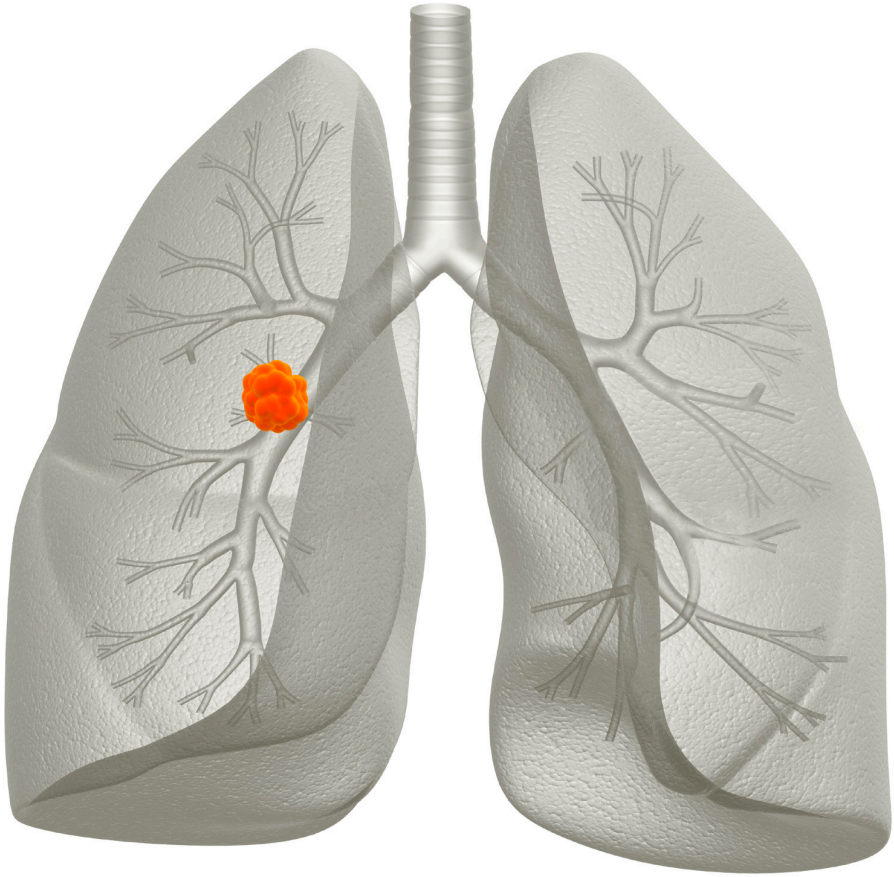

Lung cancer

Information for patients and relatives

2nd edition

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Preface

This booklet is intended for patients who are diagnosed with lung cancer, as well as for their relatives. Emphasis is on innovations in diagnosis and treatment, taking the situation in Iceland into account. General knowledge about the disease is also discussed, and that progress has been made in the diagnosis and treatment of lung cancer in recent years.

The booklet was first published in 2011 and was financed by several pharmaceutical companies without any restrictions about content or approach. The publication was very well received and over 3,000 copies were distributed. In this edition, the text has been revised and the pictures redone. The booklet can also be obtained from the website www.lungnakrabbamein.is.

Special thanks go to many professionals at Landspitali University Hospital and University of Iceland who provided assistance with the publication of this booklet. The staff of the Icelandic Cancer Society (Krabbameinsfélag Íslands) are also thanked for their assistance. Last but not least, Roche are thanked for funding the publication.

Reykjavík, November 2015

Tómas Guðbjartsson

Contents

What is lung cancer?

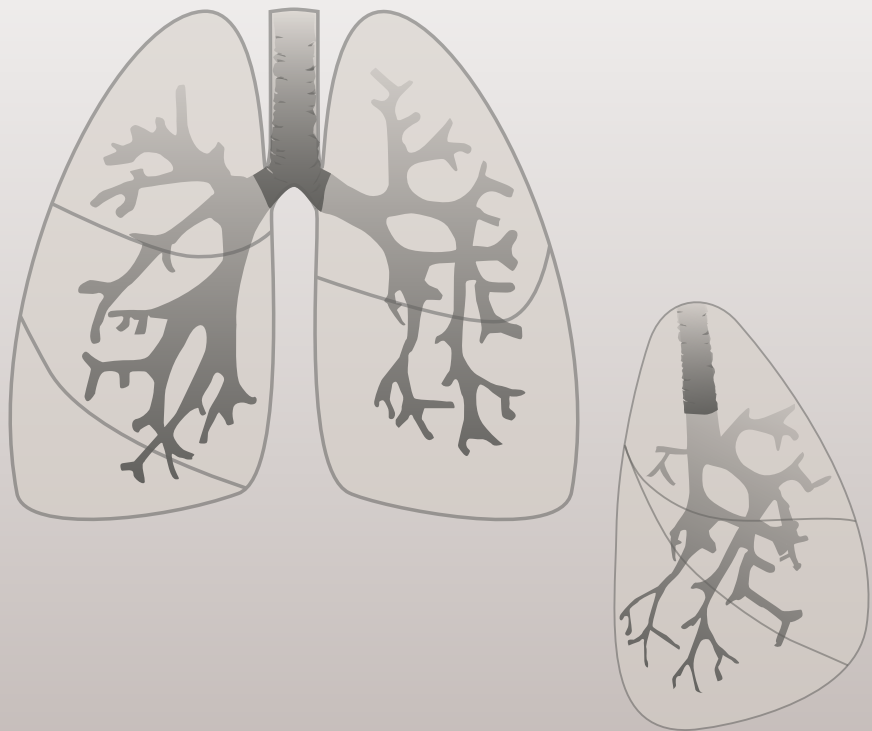
Lung cancer originates from **cells** native to the lung. Cancers that are formed elsewhere in the body can spread to the lungs, for instance breast cancer and colon cancer. In these cases the term “metastases to the lung” is used. Lung metastases are not considered to be lung cancer and their treatment differs.

Cancer is formed when cells start to **multiply** and form a **tumor** that invades surrounding tissue. This is due to damage to the genetic material of the cells (DNA), which causes disturbance in the genetic function that controls cell division. In lung cancer, damage to the DNA is mainly due to carcinogenic substances in the environment, particularly to tobacco smoke. Cancer cells do not respect boundaries and thus can grow in adjacent organs, spread to lymph nodes or be carried via the blood to distant organs.

Role of the lungs

The lungs are part of the respiratory system and take part in exchange of oxygen and carbon dioxide with the atmosphere. The **trachea** transports air to the lungs; these are divided into **lobes**, three lobes on the right and two on the left. In the lungs, air is carried through the trachea to increasingly smaller bronchial branches. The **bronchi** are hollow inside and air passes through them to the **alveoli**, which number about 300 million. Oxygen from the air is carried through the alveoli into the bloodstream and from there to the cells in the body. The lungs also release carbon dioxide that is formed in the cells and maintain the correct acidity of the blood at the same time. They also play an important role in the body’s defense systems, e.g. against microbes and dust.

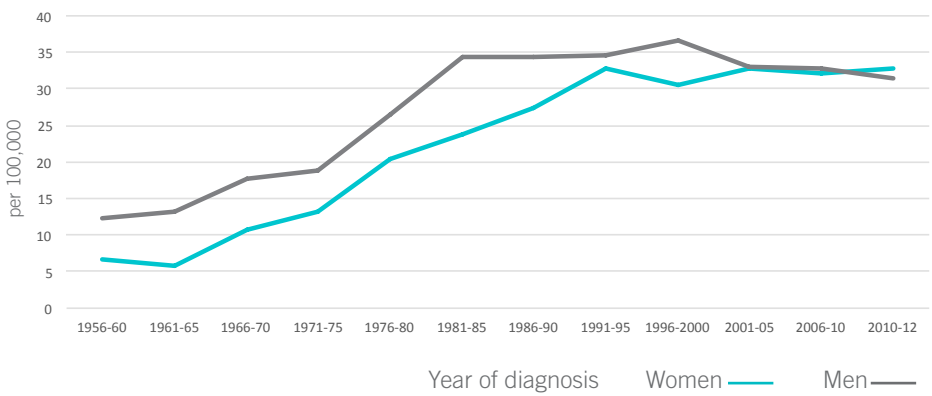
The area between the lungs is called the **mediastinum**, where lymph nodes can be found. Lymph nodes act as a kind of filter for lymph fluid carried from the lungs. Each lung is surrounded by a thin membrane called a **pleura**, which also envelops the interior of each thoracic cavity. Between these membranes is the **pleural cavity**, where fluid can accumulate.



Lung cancer in Iceland

Lung cancer is the second most common cancer of both sexes in Iceland – only prostate cancer in men and breast cancer in women are more common. In Iceland, around 160 individuals are diagnosed annually with the disease. This is a similar proportion to the other Nordic countries, with the exception of Denmark where lung cancer is more common. In Iceland the disease has a similar prevalence in both men and women, but overseas it is generally more common in men.

Frequency of lung cancer in Iceland
(age-standardized incidence)



Causes of lung cancer and risk factors

Smoking is by far the most common cause of lung cancer and is considered to contribute to about 90% of cases. The great majority of those diagnosed with the disease have thus smoked considerably. Many other diseases also have a strong link with smoking, such as cardiovascular diseases and obstructive pulmonary disease. Smoke pollution in the environment, sometimes called **passive smoking**, can increase the risk of lung cancer amongst those who have never smoked.

Individuals with obstructive lung diseases are at greater risk of being diagnosed with lung cancer, which is also the case for those who have come in contact with certain environmental toxins, such as asbestos. There is no proof that certain food types, e.g. fruit and vegetables, can reduce the risk of lung cancer, although there is some evidence that indicates this. Icelandic research has shown an increased risk of lung cancer amongst relatives of those who have been diagnosed with lung cancer, while heredity may account for almost 20% of cases.

Smoking and the importance of stopping smoking

Around 14% of Icelandic adults smoke, which is a lower percentage than in most of our neighboring countries. In recent decades, smoking cessation campaigns have been very effective and only Sweden has a lower proportion of smokers. It is especially gratifying that smoking cessation and prevention programs have proved particularly effective amongst teenagers in Iceland.

It is never too late to stop smoking. Research shows that 15 years after permanently stopping smoking, the risk of getting lung cancer decreases from 30 times to twofold. Many types of help are on offer for those who want to stop, including cognitive therapy on smoking cessation and group therapy, medication and acupuncture. Further information in Icelandic can be found at heilsuhegdun.is.

Symptoms of lung cancer

Most patients diagnosed with lung cancer have **symptoms** that can be traced to the disease. The proportion of those who are diagnosed by **chance** is growing, however, because of technical advances in imaging, especially computed tomography (CT) scanning.

Many different symptoms can accompany lung cancer, and many individuals have more than one symptom at the same time. The commonest are respiratory symptoms, especially coughing, shortness of breath, chest pain and blood in the sputum. It can be more difficult to differentiate the symptoms of lung cancer from smoking-related ailments, such as bronchitis and obstructive lung disease, in individuals with a long history of smoking. Patients therefore often wait a while before visiting a doctor, which can result in diagnosis being delayed. Symptoms that are less common are hoarseness and nerve pain in the arm, both of which are caused by local ingrowth of the tumor. One patient in three has symptoms such as bone pain, enlarged lymph nodes in the neck and headaches, which can be traced to spread of the disease to other organs.

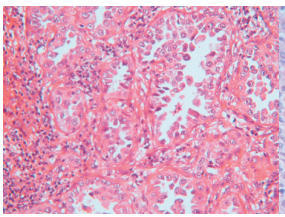
Commonest symptoms of lung cancer
Coughing
Weight loss
Breathing difficulties
Chest pain
Coughing up blood
Bone pain
Fever
Weakness
Difficulties in swallowing

So-called **paraneoplastic syndromes** are also common in patients with lung cancer and occur in around 10-20% of patients. Usually these symptoms are hormone-related, such as higher levels of calcium in the blood. Paraneoplastic syndromes can also occur in bones and ligaments or as disturbances in the functioning of nerves in the extremities.

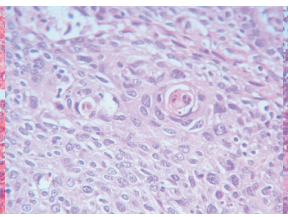
Different types of lung cancer

Lung cancers are usually 3-6 cm in diameter when they are diagnosed, but they can be only a few millimeters in size if they are found by accident, e.g. by CT scans. Cancer originates in cells that coat the inner surface of the lungs, the epithelial cells, which see to the defense and renewal of the respiratory epithelium. If the stimulus of carcinogenic substances is long-lasting, the genetic material (DNA) of the epithelial cells can be damaged and the cells start to undergo changes in appearance and begin to divide faster.

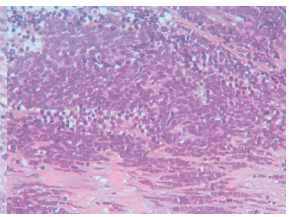
Lung cancer is divided into several types, according to the structure of the tissue when examined microscopically. In Iceland, **adenocarcinoma (45%)** is the commonest, followed by **squamous cell carcinoma (25%)**. **Small-cell lung carcinomas** represent about 15% of lung cancers. These differ considerably from the other kinds, as they have usually already spread at diagnosis and their treatment is different. Carcinoid tumors are much rarer (< 5% cases) but have a more favorable prognosis.



adenocarcinoma
e. adenocarcinoma



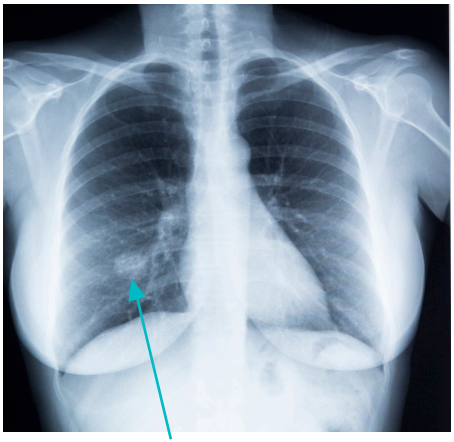
squamous cell carcinoma
e. squamous cell carcinoma

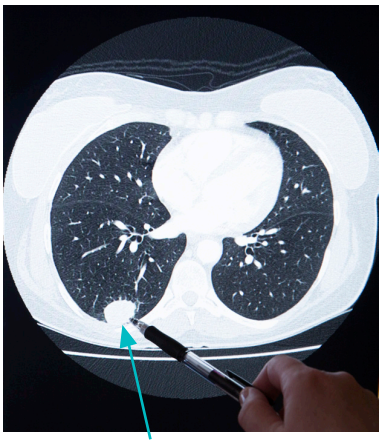


small-cell lung carcinoma
e. small cell lung carcinoma

Diagnosis of lung cancer
and the determination of tissue type

In order to diagnose lung cancer, both imaging techniques and bronchoscopy are used or other types of sampling. Usually a **chest X-ray** is the first investigation. The cancer generally appears there as a **nodule** or **dense mass** in the lung. **Computed tomography (CT)** of the lungs and chest cavity is the next step; this is a much more accurate technique than a conventional lung X-ray and allows both the outline of the cancer and its precise location in the lung to be seen.

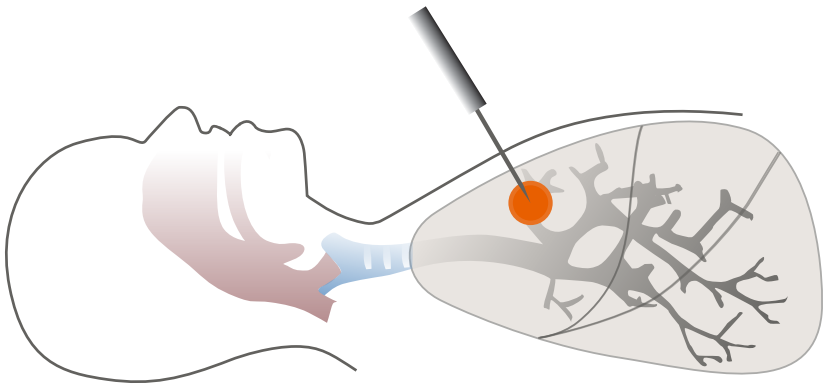




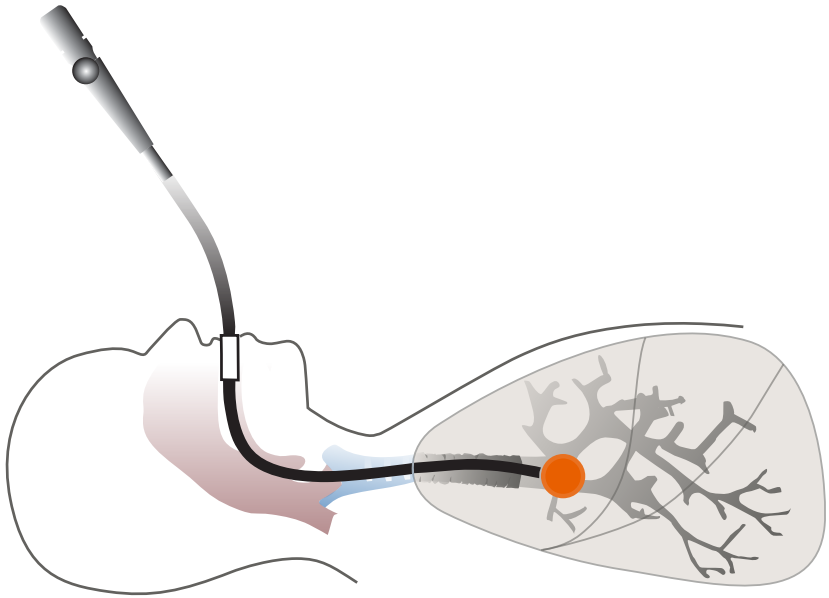
In order to diagnose lung cancer and decide what treatment to apply, it is important to obtain a biopsy sample from the tumor for tissue research. Normally this is done using bronchoscopy but sometimes this is not possible, e.g. if the tumor is situated in the periphery of the lung.

In this case, a **transthoracic needle biopsy** of the nodule is obtained, where CT imaging is used to facilitate its location. The puncture can cause an air leak from the surface of the lung, causing air to leak out into the pleural cavity. When this happens, the lung can collapse – this is known as pneumothorax. Usually this does not require any special treatment, but sometimes a chest tube is inserted and kept in for several days.

Transthoracic biopsy



Another possibility is to obtain a biopsy from metastases, if present and accessible, which allows for an easier biopsy maneuver than sampling the tumor in the lung. The biopsy is taken to look for cancer cells, but an attempt is also made to determine the histologic type of lung cancer. A pathologist examines the biopsy sample and usually delivers the result within a few days, unless the sample requires the use of special analysis. Accurate histologic analysis is no less important for patients who have previously been diagnosed with cancer, e.g. in the colon or breast, as these diseases can spread to the lungs and resemble lung cancer.



Bronchoscopy

Bronchoscopy is a quick, safe procedure that is performed by a lung specialist. A narrow flexible tube containing a fiber optic cable connected to a TV screen is used. After a local anesthetic, the tube is run down the windpipe through the nose or mouth. The interior of the larger airways are then examined and an attempt is made to obtain a biopsy from the tumor in the lung.

Sometimes it can be difficult to determine whether a single nodule in a lung is cancerous or benign. In such cases **positron emission tomography** (PET) can be useful. A special marker is injected into the patient's vein and the accumulation of the marker in the nodules and other parts of the body is investigated. There is no PET scanner currently in Iceland, but patients are sent to Copenhagen if this investigation is needed.

Screening

Screening is performed to find the tumor at an early stage of the disease, i.e. before it has spread through the body. In previous studies, in which conventional chest X-rays were used, the usefulness of screening for lung cancer could not be proven. Innovations in the field of imaging, especially **high-resolution CT scanning**, have enabled the possibility of finding much smaller nodules in the lung than before. Thus recent research appears to indicate that patients who are diagnosed by screening have smaller tumors and a better prognosis than those who are diagnosed because of symptoms. Organized screening for lung cancer has not yet been taken up in Iceland, as the results of further research on the usefulness of screening is awaited.

Assessment of the spread of the disease – staging

Staging is the term used for mapping the distribution of the disease. This information is then used to predict the prognosis of patients and to take decisions on treatment, e.g. whether the aim is to cure the disease or to keep it under control.

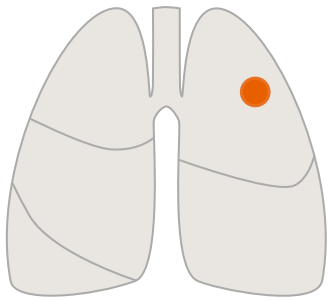
Stages of lung cancer other than small-cell lung carcinoma (NSCLC)

e. non small cell lung cancer, NSCLC

These cancers, which generally are either adenocarcinoma or squamous cell carcinoma, are restricted to the lung in about one third of cases and thus it is often possible to remove them by surgery. The disease is staged in **four stages**, I to IV. The size and location of the tumor is very important, and also whether the cancer has spread to lymph nodes in the mediastinum or to other organs. Chest **CT scans** are a key factor in staging, as well as CT scans of the abdomen and head. **Bone scintigraphy** is also used, in which a marker – a so-called isotope – is injected into a vein to find out whether the disease has spread to the bones. Finally, in many cases PET is used and then bone scintigraphy often is not neccessary (see later).

Stage I

In stage I and II
the disease is limited to the lung (stage I) and/or lymph nodes that are located in the lung (stage II).

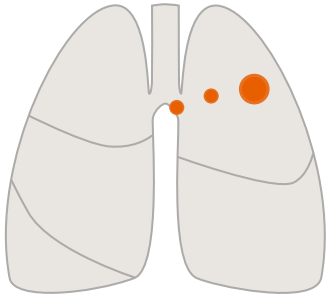


Stage II

At stage **I and II** it is nearly always possible to remove the tumor by surgery.

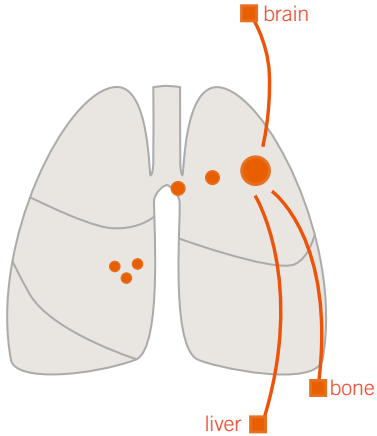
Stage III

At **stage III** the disease has either spread to the lymph nodes in the mediastinum or is growing towards the mediastinum. Surgery is only possible in selected cases.



Stage IV

At **stage IV**, the lung cancer has spread to other organs, usually to the liver, brain, bone or the other lung. Surgical removal is almost never possible, and so treatment with cancer drugs and radiation treatment are used instead.

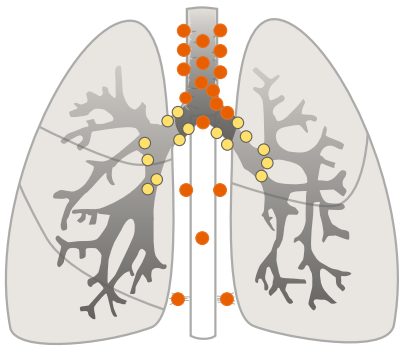


Staging of small-cell lung carcinoma e. small cell lung cancer

The staging of small-cell lung cancer differs to the staging of other tissue types of lung cancer. Most small-cell lung carcinoma has spread from the lung at diagnosis and surgery is very rarely an option, or only in less than 5% of cases. Generally **two stages** of small-cell lung cancer are considered: disease limited to one half of the chest cavity (limited disease) and extensive small-cell lung cancer (extensive disease). The stage of the disease then determines what further treatment is indicated, i.e. whether radiation treatment or chemotherapy are indicated, or whether both of these are used. CT scans of the chest cavity, brain and abdomen are important in the staging of the disease, but sometimes biopsies are also taken from the bone marrow and bone scintigraphy performed.

Importance of mediastinal lymph node evaluation and determination of disease stage

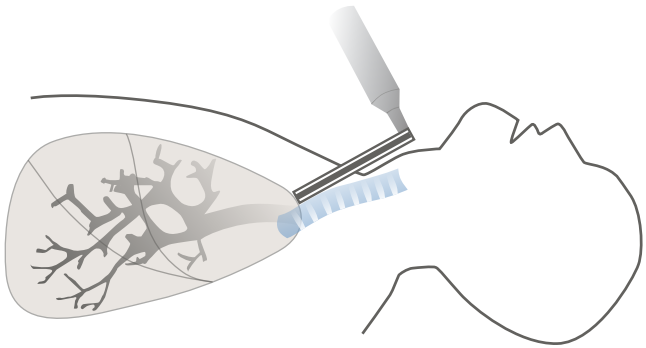
Lymph nodes in the mediastinum are important in the assessment of the spread of lung cancer, as further treatment often depends on whether or not they are normal. The condition of the lymph nodes is assessed by CT scans and often by PET scanning. Biopsies from these lymph nodes are attempted in all patients who are considered to be at stage II or III and in some cases at stage I. Initially so-called **endobronchial ultrasound (EBUS)** and/or **esophageal ultrasound (EUS)** are performed, where an ultrasound device at the head of the endoscope helps to locate the lymph nodes that have to be biopsied. These tests are often done under local anesthetic but sometimes under general anesthetic, though the patient still goes home the same day. If a biopsy cannot be obtained with EBUS and/or EUS, a **mediastinoscopy** is performed.



Lymph nodes in the mediastinum (red) and lungs (yellow).

Mediastinoscopy is done under a general anesthetic and biopsies are taken from the mediastinum lymph nodes through a 2-3 cm incision at the base of the neck. The procedure takes about half an hour and is sometimes done at the same time as surgery on the lung tumor. The lymph node biopsies are then sent for rapid analysis (freeze section) and the tumor in the lung is removed if the lymph nodes prove normal.

Mediastinoscopy



Diagnostic process at Landspítali and joint meetings of specialists

Since 2008, patients with a nodule in the lung have been investigated according to a specific protocol at Landspítali, both to get a diagnosis and to prepare further treatment, e.g. surgery. Thus an attempt is made to set up all of the necessary tests over one or two days. At the end of the test process, the patient then meets the lung specialist who directed the tests, who goes over the results and the treatment plan with the patient.

In recent years, great emphasis has been laid on the cooperation of various specialists in the treatment of patients with lung cancer. At Landspítali there is a team of specialists consisting of lung specialists, oncologists, pathologists, radiologists and thoracic surgeons. The group holds weekly meetings – called **tumor boards** – where newly diagnosed cases are discussed and a joint decision is taken about treatment.

Treatment options

Treatment of lung cancer depends primarily on the stage of the disease, i.e. of the size and location of the cancer and whether the disease has spread to lymph nodes or other organs. The physical state of the patient is important, e.g. whether the patient is thought to tolerate treatment such as surgery. It should be noted that treatment can be provided at all stages of the disease and that treatment outcome continues to improve.

Yfirlit Summary of the treatment of patients with lung cancer, excluding those with small-cell lung carcinoma

Stage	Treatment
I	Surgery only Inoperable: Radiation treatment
II	Surgery, followed by chemotherapy Inoperable: Radiation treatment and/or chemotherapy
IIIA	Chemotherapy and radiation treatment at the same time, in addition to surgery in selected cases
IIIB	Chemotherapy and radiation treatment at the same time
IV	Chemotherapy

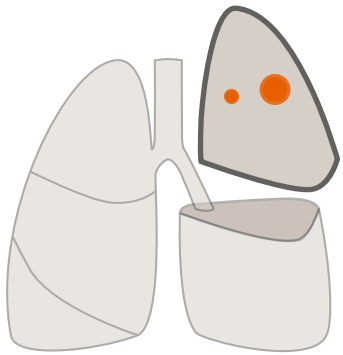
Surgical treatment

Surgery is the main treatment used to **cure** lung cancer. It is, however, only used when the disease has not spread to other organs, i.e. in stages I and II and in selected cases on stage III. In over 50% of patients with lung cancer, the disease is not localized to the lungs on diagnosis and so surgery is not performed. In another 15-20% of patients, further testing reveals that for some reason the cancer cannot be removed using surgery. Overall, one third of lung cancer patients undergo lung surgery.

Main types of surgical procedures and associated complications

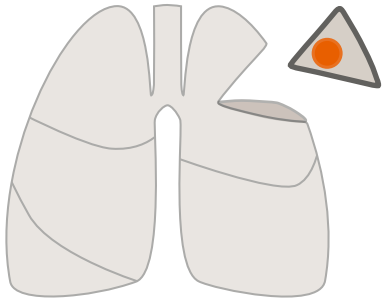
Lobectomy is the conventional surgical procedure for lung cancer, and is applied to 80% of patients who undergo surgery. In this, the lung lobe is removed in one piece, along with the surrounding lymph nodes. To get to the lung, an incision is usually made between ribs in the chest cavity, but surgery can also be performed with video-assisted-thoracoscopic (VATS) technique (see below).

Lobectomy



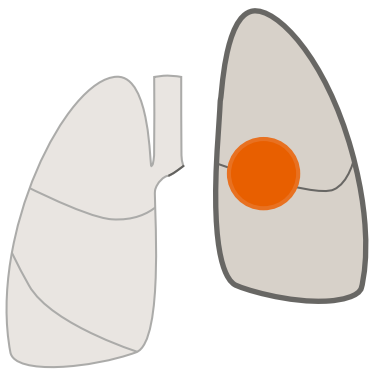
Wedge resection

Wedge resection and **segment resection** are smaller operations than lobectomy and are performed in about 10% of cases. In these, a piece is removed from the lung with a stapling device. The procedure is mainly applied to patients who are considered unable to tolerate lobectomy because of impaired lung function. Wedge resection, as lobectomy, can be performed by using the VATS- technique. A camera in the endoscope is then connected to a TV screen and the procedure is performed through a 1-3 cm wide hole in the chest cavity. Patients usually recover more quickly with VATS procedures, which are mainly performed with smaller tumors that are not located too centrally in the lung.



Pneumonectomy

If the tumor is situated in the middle of the lung or extends between the lung lobes, a **pneumonectomy** may be necessary, i.e. the whole lung is removed. Pneumonectomy is a major operation and patients take longer to recover than after a lobectomy or wedge resection.



Serious **complications** are rarely seen after surgical procedures on lungs. There can be irregularity in the heartbeat and patients can get pneumonia or infections in the surgical wound, but these are rather rare. On the other hand, the lung frequently leaks air after the operation. Therefore patients usually have a **chest tube** in the chest cavity for several days after the operation and this tube is generally connected to suction.

The operation and post-operative treatment

At the beginning of the operation the anesthetist often administers **epidural anesthesia**, which is used to minimize pain after the operation. After the skin has been locally anaesthetized, a fine catheter tube is placed into the epidural space that is close to the spinal canal and the anesthetic is given through the catheter via a pump. The catheter is usually kept in for 2-5 days, but pain medication is given in tablet form after it has been removed. Sometimes a pleural catheter is used instead of an epidural, and the anesthetic is given in a similar way via a pump.

The patient is kept asleep during the operation and is then woken at the end of the operation in the operating room. The operation commonly takes two to three hours. The patients then go to a **recovery room**, apart from patients who undergo pneumonectomy who are kept overnight in intensive care. A close watch is kept on patients for several hours in the recovery room, before they are transferred to the inpatient unit. For the first few days after the operation the chest tube is connected to suction – the length of time the tube is kept in varies, though it is never removed within the first 48 hours. Generally, patients are kept in hospital for 5-7 days after the operation. The pathologist's histological diagnosis is usually available before discharge, but definitive information on results of the operation is provided at a **follow-up meeting** at the outpatients unit, which is generally a week after discharge. Further supervision is in the hands of a lung specialist or oncologist. The incision heals completely in 6-8 weeks and usually stitches do not have to be removed as they dissolve.

Preparation of patients for surgery

Some patients have diseases that can increase the risk associated with complex surgery, for instance heart or respiratory diseases. Age and general physical condition are also important.

The most important pre-surgical procedure on lungs is **spirometry**, as patients commonly have a long history of smoking and have impaired lung function. With spirometry, the patient blows into a device that measures the volume of the lung and its functional capacity.

Other important pre-surgical procedures include an **electrocardiogram** (ECG), various **blood tests** and **imaging**. In selected cases **diffusing capacity** (DLCO) is measured and an **exertion test** is carried out by measuring maximum oxygen uptake. The latter is a good test to predict the risk associated with surgery.

Radiation treatment

Radiation treatment can be an option for curative treatment for patients who are unsuited for an operation and have a small cancer limited to the lung. Radiation treatment can also be an option as part of adjuvant treatment before surgery and is usually given in conjunction with chemotherapy (see later).

Radiation therapy is usually applied to lung cancer that is not localized (stages IIIB or IV). In these cases the treatment is given for symptoms rather than as a cure. The use of radiation therapy makes it possible to slow the growth of the tumor in the lung and/or to treat symptoms from metastases, e.g. in the bone.

Radiation treatment is generally given once a day on weekdays and can take from several days up to several weeks. If radiation treatment is given in the **palliative** sense, the treatment area is the tumor itself along with the lymph nodes that are strongly suspected to contain cancerous cells. Radiation treatment is generally well tolerated, but can be accompanied by **side effects** such as radiation pneumonia and inflammation of the esophagus.

With small-cell lung cancer, radiation therapy is applied when the disease is limited to half of the chest cavity. Chemotherapy is then given concurrently. Radiation treatment is also applied to the brain to prevent the occurrence of metastases there.

Chemotherapy

Recent years have seen considerable progress in chemotherapy for lung cancer. New drugs have come into use and the use of older drugs has changed. Cancer drugs are either given by themselves or concurrently with another treatment, e.g. they are sometimes given with radiation treatment in the curative sense or as adjuvant treatment after an operation (see p. 27). Cancer drugs are frequently given for lung cancer that is not localized (stage IV), i.e. when surgery or radiation treatment are not appropriate. Because chemotherapy of small-cell lung carcinoma differs considerably from chemotherapy of other lung cancers, it will be covered in a later section (see p. 28).

The purpose of chemotherapy for patients whose disease is not localized is to hamper the growth of the cells. By doing this, the symptoms of the disease are restrained and an attempt is made to prolong the life of the patient. The treatment is tailored to the individual and many aspects must be considered, such as general physical condition, the patient's symptoms and whether the function of the heart, lungs and kidneys is impaired. Usually a combination of two drugs is given, one of which is from the so-called platinum group of drugs. If the disease gets worse later, other drugs can be tried. In recent years a new class of drugs has emerged, often called **targeted therapy drugs.** These have a more specialized effect on cancer cells and have a milder effect on other cells in the body that replicate quickly, like hair and bone marrow cells. Targeted therapy drugs are used with lung cancer that is not localized and in some cases can restrain the cancer and prolong the life of the patient. A great deal of effort is now being provided for research into targeted therapy, and it is hoped that these research studies will lead to further progress in the treatment of lung cancer.

Chemotherapy can be accompanied by **side effects**, but in general the cancer drugs used today have less side effects than the older drugs. Examples of side effects include nausea, fatigue, weakness, hair loss and suppression of bone marrow function. Some chemotherapy drugs can disturb kidney function and thus the fluid balance of patients must be monitored during treatment. Infrequent side effects include hearing impairment and disturbances of nerves to the extremities.

Adjuvant treatment with cancer drugs after surgery

Up to half the patients who have undergone an operation because of localized lung cancer are may develop a recurrence of the disease. In recent years cancer drugs have been given to patients at stage II or III after surgery to reduce the risk of the cancer returning. Such adjuvant (additional) therapy has been shown to improve the treatment outcome of patients by up to 10%. However, at stage I the benefit of adjuvant therapy is less and so such treatment is not recommended for these patients. Adjuvant therapy with cancer drugs is only for patients who are in good physical condition and who are likely to tolerate the treatment well.

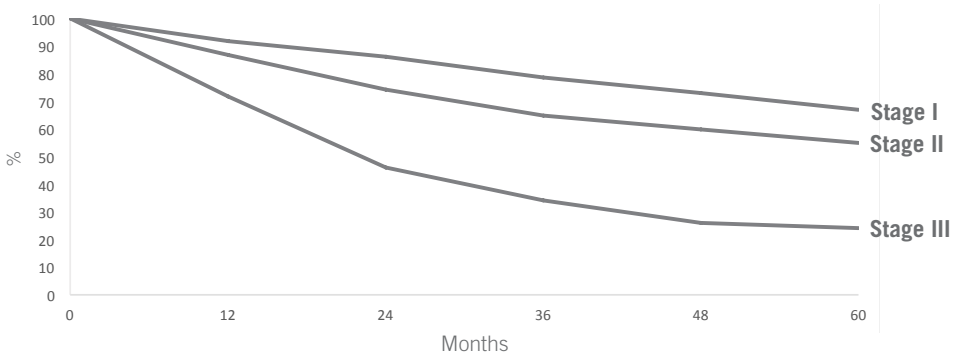
Cancer drugs for small-cell lung cancer

In the case of patients with small-cell lung cancer, the particular treatment chosen will be determined by the spread of the disease. When the disease is limited to half the chest cavity, chemotherapy is usually given at three-week intervals and radiation treatment is given at the same time. However, in most cases only chemotherapy is given – usually a mixture of two drugs – if small-cell lung cancer has spread. If the response to these drugs is unsatisfactory, other drugs are used.

Prognosis of patients

Prognosis usually refers to **survival**, i.e. the life expectancy of patients after treatment for a specific disease. It is important to remember that estimations of survival are done on a large group of patients and thus group survival cannot be extrapolated to individual patients. Survival of patients with lung cancer is determined by many factors, including physical condition and age. The most important factors are the spread (stage) of the disease and whether or not the cancer is small-cell lung carcinoma.

Survival for stages I-III



Other important prognostic factors are the size of the lung tumor and its tissue type. As mentioned above, age is also very important, along with the patient's general condition and functional capacity.

Patients with small-cell lung carcinoma have a poorer prognosis than patients with other histologic types of lung cancer. This is especially the case with small-cell lung carcinoma that has spread – patients whose disease is localized fare better. In addition to the spread of the disease, physical condition is also important, and women generally respond to chemotherapy for small-cell lung carcinoma better than men.

Palliative therapy

Palliative therapy is important to improve quality of life and the wellbeing of patients who have serious, advanced lung cancer. Previously, the term palliative therapy was primarily considered as treatment provided at end-of-life, but today it can also apply early in the illness, even concurrently with other treatment that is provided to prolong life. In this way palliative therapy can be looked at as a type of treatment, whereby a patient's wellbeing and symptoms are dealt with rather than the disease itself. An attempt is made to prevent and reduce physical and mental suffering, and an important aspect of the treatment is to relieve pain and other discomfort, such as nausea, fatigue, shortness of breath and anxiety. Emphasis is put on the patient living a life as active as possible, and an attempt is made to support both patients and their close relatives. Recent studies have shown that patients who receive palliative therapy have improved quality of life, and they also fare better than patients who do not receive such treatment. Spiritual support is also important (see later). Further information (mostly in Icelandic) can be found on the website of the Icelandic Cancer Society (Krabbameinsfélagið Íslands), www.krabb.is.

Other types of treatment

Patients often turn to complementary therapies to improve their wellbeing in serious illnesses. Examples of such therapies include massage, acupuncture, cranio-sacral therapy and relaxation, which are generally directed at reducing muscular tension and lessening pain. None of the above are provided at health institutions in Iceland, with the exception of relaxation and acupuncture. Patients have also looked to various natural products, vitamins and minerals. The scientific background of these treatments has not been well researched. However, sometimes ingestion of these products can lead to adverse

interactions with other medications, e.g. undesirable effects on the action of cancer drugs. Knowledge of side effects and interactions is increasing and thus it is important to discuss the intake of such substances with the doctors who are directing treatment. Information about the scientific background of these substances can be obtained from the website www.mskcc.org/aboutherbs. International organizations have published guidelines where information on such treatments has been gathered in one place (www.integrativeonc.org).

Living with lung cancer

To be diagnosed with lung caner is a shock to both the patient and his/her closest relatives. In addition, the treatment can be accompanied by considerable stress. Many become anxious and even gloomy, which are normal reactions to being diagnosed with a disease as serious as lung cancer. Sometimes medicines are given for anxiety, insomnia and even depression. However, in most cases support of family, friends and treatment providers suffices. Sessions with a psychologist or participation in group therapy can be effective. The Counseling Service of the Icelandic Cancer Society is an information and support service that amongst other things provides information and advice for both those who have been diagnosed with cancer and for their relatives (www.krabb.is). Ljósið is a rehabilitation and support service for cancer patients (ljosid.is – in Icelandic only) where professionals provide help in building up physical and mental stamina. If loss of income is anticipated due to prolonged illness, social workers at Landspítali can provide assistance, as can the Counseling Service of the Icelandic Cancer Society.

Patients diagnosed with lung cancer often discern a lack of understanding of their illness in comparison to that shown to individuals who are diagnosed

with other cancers, such as breast cancer and prostate cancer. The reason might be that lung cancer is very often linked to smoking. Thus patients (and others) feel they have brought the illness on themselves by smoking. Nevertheless, the fact is that most of those who have smoked at some point do not get lung cancer and individuals can be diagnosed with the disease without ever having smoked.

Epilogue

Lung cancer is a major health problem here in Iceland, like elsewhere in the world. Today, two out of three patients are diagnosed with cancer that has spread, which partly accounts for why so many individuals die from lung cancer. Over the last decade advances have occurred in diagnosis and treatment of lung cancer that provide hope of better success, not least for patients whose disease is not localized. The importance of smoking cessation must not be forgotten: smoking has decreased significantly over the last decades in Iceland, which hopefully will result in an even greater reduction of lung cancer cases. Prevention and help with smoking cessation thus have a large impact on results in the battle with lung cancer.

Notes

Icelandic websites (limited or no English)

www.lungnakrabbamein.is – Icelandic website devoted to lung cancer
www.krabb.is – Website of the Icelandic Cancer Society. Includes information about the ICS Counseling Service which is especially aimed at those who are diagnosed with cancer, along with their relatives.
www.kraftur.org – Information for young people who are diagnosed with cancer.
www.ljosid.is – Rehabilitation for patients who have been diagnosed with cancer.
www.persona.is – Information on depression, anxiety, communication, etc.
www.hondin.is – Information on self-help, self-esteem and philanthropy, but also walking groups, courses, self-confidence support groups, etc.
www.missir.is – Information on grief processing and reactions to serious diseases

Foreign websites

www.cancer.dk – Detailed yet readable webpage of the Danish Cancer Society
www.lungcanceralliance.org – Lung Cancer Alliance
www.lungcancer.org – American Lung Association
www.lungcanceronline.org – Lung Cancer Online
www.mskcc.org/aboutherbs – Complementary therapies
www.integrativeonc.org – Complementary therapies

Books and articles in Icelandic on lung cancer

Bók um lungnakrabbamein (Book on lung cancer)
Editors: Tómas Guðbjartsson and Steinn Jónsson.
Publisher: Tómas Guðbjartsson, Reykjavík, 2009

Yfirlitsgrein um lungnakrabbamein í Læknablaðinu fyrir heilbrigðisstarfsfólk (Review on lung cancer for health professionals in the Icelandic Medical Journal, Læknablaðið); http://www.laeknabladid.is/media/tolublod/1376/PDF/f04.pdf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