

Lung cancer

Lung cancer is a cancer of the trachea (windpipe), bronchi (airways) or lung air sacs (alveoli).

This factsheet will look specifically at the two main types of lung cancer that occur most often.

The two main categories of lung cancer are:

- **Non-small cell lung cancer (NSCLC)**

Around 70–80% of people with lung cancer have NSCLC. The most common forms of NSCLC are adenocarcinoma or squamous cell carcinoma.

Rarer forms are covered in our rare lung cancers factsheet, available on the ELF website.

- **Small cell lung cancer (SCLC)**

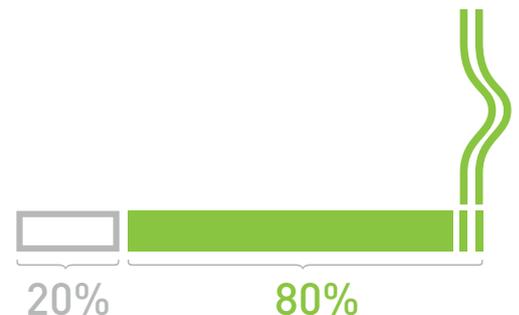
Around 20% of people with lung cancer have SCLC.

This factsheet does not cover mesothelioma, a type of cancer that grows in the lining around the lungs and is usually caused by breathing in asbestos dust. Get more information about occupational lung disease on our website.

Causes

While smoking tobacco is linked to more than 80% of all lung cancer cases, many people that have never smoked or been exposed to passive smoke develop lung cancer.

See our information on the risk factors for tobacco smoking and passive smoking and our Smokehaz website.



Other causes include exposure:

- To air pollution (including diesel exhaust fumes)
- At work (to asbestos, wood dust, welding fumes, arsenic, industrial metals e.g. beryllium and chromium)
- To indoor air pollution (to radon, coal smoke)

There may be other causes, and more will likely be found in the future.

Having the following conditions can also increase your risk of developing lung cancer:

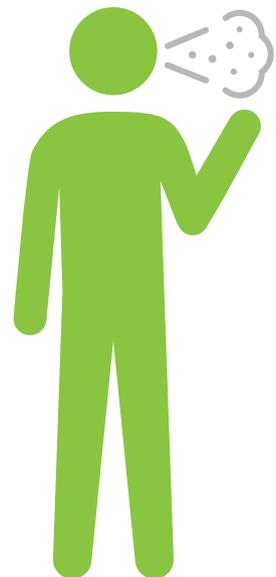
- Chronic obstructive pulmonary disease (COPD)
- Pulmonary fibrosis
- Head, neck or oesophageal cancer
- Lymphoma or breast cancer (treated with thoracic radiotherapy)

Genes can also play a role in some lung cancers. If there is a history of lung cancer in your family, you could be more likely to develop the condition, but this is not the same for everyone.

Symptoms

The most common symptoms and signs of lung cancer are:

- Chronic cough (lasting more than 3 weeks)
- Coughing up blood, or flecks of blood, in phlegm
- Losing weight for no reason
- Being out of breath for no reason
- Not feeling hungry
- Fatigue
- Pain in the chest
- Pain in the bones



- Pain in the shoulder
- Swelling in the neck
- Muscle weakness
- Hoarseness (weak, raspy or strained voice)
- Stridor (high pitched wheezing due to a blockage in the airway)
- Clubbing (swelling) of the fingers and toes

Early symptoms are often not picked up as they are linked to other common conditions. Some people do not have any symptoms at all.

The earlier lung cancer is picked up the easier it is to treat. Visit your doctor if you have any concerns at all, particularly if you are at a higher risk – see ‘Causes’ section.

Diagnosis

“When the doctor tells someone they have lung cancer they will find it almost impossible to take in any further information. It can be good to have a carer or someone to accompany you so that they can be your ears.”

Dan, Ireland, caregiver

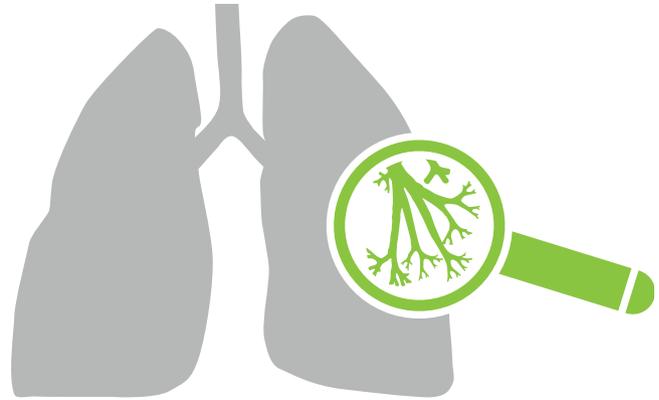
Generally, the process of being diagnosed with lung cancer is as follows:

An X-ray and a computerised tomography (CT) scan (where your body is X-rayed at a number of angles before a computer puts together a detailed image) of your chest will first be done to show if there is a lung tumour.

Your doctor may confirm the diagnosis of cancer by taking some samples of the cells from your tumour, or your glands or second tumour away from your lung tumour, (metastasis) and testing them (this is called a biopsy).

A biopsy can be carried out in a number of ways, most of which are done as an outpatient (you do not stay over):

- Using an endoscopic camera (a camera that goes inside your lungs) called a bronchoscopy. This uses a flexible tube that has a video camera at the end (called a bronchoscope). The tube is inserted through your nose or mouth. You will receive a sedative to relax you and a spray to numb your throat. See our bronchoscopy factsheet on our website for more information.
- Endobronchial ultrasound (EBUS) – this is similar to a bronchoscopy. The bronchoscope is fitted with a small ultrasound probe to help guide the physician to the right area to take a sample. This area is usually the area between the two lungs where your glands sit (called mediastinum).
- CT-guided biopsy (where you go through the CT scanner and the X-ray images guide the physician to the right area).
- Surgery (only on rare occasions).



Finding out which stage your lung cancer is at

If your doctor believes that you have lung cancer, they will request some tests that can show how far the cancer has spread. This process is called staging and could involve further CT scans of the abdomen (stomach area) and brain, or a positron emission tomography (PET) CT scan (where a CT scan is combined with a PET scan, which involves a small amount of radioactive dye being injected into your veins to show up anything abnormal in your tissues).

On some rare occasions, your doctor may suggest that you have a biopsy of your axillary (armpit) and neck lymph nodes.

Staging tests also give useful information as to which is the most appropriate site to take a biopsy from.

The stage of your lung cancer is one of the factors that will help your healthcare professionals to decide on the best kind of treatment to offer you.

Your doctor will be able to give you information on the stage of the cancer. This is based on tumour size, how much it has spread into your lymph nodes/glands, and whether there is another tumour in your body that the doctor thinks is related to the main tumour in your lung (metastasis). This staging process is sometimes referred to as TNM (tumour, node, metastasis).

Being told that you have lung cancer can be devastating. Many people with lung cancer have told us that being able to talk to someone outside of their family, such as a counsellor or psychologist, can often help. If you feel this might be helpful for you, talk to your doctor about what services might be available – see the ‘Feelings’ section for more about this.

Prognosis

Lung cancer is a serious illness and, unfortunately, the prognosis for many is not very good overall, mainly because it is not diagnosed early enough. However, lots of work is being done to develop new treatments to help people live longer and with a better quality of life.

Most prognosis information is given in terms of a ‘5-year survival rate’. This term is often used by healthcare professionals, and refers to the number of people studied in research who lived for 5 years or more after being diagnosed with this type of lung cancer.

It is important to remember that everyone is different, and that you may not have the same reaction to a treatment as another person. Statistics do not necessarily reflect what will happen to you. You should see your prognosis as a guide – and discuss it with your consultant or doctor.

“Don’t just look at the statistics. You are not a number and it is very important to balance out all the negative information by looking at positive websites that can give you hope.”

Tom, UK, individual with lung cancer

Treatment

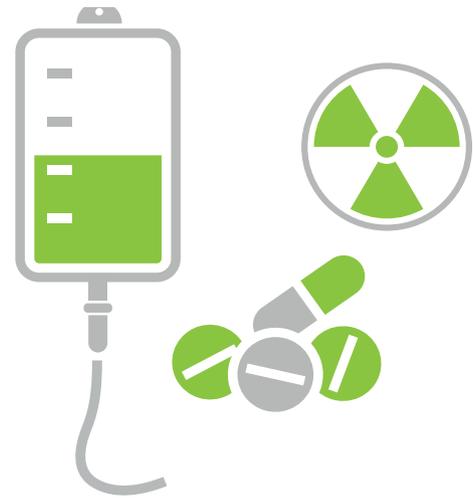
“It is very important that everyone has hope from the moment they are diagnosed and there are new treatments coming along all the time. The treatment that I am on was not available three years ago and now it is old fashioned, so do not give up hope.”

Tom, UK, individual with lung cancer

There are several different types of lung cancer, requiring a range of different treatments.

Your treatment plan will be based on the type and stage of lung cancer you have, your general state of health, and your personal preferences.

Treatments may be focused on either curing your lung cancer (curative treatments), or on helping you live longer and with a better quality of life with lung cancer (palliative treatments).



Multidisciplinary teams

In some European countries the decision to treat, and the type of treatment, is discussed among a panel of experts in the field, called a multidisciplinary team (MDT). An MDT usually includes:

- Respiratory doctors (specialising in lung health)
- A surgeon
- Oncologists
- A pathologist (doctor who will examine your biopsy and decide your type of cancer)
- A radiologist (specialising in lung imaging)
- A palliative care physician (specialising in looking after patients in pain and disability due to their lung cancer)
- A psychologist
- A nurse (specialising in lung cancer)

MDTs are becoming more common in the treatment of lung cancer. However, in some countries they would not include all the experts mentioned here. If you are managed by an MDT, you will normally have one or two healthcare professionals as your main points of contact, and you may visit other healthcare professionals for specific treatments.

There are many countries where the decision to treat relies on a single doctor, usually a lung health specialist.

Surgery

If you are fit enough for surgery, you may be offered an operation to remove the tumour.

Surgery is mainly used to treat non-small cell lung cancer (NSCLC). However, if you are diagnosed with small cell lung cancer (SCLC) at a very early stage and it has not spread, some doctors may suggest surgery. If your cancer has spread then surgery is unlikely to be the right treatment for you.

The lungs are made up of different sections or 'lobes,' with three in the right lung and two in the left lung. The usual operation for lung cancer is called 'lobectomy'. The surgeon will completely remove the part of the lung (lobe) which contains the cancer and the glands around the lung (lymph nodes) to which cancer can spread. Sometimes, it may be recommended that one lung is removed completely (pneumonectomy). Breathing tests before surgery will help to decide if this operation is right for you.

You will receive a general anaesthetic (medication to make you fall asleep) for the duration of these operations and given pain medication following the operation.

Before surgery, you may receive a type of chemotherapy that contains platinum in order to shrink the tumour as much as possible before the operation. This makes it easier to remove surgically.

New, less-invasive surgical techniques have been developed to try to remove the cancer. This means there is less damage to your tissue during surgery. This includes a type of keyhole surgery, known as video-assisted thoracic surgery (VATS), in which a small video camera and instruments are placed through small cuts into your chest to guide the surgeon during the operation. Recovery time for keyhole surgery is quicker, so may be a possibility for more people.

Surgery is not always the best option for everyone – it could be better to tackle your lung cancer with chemotherapy, often depending on where the tumour is and the stage of cancer. Your healthcare professional will discuss your treatment options with you.

Chemotherapy

Chemotherapy (also called chemo) uses drugs to treat cancer. It works to slow down the growth of the cancer.

The drugs can be given over different lengths of time and either injected directly into a vein or through an intravenous drip or pump. You will usually receive the chemo as an outpatient at the hospital every 3 or 4 weeks.

Most chemotherapy drugs cause side-effects, and nausea and being sick are the most common. Anti-nausea drugs will be given to help with this. Other side-effects may include hair loss (regrows after treatment has ended), feeling more tired than usual, losing your appetite or changes in your sense of taste.



Chemotherapy affects people in different ways so it is hard to say how you may be affected in advance. Many people are able to carry on with their normal activities during their treatment.

Just as patients with different types of lung cancer respond differently to surgery, it is possible to tailor chemotherapy depending on the type of tumour a person has.

Radiotherapy

Radiotherapy can be offered either as a standalone treatment, after surgery or in combination with chemotherapy.

If your tumour is at an early stage and you are not able to have surgery (if your lungs are not working as well as they should do or you have other significant diseases that increase the risk of surgery) you may be offered modern radiotherapy called SABR (stereotactic ablative radiotherapy). This is almost as effective as surgery and also reduces the damage caused to the areas surrounding the tumour.



Radiotherapy uses high energy X-rays to destroy the cancer cells. You typically receive this treatment every day, 5 days a week, for about 6 weeks.

You do not need an anaesthetic and receive the treatment lying on a table while a linear accelerator (the machine that delivers the radiation) moves around you at different angles.

You do not feel the radiation. Short-term side-effects may include skin inflammation (swelling and soreness), sore throat and trouble swallowing, cough and breathlessness. Most people do not have any long-term side-effects, although some people can get swelling and soreness in their lungs (called radiation pneumonitis), which is treated with steroids.

If you have undergone surgery to remove your tumour, then you may also receive radiotherapy as an additional treatment after surgery to make sure any remaining cancer cells are killed.

Sometimes radiotherapy is also prescribed to help with symptoms, such as treating blockages in your windpipe to make it easier to breathe. This type of radiotherapy is the more usual type and is not as highly targeted as modern radiotherapy. It is usually offered as a standalone treatment or in combination with chemotherapy. In some cases, you may be offered radiotherapy to treat areas outside your lungs, such as brain or bone, if the disease has spread.

Personalised treatment (biological therapies/targeted therapies)

As experts have understood more about the biology of lung cancer, they have also been able to develop new drugs that target specific parts of the cancer. These are called biological therapies or targeted therapies.

Targeted therapies for specific types of lung cancer come in tablet form, e.g. EGFR (epidermal growth factor receptor) inhibitors, with the drugs erlotinib or gefitinib found to be particularly beneficial for people who are unable to have their tumour removed surgically. ALK (anaplastic lymphoma kinase) is another type of therapy, with the drug erizotinib found to be effective.



These drugs work to block the growth of cancer cells and can control this for a long time. You take the tablets at home, rather than having to travel to a clinic as you would for chemotherapy treatment. Targeted therapies tend to come with fewer side-effects than other types of treatment.

Not everyone will benefit from targeted therapies, as this depends on the type of tumour you have. Access to these drugs may also depend on your own country's recommendations for lung cancer treatment and funding by national health care systems.

Immunotherapy (a type of biological therapy) is a new treatment approach, which has shown some promising results among people with advanced-stage NSCLC. It works by encouraging our natural immune system processes to fight cancers.

Lots of research is going on in the field at the moment, and an immunotherapy treatment for people with a type of advanced-stage squamous lung cancer was recently approved by the European Medicines Agency.

To find out if your type of lung cancer could be treated with a targeted therapy, you will need a molecular diagnostic test. These tests look at biological markers in a tissue sample of your tumour and help to find out more information about whether a particular drug or targeted treatment would be likely to work for you.

This test could happen at the time you are diagnosed, or at a later stage in your treatment. Talk to your specialist to find out if molecular testing is an option for you.

Feelings

“I mostly distanced myself from my emotions: there was anxiety but I did not let this through. I was emotionally suspended, frozen, focused on what had to be done. I did not cry as I felt once I started I would not be able to stop.”

Margaret, UK, individual with lung cancer

Having lung cancer can affect you emotionally as well as physically. You may find that you experience negative, upsetting and confusing feelings.

It is important to remember that you are not alone in what you are going through. There are many online and in-person support groups for people in your position where you can talk about and hear other people's experiences with lung cancer and build up your own support group. See the support section on the lung cancer patient priorities website.

You may find it helpful to talk to friends and family about the way you are feeling. This is also a difficult time for them, and their feelings may be similar or different to your own.



It may also be useful to speak to a counsellor or psychologist for some help with dealing with your feelings. Sometimes it is easier to talk to a stranger (or you may not have friends and family around to support you). A counsellor/psychologist can give you space to talk and think about how you feel.

Ask your doctor to provide some guidance on dealing with your feelings and if there is any access to psychological support.

“Cancer is an illness which you may live with or which you may overcome. I believe that a positive attitude to your treatment and trust of your doctor may make miracles.”

Natalia, Poland, individual with lung cancer

Living with lung cancer

“Enjoy every day. I was always working too hard, but now that fatigue has slowed me down, I am spending more time with my family. I am also aware that my energy levels can drop off, so I am much more aware of having rest periods during the day.”

Tom, UK, individual with lung cancer

Both people who have experience of lung cancer and healthcare professionals recommend that, after a lung cancer diagnosis, or during treatment, you try to go on living your life as it was before as best you can.

There are a number of things you can do to help yourself on a daily basis:

- **Eat a healthy diet**
Try to eat a diet that helps you maintain a healthy weight and gives you all of the nutrients your body needs (protein, fruit and vegetables). You may find that certain foods make side-effects of your treatment worse - in this case, try to avoid these. Talk to your healthcare professional if you need advice on this.
- **Exercise**
Physical activity has been shown to be very beneficial for people with all stages of lung cancer. Try to be as active as possible when you can – for example, walking to the shops rather than driving; yoga, or swimming. Your doctor should be able to help you develop a tailored fitness plan.

- **Do things you enjoy**

Try to keep doing things that you enjoy, e.g. go shopping, visit friends, travel. The aim is to keep your life as normal and free of stress as possible.

You may, especially if you have other lung health issues, be offered pulmonary rehabilitation as a way of improving your physical strength and reducing the impact of your symptoms on your life.

Pulmonary rehabilitation is a type of treatment that aims to reduce the physical and emotional impacts of a lung condition on a person's life. It is a personalised programme that combines exercise training with education about ways you can help keep yourself as healthy as possible. See our pulmonary rehabilitation factsheet for more information available on the ELF website.

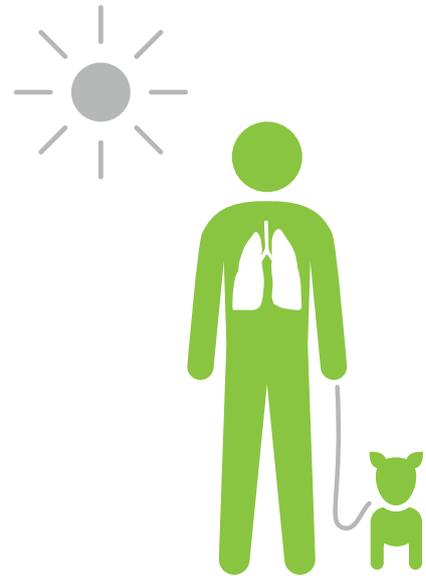
There is some evidence that pulmonary rehabilitation after surgery for individuals treated for lung cancer is both possible and effective. It can help to reduce fatigue and enable you to cope with more exercise.

You may also need to deal with practical matters relating to your work, finances and social activities.

Making a list of questions to ask your doctor or specialist can help you manage these things and find out what support may be available to help you.

“My work-life balance became far more important and I'm very lucky as I now work part-time and spend a lot more time with my family. You still need to pay the bills, though, and I have found a happy compromise.”

Tom, UK, individual with lung cancer



Palliative care

Palliative care (also called supportive care) aims to improve the quality of life of people affected by serious illness such as lung cancer and their family members.

Palliative care will not cure the condition, but it can prevent and treat the symptoms and side-effects experienced. It is offered alongside other therapies.

Accessing palliative care services can help people affected by lung cancer to live their life as best as possible even though they are ill.

Palliative care can be accessed at any stage from diagnosis onwards and can provide relief from pain, nausea and other symptoms, and offer support and comfort to people affected by lung cancer. It involves caring for people's physical, emotional and spiritual needs in the best way possible.

Palliative care can be provided in many settings such as the hospital, community or hospice. Finding out what palliative care support is available for you can help you make decisions about how you want to be cared for now and in the future.

Talk things through with any of your healthcare professionals. Ask questions and tell them about any concerns you have now and for the future. You may also want to talk things through with your family and friends. If they know how you feel they might be better able to support you.

“Attending the day hospice has helped my breathlessness tremendously and the pain is now also much better. Talking with the palliative care nurse has helped me see that I still have a lot of life in me and now I look forward to every day again.”

Mary, Ireland, individual with lung cancer

Further reading

ELF lung cancer website - www.europeanlung.org/lungcancer

- Access information developed with people with experience of lung cancer and experts in the field.
- Read about the latest research and advances in lung cancer treatment.
- Find lung cancer support networks across Europe.
- Watch videos and case studies from people with lung cancer and share your own story.

ELF website – www.europeanlung.org

Access more lung disease information and relevant factsheets including the following:

- Bronchoscopy factsheet
- Pulmonary rehabilitation factsheet
- Rare lung cancers factsheet



ELF EUROPEAN
LUNG
FOUNDATION

The European Lung Foundation (ELF) was founded by the European Respiratory Society (ERS), with the aim of bringing together patients, the public and respiratory professionals to positively influence respiratory medicine. ELF is dedicated to lung health throughout Europe, and draws together the leading European medical experts to provide patient information and raise public awareness about lung disease.



ERS EUROPEAN
RESPIRATORY
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every breath counts

This material was compiled with the help of ERS members working in the lung cancer field and members of ELF's lung cancer patient advisory group.