effects of PD-1/PD-L1 inhibitors include fatigue, cough, shortness of breath, skin rash, itching in the skin, joint pain, and diarrhea.

The most common side effects of CTLA-4 inhibitors include fatigue, skin rash, diarrhea, muscle or bone pain.

Less common but more serious side effects of these drugs include infusion reaction and autoimmune reaction.

- **Autoimmune reaction:** Because immunotherapies stimulate the immune system, they can cause the immune system to attack other parts of the body, such as the bowels, thyroid, liver, skin, kidneys, lungs, and other organs. Sometimes, these side effects can be life-threatening.
- **Infusion reaction:** Some people may have an infusion reaction while receiving the drug. This reaction can range from mild to serious. The symptoms include flushing of the face, back or belly pain, difficulty breathing, fever, chills, and dizziness. If any of these happens while you get these drugs, tell your doctor or nurse immediately.

Tell your medical team immediately if you experience any of these side effects or any other new symptoms. Treatments are available to manage them.

Questions to ask your medical team about immunotherapy

- What is the goal of immunotherapy?
- Am I a candidate for immunotherapy? What are my treatment options?
- Do I need to do biomarker testing to receive immunotherapy drugs?
- How long will this treatment last, and how often will I receive it?
- What drugs will I receive, and how do they work?
- What side effects might occur, and what can I do to prevent or cope with them?
- Are any of the side effects permanent?
- Who can I contact if I develop any side effects?
- Are there medications to help with side effects?
- When will I be able to return to my normal activities after immunotherapy?
- Is there anything I can do, such as changing my diet, exercising, or managing stress, to help cope during therapy or to help my recovery?
- Am I eligible to participate in any clinical trials of immunotherapy drugs?

Targeted therapy

Targeted therapies are drugs designed to target a tumour with specific genetic mutations. The results of your biomarker testing will determine if you can receive a targeted therapy drug.

These drugs disrupt key processes the cancer cell needs to stay alive and grow. This disruption can slow the growth of cancer or shrink the tumour. Because they have specific targets, targeted therapies generally affect fewer healthy cells and cause less severe side effects than chemotherapy.

In the following section, we'll discuss the targeted therapies for lung cancer. The field of targeted therapy is evolving rapidly and new treatments are approved regularly. As such, discuss with your medical team about the best drug choices for you.

Targeted therapies are categorized by the genetic mutation that they target:

- **EGFR inhibitors:** EGFR (epidermal growth factor receptor) is a protein on the surface of the cells that help them grow. Cancer cells with EGFR mutation create mutated EGFR proteins that constantly signal the cell to grow, making the tumour larger. EGFR inhibitors block this signal. In Canada, around 14% of adenocarcinomas have EGFR mutation. Adenocarcinoma with EGFR mutation is more common in women, non-smokers, light smokers, and East Asians.
- **ALK inhibitors:** Some cancer cells have a mutation in the ALK gene, which results in abnormal ALK proteins that promote cell growth. ALK inhibitors target the abnormal ALK proteins. About 3% to 5% of non-small cell lung cancers have this mutation. These tumours are more common in younger people with adenocarcinoma who have never smoked or used to be light smokers.
- **ROS1 inhibitors:** Some cancer cells contain ROS1 genes that are mixed or fused with another gene. These cells create abnormal ROS1 proteins. ROS1 inhibitors target these proteins. Only 1% of non-small cell lung cancers have this mutation. These tumours are more common in younger people, non-smokers, and light smokers.
- **BRAF inhibitors:** Approximately 1—3% of non-small cell lung cancers have a BRAF mutation known as V600E. Cancer cells with this mutation create abnormal BRAF proteins that promote cell growth. BRAF inhibitors target the abnormal BRAF proteins.

- **TRK inhibitors:** Some cancer cells contain NTRK genes that are mixed or fused with another gene. This mutation is called a TRK fusion and results in abnormal TRK proteins. TRK inhibitors target TRK abnormal proteins. Only 1% of non-small cell lung cancers have this mutation. These tumours are more common in younger people, non-smokers, and light smokers.
- **KRAS inhibitors:** Some cancer cells have a mutation in the KRAS gene that leads to abnormal KRAS proteins, promoting cell growth. Some non-small cell lung cancers have a specific type of KRAS mutation known as KRAS G12C mutation, which results in abnormal KRAS G12C proteins. KRAS inhibitor targets these proteins.
- **RET inhibitors:** A small percentage of non-small cell lung cancers have a mutation in the RET gene. This mutation produces abnormal RET proteins that promote cell growth. RET inhibitors target these abnormal proteins.
- **MET inhibitors:** MET exon-skipping mutations are among MET mutations found in non-small-cell lung cancer. MET inhibitors target the MET exon-skipping mutations.

For detailed information on targeted therapies for lung cancer and available medications in Canada, visit lungcancercanada.ca.

Side effects of targeted therapy

Common side effects of targeted therapies include diarrhea, rash, mouth sores, loss of appetite, and fatigue. Many of these side effects are well-tolerated and can be managed. If you experience any side effects while taking targeted medications, talk to your medical team.

Questions to ask your medical team about targeted therapy

- What mutations were found in my biopsy sample? What are my treatment options?
- Should my cancer be tested for other mutations?
- What is the goal of targeted therapy?
- How long will this treatment last, and how often will I receive it?
- What drugs will I receive, and how do they work?
- What side effects might occur, and what can I do to cope?
- Are any of the side effects permanent?
- Who can I contact if I develop any side effects?
- Are there drugs to help with side effects?
- Am I eligible to participate in any clinical trials?

Treatment of small cell lung cancer

Chemotherapy is the main treatment for limited- and extensive-stage small cell lung cancer. Since this cancer grows quickly and is usually diagnosed in the later stages when it has already spread, chemotherapy is more effective than localized treatments like radiation therapy and surgery.

Currently, no effective targeted therapies or immunotherapies exist for small cell lung cancer. However, research is ongoing in clinical trials.

Chemotherapy

Chemotherapy is used in combination with radiation (chemoradiation) as first-line treatment for limited-stage small cell lung cancer. But chemotherapy alone is the first-line treatment for extensive-stage small cell lung cancer.

Usually, a combination of two chemotherapy drugs is used. The most common combinations are etoposide + cisplatin and etoposide + carboplatin.

Both cisplatin and carboplatin are injected into a vein, but etoposide is taken as a pill.

Some combination regimens may use a chemotherapy drug called irinotecan instead of etoposide. If you don't tolerate or do not want combination treatment, your doctor may give you only etoposide.

To learn more about what to expect in chemotherapy and its side effects, pages 54 to 57 in this guide.

Radiation therapy

Radiation therapy is used in different situations:

- **Limited-stage small cell lung cancer:** Radiation treatment is part of the chemoradiation therapy. If the lung cancer responds well to this treatment, your doctor may recommend radiation to the brain to prevent the spread of the cancer to the brain.
- **Extensive-stage small cell lung cancer:** Radiation is not part of the primary treatment. Instead, it is used as part of palliative treatment. Palliative treatment may relieve symptoms, such as difficulty breathing or swallowing.

  Also, if cancer has not yet spread to the brain and the tumour responds well to chemotherapy, your doctor may recommend radiation to the brain to prevent the spread of cancer to the brain. If cancer has already spread to the brain, external beam radiation therapy is used to radiate the brain.

To learn more about what to expect in radiation therapy and its side effects, see pages 47 to 54 in this guide.

Surgery

Currently, surgery is not a standard treatment for small cell lung cancer. Rarely, surgery can be offered as the first-line treatment if:

- The cancer is diagnosed in the limited stage, **and**
- The tumour is small and can be removed entirely, **and**
- The pulmonary function tests (PFTs) indicate the lung is healthy enough to remove an entire lobe or a lung.

To learn more about types of surgery, what to expect in surgery, and its side effects, see pages 41 to 47 in this guide.

Clinical trials

A clinical trial (a study on human participants) is a carefully controlled way to research the effectiveness and safety of new treatments. Before any treatment reaches this stage, it has been extensively tested in labs and on animals.

Clinical trials are conducted under the close supervision of doctors and researchers. They require Health Canada's approval and must be reviewed and approved by the Research Ethics Board (REB). The REB is a team of independent researchers who ensure the trial meets the highest ethical standards and is conducted safely.

Participating in a clinical trial is entirely your choice. If you want to participate in a clinical trial or learn whether a specific trial would be right for you, discuss it with your medical team. Ask them any questions you have, as they can best advise you about your treatment plan and options.

Clinical trial participants are **not** "guinea pigs" and trials are **not** a last resort. When your doctor recommends a trial, it's because they believe it might be the optimal choice given your type or stage of cancer.

For detailed information about clinical trials, visit lungcancercanada.ca. To explore clinical trials in your area, visit canadiancancertrials.ca and clinicaltrials.gov.

Palliative care

Palliative care is a symptom-management program for anyone diagnosed with a chronic or serious illness, including cancer. It helps manage symptoms of the disease and side effects from treatments.

Patients can opt for palliative care at any stage of their treatment journey. This care can be offered in hospitals, outpatient clinics, or at home.

The palliative care team collaborates closely with your other doctors. While you undergo treatments, such as surgery or chemotherapy, you can benefit from the support of palliative care at the same time.

What to expect from palliative care

Your palliative care plan is unique to you and your symptoms. Generally you can expect relief from symptoms such as:

- Shortness of breath
- Pain
- Persistent coughing
- Fatigue
- Loss of appetite and weight loss
- Nausea and vomiting
- Constipation or diarrhea
- Sleep disturbances
- Mood changes

Palliative care addresses your symptoms and helps you continue with your daily life. It also improves your ability to go through your treatments. Moreover, it helps you better understand your cancer and prepares you for what lies ahead.

Difference between palliative care and hospice care

Palliative care differs from hospice care:

- Palliative care is suitable for anyone with a chronic or serious illness, regardless of the disease progression. It can be provided from diagnosis and continue throughout care and treatment.
- Hospice care is end-of-life care. It is given to patients in the terminal stages of their disease. Its primary goal is to ensure maximum comfort for those approaching the end of life.

Palliative care is organized in different ways in different hospitals. Talk to your doctor to see if palliative care is available and can benefit you.

For detailed information on palliative care, visit lungcancercanada.ca.

Questions to ask your medical team about palliative care

- How does palliative care differ from my current treatment?
- When is the right time to start palliative care?
- How can palliative care help me specifically?
- What symptoms of my lung cancer can palliative care help alleviate?
- How can palliative care help in managing the side effects of my treatments?
- Will the palliative care team coordinate with my oncologist and other specialists?

- Can I continue my current treatments while receiving palliative care?
- Where will I receive palliative care – in a hospital, outpatient clinic, or home?
- Who comprises the palliative care team?
- Does the palliative care team offer psychological or emotional support?
- How often will I meet with the palliative care team?
- How long does each palliative care session typically last?
- How can palliative care help me make informed decisions about my treatment options?
- Can the palliative care team assist with advance care planning or creating a living will?
- Does my insurance cover palliative care?
- How can palliative care support my family and loved ones?
- Can my family join me during palliative care sessions or meetings?
- How will I know when it's time to transition from palliative care to hospice care?
- What is the process of moving to hospice care if needed?
- Are there any resources or reading materials you can recommend about palliative care?
- Can I speak to another patient who has gone through palliative care and ask for their feedback?

Chapter 5:
Living With Lung Cancer

Terry Morey

Terry Morey is 76 years old, and lives in Cochrane, Alberta. Diagnosed with stage IV non-small cell adenocarcinoma of the lungs, his journey began in 2013 with what he thought was just a persistent cold.

After the cold symptoms continued, his doctor sent him for an x-ray, it was then discovered he had a great deal of fluid in his lower left lung and it was at risk of collapsing. Terry went straight to the hospital, had it drained and a CT scan for further examination.

The next week he received the results, lung cancer. “But it couldn’t be - I had never smoked, I lead a fairly healthy lifestyle, they must be wrong”, says Terry. Terry was told he had 6-18 months to live, his only treatment option was chemotherapy which did not go as planned and was halted in 2015.

Then a seed of hope; Terry was offered a chance to enter a clinical trial for an immunotherapy drug. This required a solid tissue biopsy which indicated that he had the ALK mutation. Instead of immunotherapy Terry started on a TKI pill. In 2019 there was new growth identified in his tumours and his care team decided to change him onto a different TKI. In 2020, Terry was put on another TKI and although the side effects cause some fatigue, he’s been able to continue with his everyday activities without too much difficulty.

“Ten (10) years later I am still here to tell my story. I am a fortunate man. My family, friends and church community have been so supportive of me and my journey with lung cancer. My advice…Never give up hope. There is always hope!”

Read Terry’s full story at www.lungcancercanada.ca

Life after a lung cancer diagnosis can be an emotional rollercoaster. Even successful treatment can bring a deep sense of relief along with a lingering fear of recurrence, anxiety, or uncertainty. It's natural to feel this way.

In this chapter, we'll go through various aspects of living with lung cancer.

Your healthcare team

Your healthcare or treatment team consists of doctors from different specialties and other health professionals. They work together to support you and your loved ones through your cancer diagnosis and treatment:

- **Anesthesiologist:** A medical doctor who specializes in anesthetics—drugs that prevent pain and put you in a deep sleep during surgery.
- **Chemotherapy nurse:** A nurse who specializes in administering chemotherapy and other treatments. They also help you manage chemotherapy side effects.
- **Clinical psychologist:** A healthcare professional who specializes in mental health. They can help you cope with your emotions throughout your cancer diagnosis and treatment. Also, they can guide you in managing pain, anxiety, stress, depression, and other emotional challenges.
- **Clinical trial nurse (or research nurse):** A nurse who provides nursing care in clinical trials.
- **Community care nurse:** A nurse who visits you at home to care for you and help you with daily activities.
- **Family doctor:** A general practitioner who provides primary care, monitors your overall health, and diagnoses and treats common diseases. They also serve as a first point of contact for most medical concerns and can refer you to specialists when necessary.

- **Medical oncologist:** A medical doctor who specializes in cancer diagnosis and treatment. They will oversee your cancer treatment and may become your de facto primary care provider during your cancer treatment.
- **Nurse navigator:** A nurse who coordinates your care between the members of the healthcare team. They may become your main point of contact and provide you with information and support throughout your care journey.
- **Palliative care specialist:** A medical doctor who specializes in palliative care. They help you manage your symptoms or treatment side effects to improve your quality of life.
- **Pathologist:** A medical doctor who specializes in analyzing samples, such as tissues, cells, and bodily fluids, in the laboratory to diagnose diseases. Pathologists play a crucial role in determining the exact type and stage of cancer, which can influence treatment decisions.
- **Pharmacist:** A healthcare professional who specializes in medications and their side effects. They ensure you receive the right type and dose of medications. They can advise you on how to use medications and handle their side effects.
- **Physiotherapist:** A healthcare professional who helps in rehabilitation after treatment. They can teach you exercises to rebuild and maintain your strength, endurance, and mobility.
- **Pulmonologist (or respirologist):** A medical doctor who specializes in diagnosing diseases of the lung, often by using a bronchoscope. They also perform procedures to manage fluid buildup around the lungs, relieving shortness of breath.
- **Radiation oncologist:** A medical doctor who specializes in using radiation to treat cancer. They determine if radiation therapy is right for you, decide on the appropriate dose, and oversee your treatment to ensure the safe delivery of radiation.

- **Radiologist:** A medical doctor who specializes in diagnosing diseases with imaging techniques like X-rays, ultrasound, and CT scans. They also assist surgeons by guiding surgical tools with imaging techniques.
- **Registered dietitian:** A licensed professional who can develop a diet plan for you and help you meet your nutritional needs.
- **Social worker:** A licensed professional who helps you access supportive counseling and community resources.
- **Surgeon:** A medical doctor who specializes in treating and diagnosing diseases with surgical operations. A thoracic surgeon specializes in diseases of the organs in the chest, including the lungs, heart, windpipe (trachea), and gullet (esophagus). A surgical oncologist specializes in operations for managing cancer.

"Speak up for yourself and become involved in your care. Participate actively in your healthcare decisions. Maintain open communication with your care team. Speak openly, ask questions, and discuss your concerns."

- Nina, living with stage 4 non-small cell lung cancer

Post-treatment follow-up and survivorship

Once your treatment is stabilized or completed, your healthcare team will want to continue to monitor you closely. It is critical to attend your follow-up appointments. During these visits, your doctor will ask if you experience any symptoms and may examine you. Based on that information, they may order lab and imaging tests to check for any signs of cancer coming back or treatment side effects. While some side effects are short-lived, others may persist or even emerge after treatment has ended. It's important that your doctor follows up with you and stays vigilant about any potential issues.

Lung cancer recurrence is most common within the five years following treatment. That's why regular follow-up is necessary during this period. Usually, follow-up visits are scheduled every three months for the initial years. If there are no signs of cancer coming back, these visits may decrease in frequency—shifting to every six months for the next few years and eventually (five years following treatment) to once a year. However, your follow-up schedule may vary based on your individual circumstances.

Always stay attentive to any changes in your body. If you experience any new symptoms or changes in your current ones, inform your doctor immediately. Also, keep copies of your medical records, as you may need them if you ever see a new physician. Please note that obtaining copies of your medical records isn't always straightforward and may come at a cost.

Survivorship care plan

Your treatment team may provide you with a survivorship care plan either during your treatment or once it's completed. This care plan offers a comprehensive roadmap for post-treatment care, addressing both the medical and psychosocial needs of survivors. It typically includes:

- A summary of all the treatments you have received.
- Information on possible long-term and late side effects from the treatments you've received.
- Types of doctors and healthcare professionals you need to see.
- Schedules for follow-up appointments and medical tests.
- Tips and resources for managing the physical effects of cancer and its treatment, like fatigue or pain, and emotional challenges, such as anxiety or depression.
- Suggestions related to diet, exercise, and other lifestyle choices that can support your health and reduce the risk of cancer coming back.
- Information and resources to manage different aspects of survivorship, including social, legal, and financial issues.
- A list of available resources, such as support groups, counseling services, or information on navigating the healthcare system.

Talk to your doctor about creating a survivorship care plan to guide you post-treatment. Start by asking questions. You can consider the ones listed below. You can also use online tools to work together with your doctor on your care plan.

Questions to ask about your survivorship care plan

- Who can help me create a detailed record of my treatment history?
- Which doctors should I see for what type of care?
- How often should I have regular appointments?
- When should I do my follow-up post-treatment tests? What's the schedule?
- What symptoms should I report to which doctor or other professionals?
- What long-term and late side effects should I expect?
- What can I do to maintain and improve my health and well-being?
- Who can help me get work-related accommodations if I need them?
- Could you suggest a support group or counseling service for me?

Reducing the risk of cancer coming back

After finishing your treatment and hearing that you're free from cancer, you'll probably feel relieved. But the worry of cancer coming back never truly goes away for some people. The risk of cancer recurrence mostly depends on the type and stage of your cancer at the time of diagnosis. While there's no way to reduce the chance of recurrence to zero, there are steps you can take to reduce the chance of its return and maintain your health as much as possible.

Quit smoking

If you smoke, the most significant step you can take to reduce the risk of lung cancer coming back is to quit. Strong evidence shows that stopping smoking not only lowers the risk of lung cancer recurrence but also decreases the likelihood of developing a new lung cancer. Studies also have shown that individuals who quit smoking may live longer, even if the cancer has spread. Quitting smoking also boosts your overall health and reduces the risk of other cancers.

It's never too late to quit. If you or someone you know needs help quitting smoking, visit the Canadian Cancer Society at Cancer.ca or call 1-888-939-3333.

Limit exposure to carcinogens in the environment

As highlighted in the first chapter of this guide, various environmental carcinogens are linked to lung cancer, including radon, asbestos, and certain workplace chemicals. It's crucial to minimize your exposure to these harmful agents.

Consider testing your home and office for radon. You can do this by purchasing a do-it-yourself kit or hiring a professional. If you've been exposed to asbestos and other workplace carcinogens linked with lung cancer in your work environment, tell your doctor.

Exercise regularly

There are clear benefits of regular physical activity for people living with lung cancer. Both the disease and its treatments can drain your body and cause you to feel fatigued and short of breath. It has been shown that exercise can alleviate these symptoms. In addition, physical activity improves lung capacity, strength, mobility, and endurance. This can help your recovery and improve your quality of life. To learn more about physical activity, see the exercise section of this chapter.

Eat a healthy diet

While the possible link between diet and lung cancer recurrence is unclear, maintaining a healthy diet is critical to keep your body healthy both physically and mentally. A well-balanced diet not only keeps your immune system strong but also helps your post-treatment recovery. Consider consulting a dietitian to create a diet plan tailored to your nutritional needs.

> **"Focus on a healthy lifestyle: Don't smoke or try quitting if you do, limit alcohol, eat nutritious food, and engage yourself in physical activity as often as possible. A strong body and mind can help you handle challenges better."**
>
> *- Laura, living with stage 1 non-small cell lung cancer*

If the cancer comes back

Discovering that cancer has returned can be a deeply emotional and challenging experience. The whirlwind of feelings can be overwhelming. During such times, seek professional help from a psychologist or social worker. They can help you manage your emotions and cope with treatment. In addition to leaning on your family and friends, connect with others who have faced similar challenges. These peers can provide comfort and understanding. Refer to Chapter 6 of this guide for information on finding supportive communities and support groups.

Managing daily activities

When living with lung cancer, you may realize that you cannot do all the things you could before. This not only can affect your lifestyle, but it can also affect your mood and your ability to carry out some of your daily routines.

The good news is that there are simple changes you can make to save time and energy for the activities you really enjoy. Incorporating these changes into your life will help you maintain control rather than letting the symptoms decide what you can and cannot do.

> **"Drive forward and keep your optimism. Stay away from self-pity. Focus on the positive aspects of life and find ways to brighten your days."**
>
> *- Donna, living with stage 3 non-small cell lung cancer*

Discover activities and schedules that work best for you with the support of your loved ones:

- **Seek support:** Talk with family and friends about specific ways they can assist you. They might not know how to help unless you ask.
- **Evaluate activities:** List actions that worsen your symptoms, such as bending or standing for long periods, and try to minimize them.
- **Use helpful tools:** Consider tools like grab bars, bath chairs, or other aids to make daily tasks easier and safer.

- **Know your limits:** Understand your abilities to prevent overexertion. Take the time needed to finish tasks without becoming overly tired.
- **Schedule realistically:** Organize your days and weeks realistically. Balance challenging tasks with lighter ones and schedule rest. Consider the optimal times for various activities, including social ones.
- **Include enjoyable activities:** Ensure your routine has events or moments you eagerly anticipate, like weekly dinners or hobbies.
- **Adjust gradually:** Begin with easier routines and gradually challenge yourself. If you feel tired after adjusting, it's okay to scale back temporarily.

> **"Do what you love and engage in activities that are meaningful to you. Don't wait for the perfect moment; cherish the time you have."**
>
> *- Donna, living with stage 3 non-small cell lung cancer*

Managing symptoms of lung cancer

Lung cancer can cause various symptoms. However, everyone's experience is unique. The symptoms you experience, their intensity, and duration may differ from others.

Palliative care can help you manage these symptoms more effectively and address any unresolved concerns you may have. Seeking palliative care early can enhance your quality of life and ability to cope with treatments.

Always keep your treatment team informed about any symptoms you're experiencing. The better your symptoms are managed, the better your quality of life and treatment outcomes will be. In the following pages, we'll discuss the most common symptoms experienced by people with lung cancer.

Pain

Lung cancer and its treatments can lead to pain. If not addressed, pain can diminish your quality of life and affect your ability to cope with treatments. It is critical to work with your healthcare team to manage pain effectively.

Various methods can help alleviate pain. These methods include pain medications, palliative radiation and chemotherapy to shrink the tumour, and procedures to drain excess fluid from the lungs. Furthermore, if cancer has spread to bones such as the spine and causes discomfort, surgical interventions may be beneficial.

Alternative therapies, such as acupuncture and massage therapy, and behavioural strategies like meditation may also help with pain.

If you experience sudden, new, or escalating chest pain, go to an emergency room immediately. If you experience a new onset of pain or if your existing pain intensifies, consult your doctor without delay.

Tips to manage pain

- Keep track of your pain. In a notebook or on your phone, record what the pain feels like, its intensity, location, and duration. Also, make a note if certain medications or therapies alleviate it.
- If your pain medication causes side effects like drowsiness, give your body a few days to adapt before making any changes.
- Take pain medications as prescribed. Never change how you take them without first consulting with your doctor.
- Try learning relaxation techniques and meditation to help with the pain and improve your ability to cope with it.

Shortness of breath

Living with shortness of breath can be challenging. For some, it might be mild, causing occasional breathlessness. For others, it might be constant and more bothersome. Being short of breath may make it hard to do regular activities like getting dressed and cooking. It can also lead to increased fatigue, anxiety, and distress. When you're short of breath, you might tighten your chest muscles, breathe faster, or feel afraid, anxious, panicked, or uneasy.

Shortness of breath can have many causes, such as lung infections, anxiety, tumours blocking an airway, or buildup of fluid around the lungs. Depending on its cause, your doctor may recommend a combination of treatments. This could include opioid painkillers, procedures to drain excess fluid from the lungs, and palliative treatments to shrink a tumour blocking the airways. You may also receive oxygen from an oxygen tank or medications to help you relax and feel less anxious.

If you experience any of the following, see your doctor immediately:

- A sudden difficulty in breathing over a short time.
- Feeling dizzy, increased heart rate, or unusually pale skin accompanying shortness of breath.
- Feelings of nervousness while struggling to breathe.
- Sudden breathlessness upon waking up.
- Noisy breathing.

Tips to manage shortness of breath

- Do light exercises daily, like walking or gentle stretching, to improve oxygen circulation in your blood.
- Learn and practice meditation or deep breathing exercises. These can help you relax and manage anxiety related to breathlessness.
- Use a humidifier to add moisture to the air, making it easier to breathe. Also, keep windows open for short periods to ensure fresh air circulation unless outdoor air quality is poor.
- Avoid smoking and exposure to secondhand smoke or environments with airborne irritants.
- Take frequent breaks during activities to prevent becoming overly tired or breathless.
- When resting or sleeping, prop your head up with pillows. This position can make breathing easier.
- Know the triggers that make your shortness of breath worse. Avoid or minimize them when possible.

Coughing

A cough can be caused by various complications often associated with lung cancer. This includes situations where a tumour blocks an airway, inflammation of the lungs due to radiation therapy, or a buildup of fluid around the lungs. Other lung conditions, such as infections, asthma, or bronchitis, can also contribute to coughing.

Treatment for a cough depends on its root cause. They may involve shrinking the tumour blocking the airway, using antibiotics to treat infections, or using cough suppressants and opioid medications for relief.

If you develop a new cough or notice any changes in your existing one, consult your doctor immediately.

Tips to manage coughing

- Use a humidifier in rooms with dry air. This can help moisturize your airways and reduce coughing.
- Learn and practice deep breathing exercises to help clear mucus and strengthen your lungs.
- Consider using a machine designed to clear mucus from your airways.
- Position your body in certain ways to help clear mucus from your airways using gravity. This technique, known as postural drainage, involves lying in specific positions to direct mucus toward your mouth.
- Drink plenty of water to help thin out the mucus, making it easier to cough up.
- Only use cough suppressants that your doctor recommends.

Fatigue

Fatigue is more than just feeling tired. It is a persistent lack of energy characterized by constant tiredness and exhaustion. Fatigue is a common symptom of cancer and a common side effect of many lung cancer treatments. In some people, fatigue goes away when treatment is completed, but in some, it can be long-lasting.

Fatigue can affect many aspects of your quality of life, including your physical, psychological, and social well-being. It can limit your ability to do day-to-day activities and cope with cancer. It also can affect your memory.

It's crucial to communicate with your doctor about the extent and nature of your fatigue. They might order blood tests or provide recommendations on effective management strategies.

Tips to manage fatigue

- Schedule activities during the times of day when your energy levels are highest.
- Prioritize tasks that matter most and those that bring you joy.
- Exercise regularly. Choose exercise based on your ability and level of energy.
- Ask people to help you with tasks that you find draining.
- Eat healthy. Consider consulting a registered dietitian to help you incorporate energy-boosting foods into your diet. Ask your treatment team to connect you with a dietitian.
- Aim for at least eight hours of sleep each night. Avoid caffeine and alcohol several hours before bedtime.
- Take short naps (30 minutes or less) throughout the day if necessary.
- Incorporate practices such as meditation, deep breathing, or other relaxation exercises into your daily routine.

Managing treatment side effects

Lung cancer treatments can lead to a range of side effects. However, not everyone will experience the same side effects, and when they do, their intensity and nature can vary significantly. If you have any concerns about the side effects listed below, or others, consult your doctor right away.

In the following pages, we'll discuss the most common side effects experienced by people living with lung cancer and survivors.

Diarrhea

Many cancer treatments, including chemotherapy, radiation therapy, and targeted therapies, can cause diarrhea. Other factors, such as stress, dietary changes, and infections, can also contribute. Left unchecked, diarrhea can lead to complications like dehydration, fatigue, and electrolyte imbalances. Besides loose stools, symptoms can include gas or flatulence, cramping, bloating, weight loss, rectal pain, bleeding, or discharge.

Before starting your treatment, get a sense of your regular bowel movement patterns, such as the frequency and consistency of stools. This baseline understanding will enable you to detect any changes during treatment. Also, if your treatment is known to cause diarrhea, ask your doctor for preventive medications.

Visit your doctor immediately if:

- You experience symptoms of severe diarrhea, such as seven or more watery stools in a day, accompanied by nausea, fever, stool with blood, dehydration, and belly cramping.
- Your diarrhea persists for over 24-48 hours or gets worse.

Tips to manage diarrhea

- Drink fluids between meals to stay hydrated.
- Opt for non-carbonated, caffeine-free, clear fluids such as water, broth, and popsicles. Diluted juices and sports drinks are okay in moderation.
- Eat smaller, frequent meals and snacks throughout the day.
- Incorporate low-fiber, high-protein, and calorie-rich foods in your diet.
- Avoid natural laxatives, including prunes and papaya. Also, limit very sweet, high-fat, or extremely hot or cold foods.
- Consult with a licensed dietitian to create a tailored meal plan.
- In cases of severe diarrhea, always consult your doctor before taking any medication.

Constipation

Cancer treatments, such as chemotherapy and targeted therapy, can often lead to constipation. Certain medications, like opioid painkillers and anti-nausea drugs, are also known culprits. Other factors, such as insufficient fluid intake, a low-fibre diet, overuse of laxatives, and decreased physical activity, can also lead to constipation.

Besides hard stools, symptoms of constipation can include bloating, cramps, gas, loss of appetite, irregular bowel movements, small hard stools, rectal pressure, occasional stool leakage, swollen abdomen, and nausea. Prolonged constipation can lead to fecal impaction, where stool becomes lodged in the colon. This condition is serious and requires immediate medical attention.

Before your treatment, talk to your doctor about ways to prevent constipation. If you experience constipation during treatment, tell your doctor.

Tips to manage constipation

- Eat fibre-rich foods like whole grain products, raw fruits and vegetables, and legumes.
- Aim to drink 8-12 glasses of fluid daily to stay hydrated. Hot drinks, like tea or hot water with lemon, can stimulate the bowels.
- For breakfast, opt for fiber-rich foods accompanied by a hot beverage, such as tea.
- Talk to a dietitian for a personalized diet plan.
- Exercise regularly. Physical activity, even short walks, can prevent constipation.

Chemo brain

Chemo brain refers to cognitive changes after chemotherapy. People who experience chemo brain often report having difficulty concentrating, trouble finding the right words, challenges in recalling information, and struggles with multitasking. While some recover fully over time, others might have longer-lasting effects.

If you experience symptoms of chemo brain, tell your doctor. If you have more serious symptoms such as visual loss, change in gait, or severe headache, visit your doctor immediately.

Tips to help your memory

- Use planners, reminders, and notes to keep track of tasks and important dates.
- Schedule mentally demanding activities during the times of day when your energy levels are highest.
- Engage in brain-boosting activities like puzzles or learning a new language.

- Exercise regularly. Stay physically active as much as you can.
- Establish daily routines. Aim to keep the same daily schedule.
- Avoid multitasking. Focus on one task at a time.
- Avoid alcohol and other substances that reduce mental sharpness.
- Get plenty of rest and ask for help when needed.

Rash and skin toxicity

Targeted therapies and immunotherapies can cause skin toxicities such as rashes, dry skin, and itching. Rashes most commonly appear on the face and chest, but they can also develop elsewhere. These rashes can be uncomfortable, causing pain, itchiness, and a burning or tingling sensation.

If you notice a rash or other skin symptoms, tell your doctor. They may prescribe a medicated cream for relief. If there's a risk of infection, they may give you antibiotics, and if needed, they may refer you to a dermatologist.

Tips to manage skin toxicity

- Moisturize regularly with hypoallergenic lotions.
- Use itch-relief ointments and creams as needed.
- Keep your nails short and clean to reduce the risk of scratching and subsequent infections.
- Always apply sunscreen when heading outdoors. Wear wide-brimmed hats and light, long-sleeved clothing to protect the skin.
- Choose fragrance-free skincare products to minimize irritation.
- Avoid hot showers or baths; opt for lukewarm water instead.
- Consult with your doctor or a dermatologist about specific skincare products or treatments that can be beneficial.

Vaccines

Cancer treatments like chemotherapy and radiation therapy can weaken your immune system. When the immune system is weakened, it's often called immunosuppressed or immunocompromised. A weakened immune system puts you at a higher risk of infections. Immunization through vaccines is important for those living with lung cancer and may be immunocompromised, as it helps prepare your immune system against certain infections, such as influenza, pneumococcal pneumonia, and COVID-19.

Your need for specific vaccines depends on your vaccination history, past infections, and whether you're immunosuppressed. Consult your doctor about which vaccines are suitable for you, as some may not be recommended during certain treatments.

Mental health

A cancer diagnosis is a life-changing event that impacts more than just your physical health. It deeply affects your emotional and mental well-being. This emotional distress can lead to mental illnesses, such as depression, that significantly affect your quality of life. These emotions and illnesses are important to recognize and treat. Symptoms of depression include persistent sadness, guilt, loss of interest in daily activities, overwhelming fatigue, sleep disruptions, and, in severe cases, suicidal thoughts.

Many individuals with lung cancer and survivors experience different levels of depression and anxiety. Many survivors may also experience a lingering fear of cancer coming back. It's important to remember that these feelings are valid, and help is available. If you're experiencing any of these feelings or symptoms of depression, reach out to your treatment team.

They can connect you with a trained professional like a psychologist or a social worker.

Beyond professional help, connecting with others on a similar journey is significantly helpful. Consider joining a support group to feel more connected and understood. Choose the form you prefer, whether it's in-person, online, or through chat groups. For detailed information on available support groups, please refer to Chapter 6 of this guide.

> **"Find support in ways that work for you, be it counseling, group meetings, online chats, or video calls."**
>
> *- Corina, living with stage 1 non-small cell lung cancer*

Support for caregivers/care partners

Caring for a loved one with lung cancer can be challenging. As a caregiver, it's natural to prioritize your loved one's needs over your own. Yet, caregiving can be physically, emotionally, and spiritually taxing. It's crucial to recognize that you, too, will need both emotional and practical support. Below are some strategies to help maintain your well-being while caring for a loved one:

- **Stay active.** Regular exercise can boost mood, reduce stress, and improve overall health. Even short walks can make a difference.
- **Maintain a balanced diet.** Eating healthy will give you the energy and stamina required to care for your loved one.
- **Practice relaxation techniques and mindfulness.** Techniques like meditation, deep breathing exercises, and yoga can help manage stress and maintain a calm mindset.

- **Seek professional help.** Talk to a therapist or counselor to help you process your emotions and navigate the challenges of caregiving.
- **Join a support group.** Connections through shared experiences can help provide a safe space to decompress. Many hospitals and organizations, including Lung Cancer Canada, offer these groups.
- **Take breaks.** Resting is important to recharge and remain healthy. Respite care is a great approach that allows you to take time off while ensuring your loved one is cared for.
- **Gain knowledge.** Educate yourself about lung cancer, its treatment options, and the potential side effects. This knowledge can make caregiving more manageable.
- **Consider hiring home health aides.** They can assist with demanding daily activities, medication management, and other tasks you might need help with.
- **Explore financial aid or grants.** Local charities and governmental agencies may offer financial assistance for caregivers. Ask the social worker in the healthcare team about these programs.
- **Keep an open line of communication with the medical team.** Don't hesitate to ask questions or voice concerns.
- **Plan ahead:** Discuss future plans with your loved one, including topics like finances, wills, and advanced directives. For more details on these subjects, see managing finances and advanced care planning sections of this chapter.

Taking care of yourself ensures you can provide the best care for your loved one. You don't have to navigate this journey alone; help and resources are available.

For more information on supportive resources for caregivers of people with lung cancer, visit **lungcancercanada.ca**.

Lung cancer stigma

People living with lung cancer often face a unique challenge beyond the cancer itself: stigma. Stigma refers to the negative views or judgments people hold about someone because of their circumstances or choices. These judgments are often based on misconceptions.

One major reason for the stigma around lung cancer is its association with smoking. While smoking is a major risk factor, it's not the only cause. Exposure to radon, asbestos, and outdoor pollution are also significant risk factors. In addition, some people might have genes that make them more likely to get the disease. However, the prevailing perception is that if someone has lung cancer, they are at fault due to smoking. This perception is flawed and overlooks several truths:

- **If you have lungs, you can get lung cancer:** Many who've never touched a cigarette in their lives still get diagnosed with lung cancer. Yet, due to the prevailing stigma, even these non-smokers often feel judged or misunderstood.
- **Smoking is an addiction:** Contrary to the belief that it's merely a bad habit, smoking is a powerful addiction that's incredibly challenging to quit.

Every individual, regardless of their diagnosis, deserves equal care, compassion, and support.

Impact of stigma

Being diagnosed with and navigating the challenges of cancer is daunting enough. Adding the burden of societal stigma to the mix amplifies the emotional strain and hurdles faced by people living with lung cancer.

For example, some smokers might avoid seeking medical attention, fearing judgment. This can lead to delayed diagnosis. In addition, some people may internalize negative perceptions about lung cancer, leading to feelings of guilt, embarrassment, and shame.

Despite the heavy weight of stigma and its numerous negative impacts, there are ways for you to cope and overcome these challenges.

Tips to cope with stigma

- Gain knowledge about lung cancer, its risks, and treatments. This not only empowers you but also allows you to educate and correct others' misconceptions.
- Share your story. Personal stories can change perceptions and help others understand that lung cancer can affect anyone.
- Join a support group. These groups offer a safe space to express feelings and find understanding.
- Acknowledge your feelings. Being open about your emotions with yourself and loved ones can strengthen bonds.

Nutrition

Your body will require a great deal of energy to manage the effects of lung cancer and its treatments. During this time, it is important to eat regularly and stay hydrated. This can be hard because loss of appetite is a common challenge faced by many with lung cancer. The reduced appetite can be due to the cancer itself, treatments, or associated side effects.

Maintaining a healthy weight and meeting your nutritional needs, even in the face of reduced appetite, is crucial for your recovery, strength, and overall well-being. Here are some strategies to help manage loss of appetite and minimize weight loss:

- **Opt for small, frequent meals.** Instead of three large ones, eat five or six smaller meals throughout the day for steady energy.
- **Choose nutrient-dense foods.** When appetite is limited, maximize nutrition with every bite. Eat energy-rich foods that are high in carbohydrates, proteins, and fats.

- **Stay hydrated.** Aim to drink eight to twelve cups daily to support recovery and flush out medication by-products.
- **Limit liquids during meals.** Drink more between meals to avoid feeling overly full.
- **Enhance the dining environment.** Make meals enjoyable by setting the table, playing music, or dining with loved ones.
- **Address nausea.** If you're feeling nauseous, discuss anti-nausea solutions with your doctor.
- **Adjust for taste alterations.** If you experience a metallic taste, use glass pots for cooking and plastic utensils for eating. Also, use seasonings to improve flavor.
- **Engage in light activity.** A short walk before meals can sometimes stimulate appetite.
- **Maintain oral hygiene.** A clean mouth can enhance taste and appetite. Brush and rinse regularly.
- **Listen and adapt.** Pay attention to your body's signals and be ready to change strategies if needed.

If you have difficulty maintaining a proper diet or need help creating a diet plan, ask your healthcare team to connect you with a dietitian. You can also find a registered dietitian who specializes in cancer on the Dietitians of Canada website at dietitians.ca.

Exercise

The idea of exercise may seem daunting when you have lung cancer. But regular exercise can benefit you physically and mentally. It has been shown that exercise improves your ability to go through treatment, reduces fatigue, and helps with other treatment side effects. Exercise can have different forms, including:

- **Breathing exercises:** Breathing exercises are techniques of controlled breathing. They can help you feel more relaxed and improve shortness of breath.
- **Stretching exercises:** Stretching helps get more blood and oxygen to your muscles, which can improve their elasticity. Upper body stretches can make your chest expand more, allowing more space for your lungs to fully expand during breathing. This allows for deeper breathing, which can improve shortness of breath. Stretching also helps improve your body's range of motion and stiffness.
- **Aerobic exercises:** These are activities that get your heart pumping, making it stronger and helping your body use oxygen more efficiently. Walking, dancing, or any other activity that increases your heart rate are examples of aerobic exercises.
- **Strength training:** Strength training can help you regain muscles and improve your ability to perform daily tasks. It also improves your posture and bone health. Be patient with strength training and increase the intensity slowly.

Tips for exercising

- Before starting any exercise program, consult your doctor to understand suitable activities and limitations.
- Start exercises gently and gradually increase intensity.

- Choose enjoyable exercises to maintain motivation.
- Monitor your breathing during workouts. Pause if you experience breathlessness.
- Drink water before, during, and after workouts to stay hydrated.
- Always listen to your body. Stop and rest if you feel pain or extreme fatigue.

"Keep doing your usual activities after your diagnosis and try to keep to a regular routine. Even simple things like walking around the neighbourhood can boost your mood and health."

- Laura, living with stage 1 non-small cell lung cancer

Exercise for Cancer to Enhance Living Well (EXCEL)

Exercise for Cancer to Enhance Living Well (EXCEL) is a program created by the University of Calgary for people living with cancer and survivors. EXCEL combines aerobic, resistance, balance, and flexibility exercises and creates a tailored exercise routine for each person based on their unique needs and abilities.

For additional information on the EXCEL program, check out their website at https://bit.ly/EXCELUCalgary.

Managing finances

A lung cancer diagnosis brings with it not only emotional and physical challenges but also potential financial concerns. While provincial and territorial health insurance covers many medical expenses like doctor visits and hospital stays, a cancer diagnosis can lead to many unforeseen costs. Balancing treatments, personal life, and finances can be overwhelming. Add financial worries to the mix, and it can take a toll on your well-being. But you are not alone, and help is available.

Benefits and financial assistance

A range of benefits and financial assistance options exist to help lower the cost associated with your cancer. These include:

- **Health insurance:** Your provincial or territorial healthcare insurance often covers a significant portion of medical expenses. In addition, private or employer-provided insurance can supplement and cover specific healthcare costs not included in the public plans.
- **Drug financial assistance programs:** Some provinces offer drug assistance programs for people who have high prescription drug costs. Look into programs like the Ontario Drug Benefit or the British Columbia Fair PharmaCare program. Non-profits like the Canadian Cancer Society also provide financial help or resources. A drug access navigator can guide you with these programs.
- **Transport and accommodation:** The Canadian Cancer Society assists with transportation to treatment facilities and offers accommodations near treatment centers.
- **Wigs and head coverings:** The Canadian Cancer Society offers wigs or head coverings free of charge.

For more information on the Canadian Cancer Society's transport and head covering services, check out their website at cancer.ca.

- **Work-related benefits:** If you're employed, you have rights related to medical leave and other benefits provided by your employer. Check if you qualify for the Canada Pension Plan (CPP) disability benefit.
- **Long-term disability (LTD) benefits:** For those who cannot work due to their health, long-term disability can provide a consistent income, covering a percentage of the usual salary. It's essential to understand the requirements, limits, and any necessary medical documentation.

For more information, check out the Government of Canada's page on long-term disability benefits at bit.ly/CanadaLTD

- **Government assistance:** Both federal and provincial governments offer a range of financial assistance programs tailored to individual needs.

For more information, check out the Government of Canada's page on benefit programs at bit.ly/CANBenefits.

Tips to manage finances

There are things you can do to ease some of the financial burdens connected to your diagnosis:

- Make a budget including all possible medical costs to avoid surprises.
- Get to know your insurance: what it covers, what it doesn't, and any extra costs you may need to pay.
- Look for extra help from government programs, charities, and other groups.
- Talk to a financial planner or advisor to help you plan for care-related expenses.

- Keep track of medical bills, appointment details, and insurance claims. This helps you stay organized and use your benefits to the fullest extent.

Advanced care planning

Advanced care planning (ACP) is the process of planning for your future health and personal care. While many believe it's only for those who are very ill, it's for everyone, regardless of age or health condition. Making decisions about your future care can give you peace of mind, knowing that your wishes are heard and will be respected when the time comes.

Advanced care planning is a voluntary, ongoing process. It assures you that healthcare professionals caring for you will consider your personal choices. In addition, it offers guidance to your loved ones when facing difficult care decisions. Finally, it can improve the quality of your later years, allowing you to live with dignity to the very end.

Advanced care planning involves thinking about your care preferences, discussing them with family members, and documenting those decisions.

Medical power of attorney

An essential part of advanced care planning is choosing a trusted individual as your substitute decision-maker. This individual will have the power to make medical decisions on your behalf if you become unable to do so. This person is also known as power of attorney for your care or medical power of attorney. In addition to a medical power of attorney, you may choose to appoint a separate power of attorney to make financial decisions on your behalf.

Advance directive

An advance directive, also known as a **living will**, is a legal document that outlines how a person wishes to be medically treated if they become unable to make decisions for themselves. Many people create this document so that their personal choices are honored in medical emergencies.

This document includes a person's decisions about end-of-life care, such as whether to use cardiopulmonary resuscitation (CPR) if the heart or breathing stops, the use of breathing machines or ventilation, tube feeding, and dialysis. It can also include a person's wishes about organ and tissue donation.

An advance directive must be in writing. Laws regarding them vary from province to province. Speak with a lawyer or your healthcare team for detailed information.

For detailed information about advance care planning, check out **advancecareplanning.ca**.

End-of-life planning

Facing the final chapters of life can be an emotionally challenging time for anyone diagnosed with lung cancer and their family. It's a time for reflection and making decisions that bring the best quality of life in the days that remain.

In this section, we'll go through two options for end-of-life care: hospice care and medical assistance in dying (MAID).

Hospice care

Hospice care is a specialized form of care for people who are near the end of life. It affirms the value of life and allows the natural process of death to unfold. The goal is not to cure the disease but to treat the individual, ensuring their last days are spent in dignity and comfort.

Hospice care is considered when someone has a limited life expectancy, usually around six months, but this can vary. It can be provided at home, in a special facility called a hospice, or in a hospital. Hospice care is given by a team of trained professionals to support both you and your loved ones, including:

- A hospice physician who is a doctor trained in hospice care. They may lead your medical care or work alongside your current doctor.
- A hospice nurse who visits regularly to check on you and manage your pain and any other symptoms. They're available 24/7 to handle medical emergencies or answer questions.
- Home health aides who help with daily tasks like bathing, dressing, and making meals.
- A social worker who arranges community services, helps with financial issues, and offers emotional support to you and your family.

To access hospice care, you'll need a referral. However, you don't have to wait for your doctor to initiate this. You can research hospice programs on your own, and when you're ready, request a referral from your doctor.

Medical assistance in dying (MAID)

Medical Assistance in Dying (MAID) is a legal procedure in Canada that allows eligible individuals to receive help from a medical professional to end their life. The federal Criminal Code of Canada strictly regulates this practice, ensuring it occurs under specific circumstances and adheres to clear guidelines.

There are two available methods for medical assistance in dying in Canada:

- **Clinician-administered medical assistance in dying:** In this method, a physician or nurse practitioner administers a substance directly, usually via injection, that causes the person's death.
- **Self-administered medical assistance in dying:** In this method, the patient self-administers a prescribed drug to bring about their death.

Eligibility for medical assistance in dying

To qualify for medical assistance in dying, a person must:

- Be eligible for health services funded by the federal, provincial, or territorial government.
- Be at least 18 years old and mentally competent, meaning they can make healthcare decisions for themselves.
- Have a grievous and irremediable medical condition. This means they:
  - Have a severe illness, disease, or disability, and
  - Are in an advanced state of decline that cannot be reversed, and
  - Experience intolerable physical or mental suffering that cannot be relieved.
- Make a voluntary request for MAID without any external pressures.
- Give informed consent, which includes understanding their medical diagnosis, available treatments, and other options like palliative care.

People don't need a terminal condition to be eligible, but they need to meet all the criteria mentioned above. In addition, they must give informed consent twice: once during the initial request and again immediately before the procedure. They have the right to withdraw their consent at any point.

Making a request for medical assistance in dying

Regardless of where you are in Canada, you can ask for medical assistance in dying if you meet the criteria. If you are considering medical assistance in dying, speak with your doctor. They will guide both you and your family based on your situation.

For more information, check out the Government of Canada's page on medical assistance in dying at **bit.ly/MAIDCanada**

Chapter 6:
Learning More and Finding Support

Resources

Lung Cancer Canada

www.lungcancercanada.ca

Lung Cancer Canada is a national charitable organization. We are Canada's leading resource for lung cancer education, support, research, and advocacy. We offer a variety of resources and support services to assist persons living with lung cancer, their care partners and loved ones.

To speak with a member of our team, please call 1-888-445-4403

Airways of Hope

The Airways of Hope support programs provide therapeutic spaces to share and learn from others in a safe and supportive manner. Several formats exist allowing for one to choose what is best suited to their needs and comfort level.

Online Support Groups

Lung Cancer Canada offers a variety of support groups as an opportunity for persons living with lung cancer and care partners to connect, share personal stories, express feelings, and discuss firsthand experience related to lung cancer.

One-on-One Support

Providing personalized support via telephone and videoconferencing to assist persons living with lung cancer and their care partners throughout the trajectory of the disease with such things as emotional, financial, and practical concerns, advance care planning, bereavement and more.

Peer-to-Peer Program

Provides an opportunity to engage in knowledge, experience and supportive exchanges with others living with lung cancer, lung cancer survivors and care partners. Peer support provides a vital link by being an empathetic supporter and navigator through the logistics and emotions of lung cancer.

Regional Lung Cancer Summits

Lung Cancer Canada hosts regional lung cancer summits in partnership with healthcare professionals in order to actively engage with the lung cancer community, providing resources and essential information sessions. These events create a community of support for persons living with lung cancer, their care partners, and loved ones, enhance fellowship and advocacy, and provide essential information to help support them while on their cancer journeys.

"Learn from reliable sources as much as you feel comfortable. Understanding your disease and treatment options empowers you during your journey."

- Nina, living with stage 4 non-small cell lung cancer

Lung Cancer Voices Podcast

Lung Cancer Voices is a podcast series hosted by Dr. Paul Wheatley-Price, medical oncologist at The Ottawa Hospital, and Dr. Nathalie Daaboul, hemato-oncologist at the Centre intégré de cancérologie de la Montérégie. Each podcast features an in-depth discussion on key issues facing the lung cancer community with leading researchers, healthcare professionals, and persons with lived experience.

Awareness Campaigns

Throughout the year, Lung Cancer Canada conducts a number of campaigns focused on increasing awareness of lung cancer; the importance of screening and early diagnosis; and the challenges that stigma presents to the lung cancer community.

Advocacy Efforts

Lung Cancer Canada is committed to advocating for policy change — from implementing and expanding lung cancer screening programs, to ensuring equitable access to lung cancer treatments. Behind the scenes, our **Medical Advisory Committee** – a team of leading volunteer healthcare professionals and researchers – supports these efforts, meeting with policy-makers and working tirelessly to ensure that promising new treatments are made available to all Canadians.

Canadian Cancer Society

cancer.ca

The Canadian Cancer Society is a national, community-based organization of volunteers. They offer a support system for people with cancer and their family, friends, and caregivers. Their programs and services help answer your questions about cancer, manage life with cancer, find community and connection, and build wellness and resilience. You can speak with an information specialist by calling them at 1-888-939-3333.

Wellspring

wellspring.ca

Wellspring is a network of community-based support centers that offer programs and services to meet the emotional, social, practical, and restorative needs of people with cancer and those who care for them. Wellspring programs are offered free of charge.

> **"Connect with others who face similar challenges. Their stories can provide guidance and encouragement."**
>
> *- Nina, living with stage 4 non-small cell lung cancer*

Chapter 7:
Glossary

Adenocarcinoma: The most common type of non–small cell lung cancer arising from mucous-secreting glands.

Adjuvant therapy: Treatment given after primary therapy to kill any remaining cancer cells and help prevent recurrence.

Advance directive: A legal document that outlines a person's preferences for medical care if they are unable to make decisions themselves.

Advanced care planning (ACP): A process that supports adults at any age or stage of health in understanding and sharing their personal values, life goals, and preferences regarding future medical care.

Alveoli: Tiny air sacs in the lungs where oxygen and carbon dioxide exchange occur. Plural form of alveolus.

Arterial blood gas test: A blood test that measures oxygen and carbon dioxide levels in the arterial blood to assess lung function.

Autoimmune reaction: A response in which the body's immune system attacks its own cells or tissues.

Benign: Not malignant or cancerous.

Bilobectomy: Surgical removal of two lobes of the lung.

Biomarker testing: Tests that assess the genetic makeup of cancer cells to identify specific gene changes (mutations).

Biopsy: Removal of tissue from the body to test for cancer

Blood chemistry tests: Blood tests that measure certain chemicals in the blood to help diagnose diseases.

Bone scan: An imaging test that helps detect areas of bone affected by cancer.

Brachytherapy: A form of radiation therapy where a radioactive source is placed inside or next to the tumour.

Bronchi: The major airways that branch from the trachea (windpipe) to the lungs. The plural form of bronchus.

Bronchioles: Small branches of the bronchi that lead to the alveoli in the lungs.

Bronchoscopy: A procedure that allows doctors to look at the airways through a tube called a bronchoscope.

Carcinoid tumours: Rare, slow-growing tumours arising from hormone-producing cells that line the bronchi and bronchioles.

Carcinoma in situ: An early stage of cancer where it is still confined to the place where it started and has not spread to neighbouring tissue.

Cardiopulmonary resuscitation (CPR): An emergency procedure that combines chest compressions with artificial ventilation to manually preserve brain function in a person whose heart stopped working.

Chemoradiation: Treatment that combines chemotherapy and radiotherapy.

Chemotherapy: Treatment of cancer with chemical agents that destroy or inhibit the growth and division of malignant cells.

Clinical trials: Research studies that test new medical approaches and determine if they are safe and effective.

Complete blood count (CBC): A blood test that measures the number and quality of cells in the blood, including red blood cells, white blood cells, and platelets.

Computed tomography (CT) scan: An imaging method that uses X-rays to create pictures of cross-sections of the body.

Conventional radiation therapy: A treatment where high-energy rays are used to kill cancer cells and shrink tumours.

Core biopsy: A procedure that uses a hollow needle to extract a core of tissue for examination.

Curative therapy: Treatments that are intended to cure a person of their illness or disease.

Deep vein thrombosis (DVT): A blood clot that forms in a deep vein, usually in the legs.

Dialysis: A procedure to remove waste products and excess fluid from the blood when the kidneys stop working.

Doublet chemotherapy: A chemotherapy regimen that uses two different drugs in combination.

Electrocardiogram (ECG): A test that measures the heart's electrical activity to assess its function.

Embolus: An abnormal particle, like an air bubble or piece of a blood clot, circulating in the blood.

Endobronchial ultrasound (EBUS): A minimally invasive procedure used in staging and diagnosis of lung cancer.

Endoscopy: A procedure that uses an endoscope to examine the interior of a hollow organ or cavity of the body.

External beam radiation therapy (EBRT): Treatment with high-energy beams of radiation that are aimed directly at a tumour to kill cancer cells.

Fine needle aspiration (FNA): A type of biopsy procedure in which a thin needle is inserted into a mass for sampling cells.

Genetic mutations: Changes to the DNA sequence of a cell's genome (genetic material).

Imaging tests: Procedures that take pictures of the inside of the body to help diagnose medical conditions.

Immunotherapy: A type of cancer treatment that helps your immune system fight cancer.

Intravenous infusion: The administration of medication or fluids directly into a vein over some time.

Large cell carcinoma (LCC): An uncommon type of non–small cell lung cancer.

Larynx: The voice box at the top of the trachea that contains the vocal cords.

Liquid biopsy: A test that uses blood, pleural fluid, or urine samples to check for cancer cells' DNA.

Lobectomy: Surgical removal of a lobe of the lung.

Local anesthetic: A medication used to cause temporary numbness in a small body area during procedures.

Low-dose CT scan (LDCT): A CT scan that uses low amounts of radiation to create images of the body.

Lymph fluid: A clear fluid that travels through the lymphatic system and carries cells that help fight infections and other diseases.

Lymph nodes: Small, bean-shaped structures that produce and store cells that help fight infection and disease.

Lymphatic vessels: Thin tubes that carry lymph fluid throughout the body.

Magnetic resonance imaging (MRI) scan: An imaging test that uses powerful magnets and radio waves to create detailed images of the body.

Maintenance therapy: Ongoing cancer treatment that is given after an initial treatment to keep cancer from coming back.

Malignant: Cancerous; capable of invading surrounding tissue and spreading to other organs.

Mediastinoscopy: A procedure used to examine the inside of the upper chest between and in front of the lungs.

Mediastinotomy: A surgical procedure that makes an incision through the sternum to examine the area between the lungs.

Metastasis: Spread of cancer to other organs through the lymphatic system or bloodstream.

Molecular testing: See biomarker testing.

Neoadjuvant therapy: Treatment given before primary therapy to shrink a tumour.

Neutrophils: A type of white blood cell that helps fight infections and heal damaged tissues.

Next-Generation Sequencing (NGS): Advanced DNA sequencing technology that allows for the rapid sequencing of large segments of DNA.

Non-small cell lung cancer (NSCLC): The most common class of lung cancer. It has three main subtypes: adenocarcinoma, squamous cell carcinoma, and large cell carcinoma.

Nuclear imaging: A medical imaging technique that uses small amounts of radioactive material to diagnose and determine the severity of diseases.

Papilloma: A small, wart-like growth on the skin or mucous membrane.

Pleura: Thin double-layered membrane that covers the outer surface of the lung and the inner surface of the chest wall.

Pleural effusion: Collection of fluid between the two layers of the pleural membranes.

Pleural fluid: Fluid found between the two layers of the pleura, helping to lubricate and facilitate breathing.

Pleural mesothelioma: A rare type of cancer that affects the pleura and is usually related to asbestos exposure.

Pleurodesis: Treatment of severe pleural effusion by sealing the pleural membranes together to remove the cavity between them.

Pneumonectomy: Surgical removal of an entire lung.

Pneumothorax: A collapsed lung due to air leaking into the space between the lung and chest wall.

Positron emission tomography (PET) scan: A test that uses nuclear imaging to reveal how tissues or organs in your body are working.

Postural drainage: A technique that uses gravity to assist in removing secretions from the lungs.

Primary treatment: The main treatment used to treat a cancer.

Pulmonary embolism (PE): Blockage of an artery in the lung or one of its smaller branches by a blood clot.

Pulmonary Function Tests (PFTs): Tests that measure how well the lungs take in and release air and how well they move gases such as oxygen into the body's circulation.

Pulmonary rehabilitation: An education and exercise program to increase awareness about your lungs and disease.

Radiation therapy: Treatment that uses high-energy rays to destroy cancer cells.

Radioactive seeds: Small seeds that contain a radioactive substance used in brachytherapy or internal radiotherapy.

Robotic-assisted thoracic surgery (RATS): A minimally invasive surgery performed with the help of robotic arms.

Segmentectomy: Surgical removal of a segment of a lung.

Single-gene testing: Testing that focuses on one gene to look for mutations.

Sleeve resection: A surgical procedure to remove part of a bronchus or trachea affected by a tumour.

Small cell lung cancer (SCLC): A major class of lung cancer.

Squamous cell carcinoma (SCC): Type of non–small cell lung cancer.

Stage: Describes the size and extent of a primary tumour and whether it shows evidence of metastasis.

Staging: The process of determining the size and spread of cancer within the body.

Stereotactic ablative radiotherapy (SABR): A highly precise form of radiation therapy that delivers a high dose of radiation to a tumour while minimizing exposure to surrounding healthy tissue.

Stereotactic body radiation therapy (SBRT): See stereotactic ablative radiotherapy (SABR).

Systemic treatments: Treatment with drugs that enter the bloodstream and affect the entire body.

T-cells: A type of white blood cell that plays a central role in immune response.

Targeted therapy: Cancer treatments that target specific genes or proteins that are involved in the growth and survival of cancer cells.

Thoracocentesis: A procedure to remove fluid or air from the chest through a needle or tube.

Thoracoscopy: A minimally invasive surgical procedure that allows a doctor to examine the lungs and the space around the lungs.

Thrombus: A blood clot that forms in a blood vessel and remains there.

TNM staging system: A system used to classify the extent of cancer. It considers T (tumour size), N (lymph node involvement), and M (metastasis).

Trachea: The windpipe.

Ultrasound: An imaging test that uses sound waves to create pictures of the inside of the body.

Video-assisted thoracic surgery (VATS): A minimally invasive surgery used to diagnose and treat conditions in the chest.

Wedge resection: Surgical removal of a triangular slice of tissue from the lung.

NOTES

LUNG CANCER CANADA
AWARENESS. SUPPORT. EDUCATION.

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SENSIBILISER. SOUTENIR. ÉDUQUER.

To order additional copies of this Guide, please contact Lung Cancer Canada.

133 Richmond St. West, Suite 208, Toronto, ON M5H 2L3

416.785.3439 (Toronto) | **1.888.445.4403** (Toll free)

www.lungcancercanada.ca
info@lungcancercanada.ca

Lung Cancer Canada is a national charity and the only one dedicated solely to lung cancer.

We're committed to helping those impacted by lung cancer across this country. Everywhere.

We won't stop. But we need help.

Donate • Volunteer • Care

Donations are greatly appreciated and a tax receipt is issued for a donation of $20 or more. Donations can be made online at www.lungcancercanada.ca, or by calling the numbers above.

Charitable Registration Number: 872775119 RR0001

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All donations are greatly appreciated. A tax receipt is issued for an amount of $20.00 or more.

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