Lung

Introduction

The chest cavity ('thorax') is the area enclosed by your ribs, from below your neck and shoulders. Its floor is the diaphragm, a wide, thin dome of muscle a little above your waist. Below the diaphragm is the abdomen.
Most of the chest cavity is filled with two large, spongy lungs. The lungs are roughly cone-shaped, and are made up of sections or lobes – the left lung has two and the right lung has three. Between the lungs is the mediastinum, an area that contains the heart and large blood vessels, the trachea (windpipe), the oesophagus (the tube that carries food from mouth to stomach), and many glands called lymph nodes.
When we breathe in, air goes through the nose or mouth, into the throat, and down the windpipe into the chest. The windpipe branches into two bronchi, one going to each lung. Inside the lungs, the bronchi branch many times, like a tree, to form smaller bronchi and then thousands of tiny tubes (bronchioles). Each bronchiole ends up at tiny, bubble-like air sacs. It is these air sacs (alveoli) that make the lungs spongy.
Blood flows between the thin walls of adjacent air sacs. This allows oxygen to move from the air into the blood, and carbon dioxide a waste product from the body – to move from blood to air, to be breathed out.
A double layer of thin membrane called the pleura surrounds the lungs. It is about the thickness of plastic cling wrap. The inner layer is attached to the lungs and the outer layer lines the chest wall and diaphragm. Between the two layers is the pleural cavity. This cavity is virtually empty – the two layers of pleura slide against each other, and they are moist and smooth so that your lungs can move smoothly against the chest wall as you breathe.

Lung Cancer

Lung cancer is cancer of some of the cells in part of your lung, usually beginning in the lining of the airway. A cancer that arises in cells lining an organ is called a carcinoma.
There are different types of lung cancer. Lung cancers are classified according to the type of cell affected. There are two main types: small cell carcinomas and non-small cell carcinomas.

Small cell carcinomas

Small cell carcinomas, also called oat cell carcinomas because of the cell shape, account for around 15 per cent of lung cancers. This type of lung cancer is strongly associated with cigarette smoking. Unfortunately, it spread early and causes few initial symptoms, with the result that more often than not it has already metastasised at the time of diagnosis.

Non-small cell carcinomas

Non-small cell carcinomas include squamous cell carcinoma, adenocarcinoma, large cell carcinoma, bronchiolo-alveolar cell carcinoma and mesothelioma.
These carcinomas affect the cells that line the main bronchi. As these tumours enlarge they can spread into the chest wall and local lymph nodes. Squamous cell carcinoma has a lower rate of metastasis (spread to other parts of the body) than other types of lung cancer and is generally discovered earlier, resulting in the best prognosis following treatment.
Mesothelioma is not, strictly speaking, a lung cancer. It is a rare cancer of the pleural membranes on the surface of the lungs and is strongly related to asbestos exposure.

Causes of lung cancer

As with many cancers, we do not know the cause in all cases. Cigarette smoking is the major cause of lung cancer but it is not known why one smoker develops lung cancer and another does not. Up to 90 per cent of lung cancer is caused by smoking. Lung cancer occurs most often in adults between the ages of 40 and 70 who have smoked cigarettes for at least 20 years. They are also likely to have started smoking as teenagers.
There is also increasing evidence to suggest that environmental tobacco smoking (passive smoking) can bring about disease in adults, children and infants.

Occupational exposure to asbestos is associated with an increased risk of asbestosis and mesothelioma. There is a doubling of risk for people with asbestosis to develop a lung cancer, and if the person also smokes then the risk is multiplied. Other occupational exposures that possibly are associated with lung cancer include contact with the processing of steel, nickel, chrome and coal gas. Exposure to radiation causes an increased risk of all cancers, including lung cancer. Miners of uranium, fluorspar and haematite may be exposed to radiation by breathing air contaminated with radon gas.

How common is lung cancer?

Around 3500 *check number* Malaysians are diagnosed with lung cancer each year. Lung cancer is the most common cause of death from cancer in Malaysian men, and the third most common for women.

Diagnosis

Some people have no symptoms, but learn that they have lung cancer when a tumour shows on a routine chest x-ray. Others realise that something is wrong when respiratory symptoms get worse or a bout of bronchitis fails to get better quickly.
Some symptoms are common to other disorders, but a doctor should check them.
The most common symptom of lung cancer is a persistent cough or change in a chronic cough. Shortness of breath, bloodstained sputum, chest pains and repeated bouts of pneumonia or bronchitis may also be signs of lung cancer. In the later stages of lung cancer, people may experience fatigue, loss of weight, extreme shortness of breath, hoarseness, difficulty in swallowing and a buildup of fluid in the chest cavity.
There may also be symptoms that seen unrelated to the lungs. These may be caused by the spread of a lung cancer to other parts of the body.

What doctors and other health professionals will I see?

Your general practitioner will refer you for initial tests to confirm whether or not you have cancer. This can be a worrying and tiring time, especially if you need to have several tests. If a diagnosis of cancer is made, he or she will also refer you to a specialist who will advise you about treatment options. You should expect to be cared for by a cooperative team of health professionals from all major disciplines, in a treatment centre that has available all means of diagnosis and treatment. Specialists and other health professionals who care for people with lung cancer include:
Respiratory physicians: usually responsible for investigating the symptoms, making a diagnosis and staging the disease
Thoracic (chest) surgeons: responsible for some biopsies and removing tumours if they can be operated upon
Medical oncologists: responsible for chemotherapy
Radiation oncologists: responsible for radiotherapy
Dieticians: recommend the best diets to follow while you are in treatment and recovery
Nurses: assist you through all stages of your hospitalisation and cancer experience
Social workers, physiotherapists and occupational therapists: advise you on support services and help you to get back to normal activities.

How lung cancer is diagnosed

If lung cancer is suspected, several tests can be used to see whether or not it is present. The doctor will first ask you about your past and current health, smoking and work history, and do a physical examination. Then, he or she may recommend that you have a test or a series of tests for lung cancer. These tests can include a chest x-ray, one or more biopsies and one or more scans.
Biopsy procedures for lung cancer include sputum cytology, bronchoscopy, fine needle aspiration, mediastinoscopy and video-assisted thoracoscopic surgery. Some of these procedures can also show if cancer has spread beyond the lungs to other parts of the body.

Chest x-ray

An x-ray of the chest can identify tumours as small as one centimetre in diameter. Occasionally, a lung cancer is found on a chest x-ray that has been taken for other reasons.

Sputum cytology

The sputum cytology test is an examination of sputum under a microscope to check for abnormal cells. Sputum is the liquid that you cough up from your lungs. Early-morning samples are collected for several days – you will be asked to cough deeply to bring up liquid from your lungs. You can do this at home, storing the sample in the fridge before taking it to the doctor or pathology collection centre.

Bronchoscopy

An instrument called a bronchoscope is sometimes used to help diagnose lung cancer. This is a flexible tube that can be inserted into the nose or mouth and down the trachea. It allows the doctor to look at the lungs and take a sample of tissue, if necessary. This procedure is done after you have had a light sedative and been given a local anaesthetic spray to the back of the throat. It can be uncomfortable but is not painful.

Fine-needle aspiration

This procedure is done if you have a suspicious-looking lump (tumour) that cannot be sampled using bronchoscopy but can be reached by putting a needle into the tumour. It is usually done in hospital. You will have a local anaesthetic before the doctor inserts the needle through the chest wall and into the tumour, guided by x-ray pictures, and removes some tissue.

A procedure called thoracentesis also uses a fine needle. Instead of going into the tumour, fluid from around the pleural space is sampled to check for cancer cells.

Mediastinoscopy

In this procedure, the doctor is able to look at lymph nodes in the centre of the chest, to see if they are affected by cancer. The procedure is similar to bronchoscopy, but the tube is inserted through an incision in the neck and fed down to the lymph nodes. The doctor can remove a sample of tissue if necessary. This procedure is done using a general anaesthetic. It is usually a day procedure, but sometimes includes an overnight stay in hospital.

Video-assisted thoracoscopic surgery

Thoracoscopes are instruments like bronchoscopes and mediastinoscopes. They are inserted into the chest cavity through small incisions in the skin. The doctors can see inside your chest using these instruments, and take tissue samples if necessary.

Often the doctor uses a very small video camera and is able to guide the instruments by watching the video screen. You may have up to three small cuts made in your chest, one for the camera and two for the surgical instruments. You will have a general anaesthetic and be in hospital for two or three days.

CT scan

A computerised tomography (CT) scan can be used to identify smaller tumours than those found by x-rays. It can also assess whether lymph nodes are enlarged. A CT scan is a special type of x-ray that gives a three-dimensional picture of the organs and other structures (including any tumours) in your body.

CT scans are usually done at a hospital or a radiology service. It usually takes about 30-40 minutes to complete this painless test. You will be asked to lie flat on a table while the CT scanner, which is large and round like a doughnut, rotates around you. A dye may be injected into a vein, probably in your arm, before the scan. This will make the pictures that the scanner takes clearer. You will be asked not to eat or drink for a while before you have you scan. Most people are able to go home as soon as their scan is over.

Other scans

Other types of scan may be used.

A bone scan can show whether cancer has spread to the bones. A small amount of radioactive substance is injected into a vein. It travels through the bloodstream and collects in areas of abnormal bone growth. An instrument called a scanner measures the radioactivity levels in these areas and records them on x-ray film.

Ventilation/perfusion lung scans can calculate how much lung function will be lost if lung tissue is removed. Positron emission tomography, also known as a PET scan, involved the injection of radioactive glucose solution into the body. Because cancer cells use more glucose than most normal cells, the PET scanner will detect increased quantities of the radioactive glucose in those areas of the body to which the cancer has spread (if it has spread), for example to the other organs or lymph nodes.

Other tests

You may also have blood tests and breathing tests. If surgery is contemplated, it is very important to measure your breathing. People who smoke develop emphysema and may have a reduced breathing capacity.

'Staging' the disease

The tests described above show whether you have cancer, and if you do, where the primary cancer is and whether the cancer cells have spread to other parts of your body (this is known as 'metastasis'). This helps your doctors 'stage' the disease so they can work out the best treatment for you.

Non-small cell lung carcinoma is staged in the following way:

Stage 0: Also called carcinoma in situ. The cancer cells are confined to the surface lining of the airway and have not spread into the underlying tissues.

Stage I (1): This may be a relatively small, self contained tumour or a larger tumour that has spread within one lung.

Stage II (2): Includes tumours that have spread to the chest wall.

Stage IIIa (3a): The tumour has spread to the chest wall or diaphragm near the lung. Cancer cells have spread to lymph nodes on the same side of the mediastinum.

Stage IIIb (3b): The cancer is close to or involving the trachea or major blood vessels, or has spread to lymph nodes in the neck or to the other side of the mediastinum.

Stage IV (4): The defining feature of Stage IV lung cancer is that cancer cells have spread to distant parts of the body and metastasised (formed secondary tumours).

Small cell carcinoma is staged in the following way:

Limited stage: Cancer is found in one lung and nearby lymph nodes.

Extensive stage: The cancer has spread beyond the lung of origin to the opposite lung or to distant organs.

Recurrent: Cancer returns after it has been treated.

Treatment

The main treatments for lung cancer are surgery, radiotherapy (x-ray treatment) and chemotherapy (drug treatment). The choice of treatment will depend on whether the cancer has spread beyond the lung, whether your lungs are functioning properly and your general health. The aim of treatment is to keep you as well and symptom free as possible, even if your cancer cannot be cured.

Surgery

If your cancer has not spread beyond the lungs, your health (apart from the cancer) is reasonably good and your breathing capacity is sufficient, the treatment that gives the best chance of cure is surgical resection.
The most common operation, called a lobectomy, removes the affected part of the lung. Occasionally, the whole lung needs to be removed and this is called a pneumonectomy.
In patients with reduced breathing, smaller parts of the lung are removed to try to preserve breathing capacity. While these operations preserve breathing capacity, there is more likely to be a recurrence. You doctor will advise you which procedure is best for you.

After the operation

You will have an intravenous drip for a couple of days until you can eat and drink again.
There will be one of two tubes in your chest to drain fluid or air away: this is temporary.
Regular x-rays will be done to make sure your lung or lungs are working properly.
You will have some pain after the operation. This may last for weeks or longer. Let your doctor or nurses know when you need relief from pain and they will provide painkilling drugs. There is no need to 'suffer in silence'.
You will probably go home five to 10 days after the operation. You will receive advice about managing at home from your doctor, nurses and physiotherapist.
Recovery can take many weeks for some people; however you may recover more quickly than this.
Exercise will help you to recover. To begin with, you will do breathing exercises and leg exercises; later, walking or swimming will improve your strength and fitness. Your doctor or physiotherapist will recommend the best exercises for you, and tell you when it is safe for you to begin more vigorous exercise.
If your breathing was not affected before the operation, you will probably find that you can breathe normally, even though you have had a lung or part of a lung removed. People who had breathing difficulties before the operation may find that they are more breathless afterwards.

Chemotherapy

Chemotherapy is the treatment of cancer using anti-cancer (cytotoxic) drugs. The aim is to kill cancer cells while doing the least possible damage to normal cells. The drugs work by stopping cancer cells from dividing and multiplying.
Chemotherapy is the treatment of choice for patients with small cell lung cancer. As this type of cancer spreads quickly, it is very sensitive to chemotherapy. Unfortunately, although the initial response is usually good, the tumour may recur in a resistant form and only a small number can be considered to be cured.

Side effects of chemotherapy

Some drugs used in chemotherapy can cause side effects. They may include feeling sick, vomiting, depression, feeling off-colour and tired, and some thinning or loss of hair from your body and head. These side effects are temporary, and steps can be taken to prevent or reduce them.

Radiotherapy

Radiotherapy treats cancer by using x-rays to kill cancer cells. These x-rays can be precisely targeted onto cancer sites in your body. Treatment is carefully planned to do as little harm as possible to your normal body tissues. Lung function will be damaged if the radiotherapy has to be directed at the lung, and lung function tests will be needed to assess this.
In order to make certain that exactly the same area is treated each time, the radiation

therapist will make a number of marks on your skin. These marks will consist of lines, crosses and dots applied with special inks. Sometimes these non-permanent marks will need to be redone during the course of the treatment. Radiotherapy may be used to cure some early lung cancers. It may be used to contain cancer that has spread to the lymph nodes.
When lung cancer cannot be cured, radiotherapy can be used to relieve pain and other symptoms, for example pain caused by metastases in the bones or brain. Treatment that is used to relieve symptoms of disease without attempting to cure disease is called palliative treatment.

Side effects of radiotherapy

Radiotherapy can cause temporary side effects including nausea, which can be helped by medication, loss of appetite and tiredness. Skin in the treatment area may become red and sore after two or three weeks of treatment. From the start of your treatment, you will need to take care washing and avoid shaving the area or wearing clothing that rubs. Check with your doctor or nurse before using any talcs and lotions. Ask a member of your radiotherapy treatment team for a cream to ease the burning sensation.

Prognosis

As in most type of cancer, the results of treatment are best when the cancer is detected and treated early. People operated on in the early stages of lung cancer have a very good chance of cure.
In many people, lung cancer is not discovered while it can still be operated upon. In people with advanced cancer, palliative treatment with radiotherapy can effectively treat many symptoms.
People who continue to smoke after lung cancer treatment are at risk of further disease. If you need help quitting smoking, speak to your doctor or nurses or contact The Resource and Wellness Centre at 03 2698 7300 or email contact@cancer.org.my
You will need to discuss your prognosis with your doctor. Your medical history is unique, so you will need to discuss with someone who knows your medical history what you can expect and the treatment options best for you.

Palliative treatment

Palliative treatment is treatment that relieves or soothes pain and other distressing symptoms of illness. Palliative care is available for people who experience pain and distress associated with cancer, whatever their stage of cancer treatment. It is a particularly important type of treatment for people with advanced cancer, who cannot be cured but can expect to live without undue pain and distress.
Palliative care includes pain relief using painkilling drugs and other measures including radiotherapy and chemotherapy. Pain is usually well controlled with oral medication and there is no need to fear developing drug dependency.
Sometimes fluids build up in the chest because of the spread of the cancer. This can be removed and the space between the lung and the chest wall closed, with an injection of a chemical.
If an airway becomes blocked by a tumour growing in it or by pressure from outside the airway, this can be relieved. A tumour in an airway can be removed using a laser and bronchoscopy; a stent can relieve external pressure on an airway.
Sometimes, people develop blood in the sputum (haemoptysis). This may be controlled by laser bronchoscopy or radiotherapy, or by blocking the artery to the affected area.
General practitioners, specialists and specialist palliative care teams in hospital play important roles in palliative treatment for people with early and advanced cancer.

Making decisions about treatment

Sometimes it is difficult to make decisions about what is the right treatment for you. You may feel that everything is happening so fast that you do not have time to think things through. Some people find that waiting for test results and for treatment to begin is very difficult. While some people feel that are overwhelmed with information, others may feel that they do not have enough. You need to make sure that you understand enough about your illness, the

possible treatment and side effects to make you own decisions.
If you are offered a choice of treatments, you will need to weigh up the advantages and disadvantage of each treatment. If only one type of treatment is recommended, ask your doctor to explain why other treatment choices have not been advised.
Some people with more advanced cancer will always choose treatment; even it only offers a small chance of cure. Others want to make sure that the benefits of treatment outweigh any side effects. Still others will choose the treatment they consider offers them the best quality of life. Some may choose not to have treatment by to have any symptoms managed as they arise in order to maintain the best possible quality of life.

Talking with doctors

You may want to see your doctor a few times before making a final decision on treatment. The first consultation when you are told you have cancer is usually stressful and you may not remember very much. It is often difficult to take everything in, and you may need to ask the same questions more than once. You always have the right to find out what a suggested treatment means for you, and the right to accept or refuse it.

Talking with others

Once you have discussed the treatment options with your doctor, you may want to talk them over with family or friends, with nursing staff, the hospital social worker, or your own religious or spiritual adviser. Talking it over can help to sort out what course of action is right for you.

A second option

You may want to ask for a second opinion from another specialist. This is understandable and can be a valuable part of your decision-making process. Your specialist or local doctor can refer you to another specialist and you can ask for your records to be sent to the second-opinion doctor. You can still ask for a second opinion even if you have already started treatment or still ant to be treated by your first doctor.

Taking part in a clinical trial

You doctor may suggest that you consider taking part in a clinical trial. Clinical trials are an essential part of the search to find better treatments for cancer. Doctors conduct clinical trials to test new or modified treatments and see if they are better than existing treatments. Clinical trials can include small or large groups of people. Many people all over the world have taken part in clinical trials that have resulted in improvements to cancer treatment. However the decision to take part in a clinical trial is always yours.
If your doctor asks you to take part in a clinical trial, make sure that you fully understand the reasons for the trial and what it means for you. Before deciding whether or not to join the trial, you may wish to ask you doctor:

1. What treatments are being tested and why?

2. What tests are involved?

3. What are the possible risks or side effects?

4. How long will the trial last?

5. Will I need to go into hospital for treatment?

6. What will I do if any problems occur while I am in the trial?

Ask for a second opinion from an independent specialist if you are unsure about joining the trial. If you decide to join a randomised clinical trial, you will be given either the best existing treatment or a promising new treatment. You will be chosen at random to receive one

treatment or the other, but it will always be at least the best treatment available.
If you do join a clinical trial, you have the right to withdraw at any time. Doing so will not jeopardise your treatment for cancer.
It is always your decision to take part in a clinical trial. If you do not want to take part, your doctor will discuss the best current treatment choices with you.

Recovery and follow-up care

After the completion of your treatment, you may need to have regular checkups. Your doctor will decide how often you will need check ups as everyone is different. Checkups will gradually become less frequent if you have no further problems.
If the disease flares up, or relapses, you may need further treatment. The treatment used for the relapse is often different from the first treatment.

Is any research being done?

A great deal of research is being done on the causes and prevention of cancers and on identifying people who are susceptible and at risk of developing cancer. Researchers are also looking for indicators that will show which patients are at significant risk of developing further cancer so they can be carefully monitored or take preventative chemotherapy.
There is evidence that the survival of lung cancer patients is slowly improving. Recent studies have shown that for some patients, combinations of treatments are more effective than single treatments. There are more sensitive tests for detecting spread of disease, such as PET scanning, which enable better selection of appropriate treatments for individual patients.
Promising new chemotherapy drugs appear to be more effective, with fewer side effects. Trials are also testing the effectiveness of chemotherapy combined with radiotherapy.
In the future, we hope to be able to stimulate the natural defences of the body against cancer and target gene therapy to control or destroy cancer.

Seeking Support **Seeking Support**

When you are first diagnosed with cancer, you may feel a variety of emotions, such as fear, sadness, depression, anger or frustration. It may be helpful to talk about your feelings with your partner, family members or friends, or with a hospital counsellor, social worker, psychologist or your religious or spiritual adviser.

Sometimes you may find that your friends and family do not know what to say to you: Some people may feel so uncomfortable that they avoid you. They may expect you to 'lead the way' and tell them what you need. This can be very difficult to bear and can make you feel very lonely. You may feel able to approach your friends directly and tell them what you need. You may prefer to ask a close family member or a friend to talk with other people for you.

Diet

A balanced, nutritious diet will help you to keep as well as possible and cope with the cancer and any side effects of treatment. Depending on the kind of treatment you have had, you may have special dietary needs. A dietician can help to plan the best foods for your particular situation – ones that you find tempting, easy to eat and nutritious. The Resource and Wellness Centre have a resident dietician. Call (03) 2698 7300 for an appointment or email contact@cancer.org.my

Exercise

You will probably find it helpful to stay active and to exercise regularly if you can. The amount and type of exercise you do will depend upon what you are used to and how well you feel. Discuss with your doctor what is likely to be best for you.

Relaxation techniques

Some people find relaxation or meditation helps them to feel better. The hospital social worker or nurse will know whether the hospital runs any programs, or may be able to advise you on local community programs. The Resource and Wellness Centre have relaxation and meditation classes each week. Call (03) 2698 7300 for further information.

Sexuality and cancer

We are all sexual beings and intimacy adds to the quality of our lives. Cancer treatment and the psychological effects of cancer may affect you and your partner in different ways.

Some people may withdraw through feelings of being unable to cope with the effects of chemotherapy and radiotherapy on themselves on their partner. Others may feel an increased need for sexual and intimate contact for reassurance.

Communication is essential in addressing any concerns or problems that may arise. Talk about your feelings with your partner. Try different positions and practices to find out what feels right and is satisfactory for both of you. If you have difficulties in continuing with your usual sexual activities, discuss this with your doctor or with a trained counsellor so that you may obtain the best advice.

Cancer support groups

Cancer support groups offer mutual support and information to people with cancer and, often, to their families. It can help to talk with others who have gone through the same experience. Support groups can also offer many practical suggestions and ways of coping. Your hospital may run special cancer support groups: check with your doctor, nurse or social worker, or contact the Resource and Wellness Centre.

Caring for someone with cancer

Caring for someone with cancer can be very stressful, particularly when it is someone you care about very much. Look after yourself during this time. Give yourself some time out, and share your worries and concerns with someone outside.

You may have to make many decisions. You will probably have to attend many appointments with doctors, support services and hospitals. Many people have found it helpful to take with them another member of the family or a close friend. It also helps to write down questions beforehand, and to take notes during the appointment.

Cancer support group membership is generally open to patients and carers. A support group can offer the chance to share experiences and ways of coping.

Information Checklist

You may find the following checklist helpful when thinking about the questions you may want to ask your doctor about your cancer and treatment.

1. What type of cancer do I have?
2. How extensive is my cancer? (How much cancer is there?)
3. What treatment do you advise for my cancer and why?
4. Will a doctor who specialises in lung cancer perform my treatment?
5. Are all modern investigations and treatments for my type of cancer available in this hospital?
6. Will my case be discussed with specialists from other disciplines? If so, who?
7. Is there other treatment choices for me? If not, why not?
8. Are there any clinical trials of new treatments that I should know about?
9. What are the risks and possible side effects of each treatment?
10. Will I have to stay in hospital, or will I be treated as an outpatient?
11. How long will the treatment take? How much will it affect what I can do? How much will it cost?
12. Will I have a lot of pain with the treatment? What will be done about this?
13. If I need further treatment, what will it be like and when will it begin?
14. Will the treatment affect my sexual relationship?
15. How frequent will me checkups be and what will they involve?
16. Are there any problems I should watch out for?
17. I would like to have a second opinion. Can you refer me to someone else?
18. Is my cancer hereditary?

If there are answers you do not understand, feel comfortable to ask, “Can you explain that again?” or “I am not sure what you mean by…”

Other questions and notes
It can be useful to jot down any other points you may want to discuss with your doctors.

GLOSSARY

Abdomen
The parts of the body between the chest and the hips, which contains the stomach, liver, intestines, bladder and kidneys.

Adenocarcinoma
A type of lung cancer which starts in the bronchial glands which are found in the mucous membrane lining the airways

Advanced cancer

Cancer that has metastasized and/or is unlikely to be cured.

Alveoli
The tiny air sacs in the lungs; an adult has about 300 million. When air is breathed in, it goes via the airways to the alveoli, where oxygen is taken from them into the bloodstream.

Anaesthetic
A drug that is taken to stop a person feeling pain during a medical procedure. A local anaesthetic numbs only part of the body; a general anaesthetic causes a person to lose consciousness for a period of time.

Asbestosis
A slowly progressing lung disease caused by asbestos. It is not a cancer.

Benign
Not cancerous. Benign cells are not able to spread like cancer cells.

Biopsy
The removal of a small sample of tissue from the body, for examination under a microscope, to help diagnose a disease.

Bronchi/bronchioles

Bronchi are the larger tubes that carry air in the lungs. Bronchioles are the tiny tubes that carry air to the outer parts of the lungs.

Bronchoscopy
An examination in which a tube is passed through the nose or the mouth into the lungs so that they can be examined for disease and some tissue sampled, if necessary.

Carcinoma
A cancer that arises in the tissue that lines the skin and internal organs of the body.

Cells
The ‘building blocks” of the body. A human is made of millions of cells, which are adapted for different functions. Cells are able to reproduce themselves exactly, unless they are abnormal or damaged, as are cancer cells.

Chemotherapy
The use of special (cytotoxic) drugs to treat cancer by killing cancer cells or slowing their growth.

Chest cavity
The area enclosed by the ribs, above the diaphragm.

Computerized topography
The technique for constructing pictures from cross sections of the body, by x-raying from many different angles the part of the body to be examined.

Diaphragm
A dome like sheet of muscle that divides the chest cavity from the abdomen. It is used in breathing.

Emphysema
A condition in which the alveoli of the lungs are enlarged and damaged, which reduces the lung's surface area, causing breathing difficulties.

Fine needle aspiration
A procedure in which a fine needle is used to suck up a few cells from a tumour, for a biopsy.

Large cell carcinoma
A type of lung cancer which usually develops in the airways and is characterized by large rounded cells.