

# Liver Cancer

J A S C A P

JEET ASSOCIATION FOR SUPPORT TO CANCER PATIENTS MUMBAI,  
INDIA

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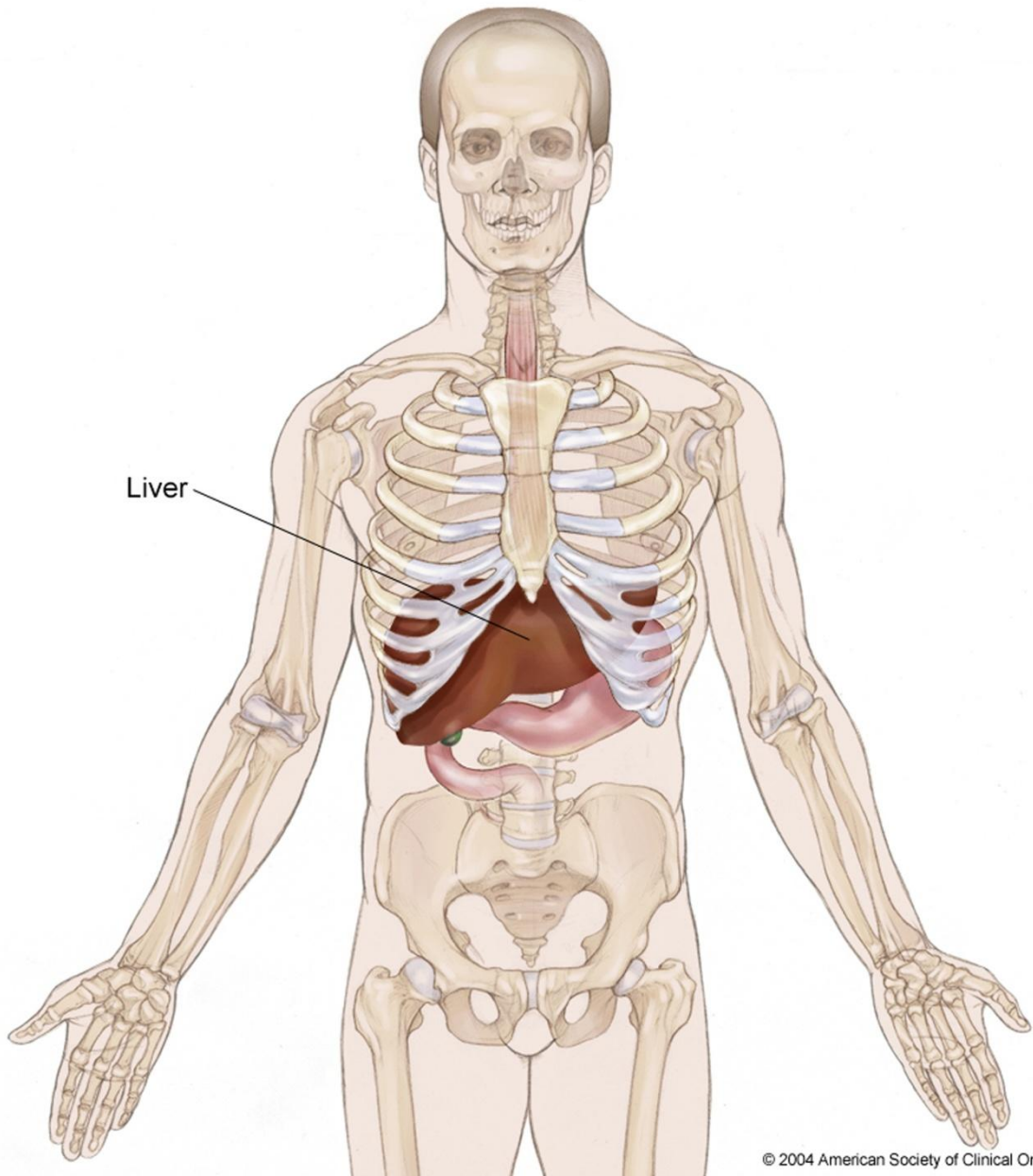
JASCAP is a charitable trust that provides information on various aspects of cancer. This can help the patient and his family to understand the disease and its treatment and thus cope with it better.

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**Donation suggested Rs.25.00**

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## Anatomy of Liver

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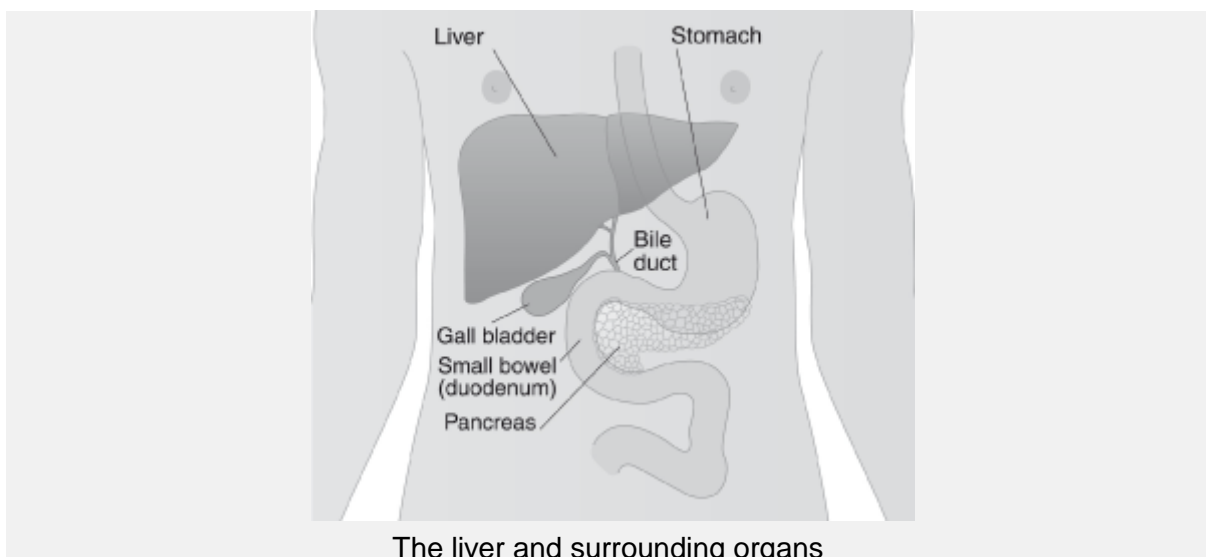
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# About primary liver cancer

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## The liver

The liver is the largest organ in the body. It is surrounded by a fibrous capsule and is divided into two lobes – left and right. It is in the upper part of the abdomen on the right-hand side of the body and is surrounded and protected from injury by the lower ribs.



The liver and surrounding organs

The liver is an extremely important organ that has many functions. These include regulating sugars and fats in the body so that they can be used for energy. It also produces proteins that circulate in the blood. Some of the proteins help the blood to clot and prevent excessive bleeding, while others are essential for maintaining the balance of fluid in the body. The liver also destroys harmful substances such as alcohol and drugs, and also gets rid of waste products. It does this by breaking down substances not used by the body so that they can be passed out in the urine or stools (bowel motions).

The liver stores glucose and vitamins so that they can be used by the body when needed. It also produces bile, which breaks down the fats in food so that they can be absorbed by the bowel (intestine).

The liver is connected to the first part of the small intestine (duodenum) by a tube called the bile duct. This duct takes the bile produced by the liver to the intestine.

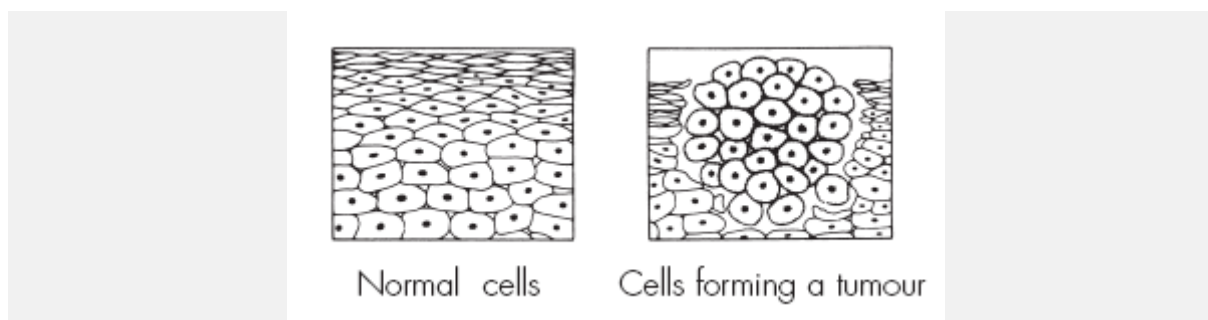
The liver is very good at repairing itself. It can function normally with only a small part of it in working order.

## What is cancer?

The organs and tissues of the body are made up of tiny building blocks called cells. Cancer is a disease of these cells.

Cells in different parts of the body may look and work differently but most reproduce themselves in the same way. Cells are constantly becoming old and dying, and new cells are produced to replace them. Normally, cells divide in an orderly and controlled manner. If for

some reason the process gets out of control, the cells carry on dividing, developing into a lump which is called a tumour.



Tumours can be either benign or malignant. Cancer is the name given to a malignant tumour. Doctors can tell if a tumour is benign or malignant by examining a small sample of cells under a microscope. This is called a biopsy.

In a benign tumour the cells do not spread to other parts of the body and so are not cancerous. However, if they continue to grow at the original site, they may cause a problem by pressing on the surrounding organs.

A malignant tumour consists of cancer cells that have the ability to spread beyond the original area. If the tumour is left untreated, it may spread into and destroy surrounding tissue. Sometimes cells break away from the original (primary) cancer. They may spread to other organs in the body through the bloodstream or lymphatic system.

The lymphatic system is part of the immune system - the body's natural defence against infection and disease. It is a complex system made up of organs, such as bone marrow, the thymus, the spleen, and lymph nodes. The lymph nodes (or glands) throughout the body are connected by a network of tiny lymphatic ducts.

When the cancer cells reach a new area they may go on dividing and form a new tumour. This is known as a secondary cancer or metastasis.

It is important to realise that cancer is not a single disease with a single type of treatment. There are more than 200 different kinds of cancer, each with its own name and treatment.

## Types of cancer

### Carcinomas

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The majority of cancers, about 85% (85 in a 100), are carcinomas. They start in the epithelium, which is the covering (or lining) of organs and of the body (the skin). The common forms of breast, lung, prostate and bowel cancer are all carcinomas.

Carcinomas are named after the type of epithelial cell that they started in and the part of the body that is affected. There are four different types of epithelial cells:

- squamous cells - that line different parts of the body, such as the mouth, gullet (oesophagus), and the airways

- adeno cells - form the lining of all the glands in the body and can be found in organs such as the stomach, ovaries, kidneys and prostate
- transitional cells - are only found in the lining of the bladder and parts of the urinary system
- basal cells - that are found in one of the layers of the skin.

A cancer that starts in squamous cells is called a squamous cell carcinoma. A cancer that starts in glandular cells is called an adenocarcinoma. Cancers that start in transitional cells are transitional cell carcinomas, and those that start in basal cells are basal cell carcinomas.

## Leukaemias and lymphomas

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These occur in the tissues where white blood cells (which fight infection in the body) are formed, i.e. the bone marrow and lymphatic system. Leukaemia and lymphoma are quite rare and make up about 6.5% (6.5 in 100) of all cancers.

## Sarcomas

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Sarcomas are very rare. They are a group of cancers that form in the connective or supportive tissues of the body such as muscle, bone and fatty tissue. They account for less than 1% (1 in 100) of cancers.

Sarcomas are split into two main types:

- bone sarcomas - that are found in the bones
- soft tissue sarcomas - that develop in the other supportive tissues of the body.

## Others forms of cancer

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Brain tumours and other very rare forms of cancer make up the remainder of cancers.

## Causes of primary liver cancer

The exact cause of primary liver cancer isn't known. Like other cancers, it isn't infectious and can't be passed on to other people.

Some factors may slightly increase a person's risk of developing primary liver cancer and these are described here.

## Cirrhosis

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This is scarring throughout the liver which can be due to a variety of causes. These include infection, heavy alcohol drinking over a long period of time, and a few rare conditions, such as haemochromatosis and primary biliary cirrhosis. Cirrhosis of the liver increases the risk of developing hepatocellular carcinoma (HCC), and the risk varies depending on the cause of the cirrhosis. However, only a small number of people with cirrhosis of the liver develop primary liver cancer.

## Infection

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Infection with either the hepatitis B or hepatitis C virus can lead to liver cancer and can also cause cirrhosis, which increases the risk of HCC. People with hepatitis B or C should avoid excessive amounts of alcohol, as this can further increase their risk of primary liver cancer.

## Inherited medical conditions

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Primary liver cancer is not caused by an inherited faulty gene, and so members of your family are highly unlikely to be at an increased risk of developing it because you have it.

However, people who have an inherited condition, such as haemochromatosis (which causes excess deposits of iron in the body), or tyrosinaemia, (where people have too much of an amino acid called tyrosine in their blood), have a higher chance of developing cirrhosis and HCC.

## Aflatoxin

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In Africa and Asia a poison called aflatoxin is a major cause of HCC. The poison is found in mouldy peanuts, wheat, soya and grain.

## Other risk factors

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People who take anabolic steroids over a long period of time have a slightly increased risk of developing primary liver cancer. Anabolic steroids are mainly used by body-builders as they can increase muscle bulk.

## Types of primary liver cancer

Primary liver cancer is quite rare in the UK and the rest of the Western world, but the number of people developing it is increasing. Around 2,800 people in the UK are diagnosed with this type of cancer each year. In other parts of the world, such as some parts of Africa and Asia, it's one of the most common cancers. It is twice as common in men as in women.

There are different types of primary liver cancer. They are usually named after the types of cells from which it is thought the cancer has developed. Knowing the exact type of cancer helps the doctors to decide on the most appropriate treatment.

## Hepatocellular carcinoma (HCC)

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Hepatocellular carcinoma (HCC) is the main type of primary liver cancer and approximately 85 out of every 100 (85%) primary liver cancers are this type. It's sometimes known as hepatoma and arises in the main cells of the liver called hepatocytes. HCC is usually confined to the liver, although occasionally it spreads to other organs. It's more common in men and occurs mostly in people with a type of liver disease called cirrhosis.

There is a rarer sub-type of HCC called fibrolamellar HCC, which usually occurs in younger women and isn't related to previous liver disease.



## Cholangiocarcinoma

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This type of cancer starts in the cells that line the bile duct and is sometimes called bile duct cancer . Cholangiocarcinoma is more common in women.

## Rarer types of liver cancer

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There are two rare types of primary liver cancer:

- Angiosarcomas are very rare. They develop in the blood vessels of the liver and are sometimes known as haemangiosarcomas . They tend to occur in people over 70.
- Hepatoblastomas are very rare and usually affect young children under three.

The information here is about hepatocellular carcinoma. You may find our section on bile duct cancer (cholangiocarcinoma) useful. We also have information available about the rarer types of primary liver cancer.

## Benign liver tumours

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Some primary tumours in the liver are non-cancerous (benign) and don't spread to other parts of the body. They are usually small and may cause no symptoms. They are often discovered by chance during operations or investigations for other conditions. Unless they are causing symptoms they don't usually need to be removed. Benign liver tumours do not turn into cancer.

# Symptoms and diagnosis

## Symptoms of primary liver cancer

In the early stages of primary liver cancer there are often no symptoms, or symptoms may be vague. If you have any symptoms that could be caused by liver cancer it's important to have them checked by your GP, but remember they are common to many other conditions and most people with these symptoms won't have cancer.

## Jaundice

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Jaundice can occur if the liver isn't working properly because of cancer or an underlying disease such as cirrhosis. It can also happen if the bile duct becomes blocked by cancer, which causes bile produced by the liver to flow back into the bloodstream. Jaundice makes the skin and the whites of the eyes go yellow and may make the skin very itchy. Other signs of jaundice are dark-coloured urine and pale stools (bowel motions).

## Ascites

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Sometimes fluid builds up in the abdomen and causes swelling known as ascites . There may be several possible reasons for this:

- If the liver is affected by cancer cells, this can cause an increase in pressure in the veins that lead into the liver and sometimes the main veins

can become blocked by a clot (thrombosis). Fluid from the abdomen can't pass quickly enough through the liver, so it starts to collect in the abdomen.

- If the liver is damaged, it may produce less blood protein. This can upset the body's fluid balance, which causes fluid to build up in the body tissues, including the abdomen.
- Cancer cells may block the lymphatic system. The lymphatic system is a network of fine channels that runs throughout the body. One of its functions is to drain excess fluid, which is eventually passed out of the body in the urine. If some of these channels are blocked, the system can't drain efficiently and fluid may build up.
- If cancer cells have spread to the lining of the abdomen, they can irritate it and cause fluid to build up.

If ascites develops, a tube can be put into the abdomen to drain the fluid away.

Whatever the cause, jaundice or ascites will always indicate a condition that needs medical attention and should not be ignored. Always have these symptoms checked by your GP.

## Pain

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People sometimes notice a vague discomfort in the upper abdomen, which may become painful. This is due to enlargement of the liver. Pain can sometimes also be felt in the right shoulder. This is known as referred pain and is due to the enlarged liver stimulating the nerves beneath the diaphragm (the sheet of muscle under the lungs) which are connected to nerves in the right shoulder.

## Other symptoms

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Vague symptoms that might occur include:

- loss of appetite
- weight loss
- feeling sick (nausea)
- weakness and tiredness (lethargy).

Some people may also develop a high temperature and feel shivery.

## Diagnosing primary liver cancer

Usually, you begin by seeing your family doctor (GP) who will examine you and arrange any tests that may be necessary. Your doctor may arrange some blood tests to check your general health.

If your GP isn't sure what the problem is, or thinks that cancer may be present, you will be referred to hospital for specialist advice. If your GP suspects that you might have a cancer you should be seen at the hospital within two weeks.

## At the hospital

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The specialist will ask you about your symptoms and your general health. You'll also be asked if you have any other health problems. The doctor will examine you by feeling your

abdomen (tummy area). You may have a blood test and a chest x-ray to check your general health.

Several tests may be used to diagnose primary liver cancer. The tests may also show the stage of the cancer – whether or not it has spread to other parts of the body. These tests help your doctor to know the best way to treat the cancer. It can help to have a friend or relative with you when you go for any tests or to get your results.

## Blood tests

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As well as blood tests to check your general health you will have other blood tests, known as liver function tests (LFTs) to see how well your liver is working.

Another blood test checks the amount of a chemical called alpha-fetoprotein (AFP) in your blood. The amount of AFP in the blood can be higher than normal in people with hepatocellular cancer – HCC. The doctors may monitor the level of AFP before and after treatment of HCC as it can show how well treatment is working.

## Liver ultrasound scan

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A liver ultrasound scan uses sound waves to make up a picture of the liver. It's done in the hospital scanning department. You'll be asked not to eat anything for at least four hours before your appointment.

Once you are lying comfortably on your back, a gel is spread onto your abdomen. A small device like a microphone, which produces sound waves, is passed over the area. The sound waves are then converted into a picture by a computer.

This is a painless test and only takes a few minutes.

## Abdominal CT (Computerized tomography) scan

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A CT scan takes a series of x-rays of the abdomen which build up a three-dimensional picture of the inside of the body. It can be used to show the size and position of a cancer, and whether it has begun to spread.

The scan is painless and takes 10–30 minutes. CT scans use a small amount of radiation, which will be very unlikely to harm you and won't harm anyone you come into contact with.

Before the scan you'll be asked to drink a special liquid which shows up on x-ray and ensures that a clear picture is obtained. Once you are lying in a comfortable position, the scan will be taken. About halfway through the scan, a special dye may be injected into one of your veins to show up the blood vessels in the liver. For a few minutes, this may make you feel hot all over. If you are allergic to iodine or have asthma you could have a serious reaction to the injection, so it's important to let your doctor know beforehand.

You will probably be able to go home shortly after the scan is over.

## MRI (magnetic resonance imaging) scan

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This test is similar to a CT scan but uses magnetism instead of x-rays to build up a detailed picture of areas of your body.

Before the scan you may be asked to complete and sign a checklist. This is to make sure that it's safe for you to have an MRI scan (because the scanner is a powerful magnet). The checklist asks about any metal implants you may have, for example a pacemaker, surgical clips, bone pins etc. You should also tell your doctor if you have ever worked with metal or in the metal industry (as very tiny fragments of metal can sometimes lodge in the body). If you do have any metal in your body it's likely that you won't be able to have an MRI scan. In this situation another type of scan can be used.

Before having the scan, you'll be asked to remove any metal belongings including jewellery. Some people are given an injection of dye into a vein in the arm, which doesn't usually cause discomfort. This is called a contrast medium and can help the images from the scan to show up more clearly. During the test you will be asked to lie very still on a couch inside a long cylinder (tube) for about 30 minutes. It is painless but can be slightly uncomfortable, and some people feel a bit claustrophobic during the scan. It's also noisy, but you'll be given earplugs or headphones. You will be able to hear, and speak to, the person operating the scanner.

## Liver biopsy

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The only way to be sure of the diagnosis is to take some cells or a small piece of tissue from the affected area to look at under a microscope. This is called a biopsy. A biopsy isn't always done and sometimes the diagnosis is confirmed after an operation to remove the tumour.

After the area has been numbed using a local anaesthetic injection, a fine needle is passed into the tumour through the skin. CT or ultrasound may be used at the same time, to make sure that the biopsy is taken from the right place.

You will need to stay in hospital for a couple of hours after a liver biopsy, and possibly overnight. This is because there is a risk of bleeding afterwards.

If your cancer hasn't already spread, and if there is a chance your tumour can be removed, you may not have a biopsy. This is because there is a small risk that the cancer can spread along the pathway of the needle when the biopsy needle is removed.

## Laparoscopy

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A laparoscopy is a small operation that allows the doctors to look at the liver and other internal organs in the area. It's done under a general anaesthetic and will mean a short stay in hospital. While you are under anaesthetic the doctor will make a small cut (incision) in the front of your abdomen and insert a thin tube containing a light and a camera (laparoscope). Using the laparoscope, the doctor is able to look at the liver and can take a small sample (biopsy) for examination under a microscope.

During the operation, carbon dioxide gas is passed into the abdominal cavity and this can cause uncomfortable wind and/or shoulder pains for several days. The pain is often eased by walking about or taking sips of peppermint water. After the laparoscopy you will have one or two stitches in your abdomen.

It will probably take several days for the results of your tests to be ready and a follow-up appointment will be made for you. Obviously this waiting period can be an anxious time. It will probably help if you can talk things over with a relative or friend. You can also contact one of our listed support organisations or call one of our cancer support specialists .

## Further tests for primary liver cancer

If the tests described in the diagnosing primary liver cancer section show that you have primary liver cancer your doctor may need to do some further tests. These will tell the doctor more about the cancer and show whether it has begun to spread.

### Hepatic angiogram

This test allows the doctors to see how the tumour is affecting the main blood vessels around the liver. A fine tube is inserted into an artery in your groin and a dye is injected through the tube. The dye circulates in the arteries to make them show up on x-ray. An angiogram is carried out in a room within the x-ray department.

Sometimes an MRI scan can be used to show up the blood vessels of the liver (which means that an angiogram will not be necessary).

## Staging of primary liver cancer

The stage of a cancer is a term used to describe its size and whether it has spread beyond its original site. Once your doctor knows the type and stage of the cancer they can decide on the most appropriate treatment for you.

Generally, primary liver cancer is divided into four stages: small and localised (stage one); spread into surrounding structures (stages two or three); or spread into other parts of the body (stage four). If the cancer has spread to distant parts of the body this is known as secondary cancer (or metastatic cancer).

A commonly used staging system is

- Stage 1 The cancer is no bigger than 2cm in size and hasn't begun to spread to the blood vessels of the liver, nearby lymph nodes or other parts of the body.
- Stage 2 The cancer hasn't begun to spread to the lymph nodes or other parts of the body, but is bigger than 2cm in size, or the cancer is affecting the blood vessels in the liver, or there are multiple tumours in one of the lobes of the liver – each tumour is no bigger than 2cm in size.
- Stage 3 This stage is divided in two:
- Stage 3A The cancer is affecting the blood vessels in the liver but hasn't spread to lymph nodes or other parts of the body. Or the tumour is bigger than 2cm in size, or there are multiple tumours in one lobe of the liver.

- Stage 3B The tumour can be of any size and the blood vessels of the liver may or may not be affected, but the cancer has spread to nearby lymph nodes.
- Stage 4 The cancer has spread to parts of the body further away from the liver, such as the lungs.

If the cancer comes back after initial treatment this is known as recurrent cancer.

## TNM staging system

Another staging system known as the TNM system is also used. This can give more precise information about the extent of the cancer.

- T describes the size of the tumour .
- N describes whether the cancer has spread to the lymph nodes .
- M describes whether the cancer has spread to another part of the body (secondary or metastatic cancer).

Your specialist can tell you more about the TNM system. However, it is more common for doctors to talk about primary liver cancer in terms of stages 1 to 4.

# Treating primary liver cancer

## Treatment overview for primary liver cancer

The type of treatment you are offered will depend on the type of liver cancer you have, the stage of the cancer , its size and your general health.

The main treatments used to treat primary liver cancer are surgery , and chemotherapy . Other treatments, such as tumour ablation , biological therapy , and radiotherapy may occasionally be used.

## Planning your treatment

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In most hospitals a team of specialists will meet to discuss and agree on the plan of treatment they feel is best for your situation. This multidisciplinary team (MDT) will include:

- a surgeon experienced in liver surgery
- a bowel and liver specialist (gastroenterologist/hepatologist)
- a clinical or medical oncologist (to advise on chemotherapy)
- a radiologist (who analyses x-rays)
- a pathologist (who advises on the type and grade of the cancer, and how far it has spread).

The MDT may also include a number of other healthcare professionals such as a:

- nurse specialist
- symptom control specialist
- dietitian
- physiotherapist
- occupational therapist
- psychologist or counsellor.

The MDT will plan your treatment by taking into consideration a number of factors. This will include your age, general health, the type and size of the tumour, what it looks like under the microscope and whether it has spread beyond the liver (the stage).

## The benefits and disadvantages of treatment

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Many people are frightened at the idea of having cancer treatments, because of the side effects that can occur. Some people ask what would happen if they did not have any treatment.

Although many of the treatments can cause side effects, these can usually be effectively controlled with medicines. Treatment can be given for different reasons, and the potential benefits will vary depending upon each person's situation.

### Early-stage liver cancer

In people with early-stage liver cancer, surgery is often done with the aim of curing the cancer.

### Advanced liver cancer (metastatic)

If the cancer is at a more advanced stage, the treatment may only be able to control it, leading to an improvement in symptoms and a better quality of life. However, for some people, the treatment will have a limited effect upon the cancer and they will get the side effects with little benefit.

## Treatment decisions

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If you have been offered treatment with the aim of curing your cancer, deciding whether to accept the treatment may not be difficult. However, if a cure isn't possible and the treatment is being given to control the cancer for a period of time, it may be more difficult to decide whether to go ahead with treatment.

Making decisions about treatment in these circumstances is always difficult, and you may need to discuss in detail with your cancer specialist the possible treatment options.

## Giving consent

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Before you have any treatment, your doctor will explain its aims to you. They will usually ask you to sign a form saying that you give your permission (consent) for the hospital staff to give you the treatment. No medical treatment can be given without your consent. Before you are asked to sign the form you should have been given full information about:

- the type and extent of the treatment you are advised to have
- the advantages and disadvantages of the treatment
- any other treatments that may be available
- any significant risks or side effects of the treatment.

If you don't understand what you have been told, let the staff know straight away so that they can explain it again. Some cancer treatments are complex, so it's not unusual for people to need repeated explanations.

It's often a good idea to have a friend or relative with you when the treatment is explained. This can help you remember the discussion more fully.

Patients often feel that hospital staff are too busy to answer their questions, but it's important for you to be aware of how the treatment is likely to affect you. The staff should be willing to make time for you to ask questions. You can talk to the liver specialist nurse at the hospital or call our cancer support specialists .

You can always ask for more time to decide about the treatment if you don't feel you can make a decision when it's first explained.

You are also free to choose not to have the treatment. The staff can explain what may happen if you don't have it. It's important to tell a doctor or your nurse if you decide not to have treatment, so that they can record your decision in your medical notes. You don't have to give a reason for not wanting to have treatment, but it can help to let the staff know your concerns so that they can give you the best advice.

## Second opinion

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Usually a number of cancer specialists work together as a team using national treatment guidelines to decide on the most suitable treatment for you. Even so, you may want to have another medical opinion. Either your specialist or your GP should be willing to refer you to another specialist for a second opinion, if you feel it will be helpful. The second opinion may cause a delay in the start of your treatment, so you and your doctor need to be confident that it will give you useful information.

If you do go for a second opinion, it may be a good idea to take a friend or relative with you, and have a list of questions ready. This way you can make sure your concerns are covered.

## Surgery for primary liver cancer

Surgery is the most effective treatment for primary liver cancer, but isn't always possible due to the size and position of the tumour. It's also not possible to operate if the cancer has spread beyond the liver. If the liver is severely damaged by cirrhosis it may not be safe to have surgery. Unfortunately only a small number of people with primary liver cancer will be able to have surgery.

There are different types of surgery, depending on the position and size of the tumour and whether the liver is damaged by cirrhosis. Before any operation it's important to discuss it fully with your doctor so that you understand what it involves.

### Liver resection

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If only certain areas of the liver are affected by cancer and the rest of the liver is healthy, it may be possible to remove the affected part.

This is called a liver resection. If the operation involves the removal of a whole lobe of the liver, it's called a hemi-hepatectomy .



The liver has an amazing ability to repair itself. Even if up to 80% of the liver is removed it will start to re-grow very quickly, and may be back to normal within a few weeks.

## Liver transplant

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It may be possible to remove the whole liver and replace it with a liver from another person – a donor. In the treatment of Hepatocellular carcinoma (HCC) a liver transplant can only be done if you have:

- a single tumour that is between 3–5cm
- a single tumour that is between 5–7cm that hasn't changed in size for six months
- a maximum of five tumours, all smaller than 3cm in size.

Your specialist may suggest a liver transplant if you have cirrhosis of the liver. However, if your cirrhosis is severe you may not be well enough to go through this major operation.

Most liver transplants are taken from people who have died (organ donors). In some situations it may be possible to have a living-donor liver transplant operation. The donor has surgery to remove either the right or the left lobe of their liver, which is immediately transplanted into the patient. This is a newer type of operation and is not available in many hospitals.

Most people with primary liver cancer won't be suitable for a liver transplant. This is because they will not be well enough or because the cancer has already begun to spread beyond the liver. There is also likely to be a wait for a suitable donor to become available, which can take many months. The cancer will continue to grow during this time and you will be given other treatments to control it.

If there is any risk that cancer cells may have spread, a liver transplant won't cure the cancer and usually won't be recommended. After a transplant operation you will need to take drugs so that your body doesn't reject the new liver. These drugs, known as immunosuppressants, dampen down the immune system making it less effective at fighting against any cancer cells. So if the cancer had spread before the surgery you will have gone through a major operation only to have the cancer come back.

Your specialist can discuss if a transplant is suitable for you.

## After your operation

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For about 24 hours after your operation you may be nursed in the intensive care ward or high-dependency unit, until you have fully recovered from the anaesthetic. The liver has a really good blood supply and there is a risk that it may bleed after surgery so the doctors and nurses will keep a very close check on your blood pressure.

## Drips and drains

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You will have a dressing over the operation site on your abdomen, and if necessary one or more drainage tubes will drain fluid and blood from the wound site into drainage bags. The nurses will regularly measure the amount of blood (if any) in these bags. When the drainage has almost stopped, the tube(s) will be removed. This usually takes place after a few days.

You will have a drip (intravenous infusion) going into a vein in your arm to give you fluids and essential nutrients. This will be removed once you're drinking and eating again – usually within 1–2 days.

A small tube called a catheter will be put into your bladder to drain urine into a collecting bag. This will save you having to get up to pass urine. It's usually removed after a few days.

## Pain

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It's normal to have some pain or discomfort after an operation on the liver. You'll be given regular injections of painkillers for several days after the operation to prevent and relieve pain.

## Nausea (sickness)

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Some people feel sick after an operation. You may be given injections of anti-sickness drugs (anti-emetics) to help prevent and relieve this.

## Going home

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Most people are able to go home 6–12 days after their operation and will need painkillers for the next few weeks. It may take up to six weeks before you start getting back to normal.

If you think you might have problems when you go home (for example, if you live alone or have several flights of stairs to climb), let the nurse or social worker know when you are admitted to the ward so that help can be arranged.

Your nurse specialist can offer or arrange support or counselling for you and your family. Social workers are often available to give practical advice. Many are also trained counsellors. If you would like to talk to a social worker you can ask your specialist nurse to arrange it for you.

Before you leave hospital you'll be given an appointment to attend an outpatient clinic for your post-operative check up. This is a good time to discuss any problems you may have. If you have any problems or worries before this time, you can speak with your ward nurses or hospital doctor.

# Chemotherapy for primary liver cancer

Chemotherapy is the use of anti-cancer (cytotoxic) drugs to destroy cancer cells.

Chemotherapy is sometimes used to treat primary liver cancers that can't be removed by surgery, although in adults chemotherapy will not usually cure the cancer. It can help to shrink the tumour and slow its progression, which can help to control symptoms.

Chemotherapy drugs are sometimes given as tablets, or more usually, as injections into a vein (intravenously) or by injection directly into the hepatic artery (the main blood vessel that takes blood to the liver). Chemotherapy can sometimes be given as part of a treatment called chemoembolisation .

There is no standard chemotherapy drug for the treatment of hepatocellular carcinoma. The most commonly used chemotherapy drug is doxorubicin . Other chemotherapy drugs that may be used are:

- cisplatin
- Fluorouracil (5FU)
- gemcitabine (Gemzar®) .

A combination of chemotherapy drugs may be used. Not everyone is suitable for chemotherapy treatment as it can only be given if the liver function is good enough.

## How chemotherapy is given

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Chemotherapy is usually given as a session of treatment called a cycle. Each cycle lasts a few days and is followed by a rest period of a few weeks to allow the body to recover from any side effects of the treatment. The number of cycles you have will depend on the type of liver cancer you have and how well it is responding to the drugs.

Chemotherapy is usually given in the hospital outpatient department or chemotherapy unit. Sometimes the chemotherapy is injected slowly into a vein (intravenously), or it may be given as a drip (infusion) over a few hours. You may need to stay a few days in hospital. Occasionally it is given as a continuous infusion through a small pump that you take home with you. Your doctor or nurse will explain all about your chemotherapy.

A number of research trials are being carried out to try to improve the results of treatment for primary liver cancer. You may be asked to take part in a trial. See our [clinical trials](#) section for more information.

## Side effects

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Chemotherapy can sometimes cause unpleasant side effects, but it can also make you feel better by relieving the symptoms of the cancer. Most people have some side effects, but these can often be well controlled with medicines. The possible side effects are described here, along with some of the ways in which they can be reduced.

### Lowered resistance to infection (neutropenia)

While the chemotherapy is acting on the cancer cells in your body, it also temporarily reduces the number of white blood cells. When there are fewer white blood cells, you're more likely to get an infection. During chemotherapy, your blood will be tested regularly and, if necessary, you'll be given antibiotics to treat any infection.

### Bruising or bleeding (thrombocytopenia)

Chemotherapy can reduce the production of platelets, which help the blood to clot and stop any bleeding. Let your doctor know if you have any unexplained bruising or bleeding, such as nosebleeds, blood spots or rashes on the skin, or bleeding gums.

### Low number of red blood cells (anaemia)

You may become anaemic. This can make you feel tired and breathless. Our section on [coping with fatigue](#) may be helpful.

## Sore mouth

Some chemotherapy drugs can make your mouth sore and cause small ulcers. Regular mouthwashes are important and your nurses will show you how to do these properly. If you don't feel like eating during treatment, you could try replacing some meals with nutritious drinks or a soft diet.

Our section about eating well has some useful tips on coping with eating problems.

## Feeling sick

Some of the drugs may make you feel sick (nauseated) and you may be sick. There are now very effective anti-sickness drugs (anti-emetics) to prevent or greatly reduce nausea and vomiting. Your doctor can prescribe these for you. Let your doctor or nurse know if your anti-sickness drugs aren't helping, as they can change it to a different type. Some anti-emetics can cause constipation. Let your doctor or nurse know if this is a problem.

## Tiredness

You are likely to find that you become very tired and have to take things much more slowly. Just do as much as you feel like and try not to overdo it. Our section on coping with fatigue may be helpful.

## Hair loss

Ask your doctor whether the drugs you are taking are likely to make your hair fall out. Not all drugs cause hair loss. If your hair does fall out, it will start to grow back once your treatment is over.

## Diarrhoea

Some drugs used to treat cancer of the liver can irritate the lining of the digestive system and cause diarrhoea for a few days. Your doctor can give you medicine to slow down the bowel and reduce the diarrhoea. You may also be able to help to control it by eating a low-fibre diet, avoiding wholemeal bread and pasta, raw fruit, cereals and vegetables for a few days after each treatment. There are more tips and recipes in our eating well section.

## Skin

Chemotherapy can affect the skin and nails, causing dryness and flaking. Some drugs make your skin more sensitive to the sun, so it is important to cover up and use a high-factor sun cream (SPF 15 or greater).

## Numbness or tingling in hands or feet

Some chemotherapy drugs can affect the nerves causing numbness and tingling. This is known as peripheral neuropathy. Tell your doctor if you notice these side effects. This problem usually improves slowly a few months after the treatment has finished.

## Your kidneys may be affected

Some chemotherapy drugs can affect the way your kidneys work. Usually this does not cause any symptoms and the effect is normally mild. Rarely, it may cause permanent damage to the kidneys unless the treatment is stopped. Before and after each treatment, your kidneys will be checked by a blood test and you'll be given plenty of fluid through a drip

to keep your kidneys working normally. It is important that you also drink plenty of fluids during and after your treatment. Your urine may also be measured (to check that your kidneys are working properly).

## Changes in hearing

Chemotherapy can cause ringing in the ears (tinnitus) and you may be unable to hear some high-pitched sounds. This usually improves when the treatment is over. Tell your doctor if you notice any loss of hearing or ringing in your ears.

Although these side effects may be hard to bear at the time, they will gradually disappear over a few weeks once your treatment has finished.

## Chemoembolisation

Chemoembolisation treatment aims to get rid of the cancer by giving chemotherapy directly into the affected part of the liver and by cutting off the blood supply to the tumour (a process known as embolisation).

Chemotherapy drugs are injected directly into the tumour in the liver. The chemotherapy drugs will be mixed with a substance called lipiodol that helps the chemotherapy stay in the liver for longer. This makes the treatment more effective.

You will be given a local anaesthetic and possibly a mild sedative to make you feel relaxed. The doctor then puts a fine tube called a catheter into a main blood vessel in your groin (femoral artery). The catheter is passed along the femoral artery until it reaches the main blood vessel that carries blood to the liver (hepatic artery).

The chemotherapy and lipiodol mixture is then injected into the liver through the catheter. Sometimes the doctor will also inject something to block the blood flow to the tumour, such as a gel or some tiny plastic beads. Blocking the blood supply (embolisation) will starve the tumour of oxygen, which can help to destroy it.

Chemoembolisation is carried out in the x-ray department at the hospital. You will usually need to stay in hospital overnight and possibly longer.

The treatment can be repeated several times.

Chemoembolisation is sometimes combined with radiofrequency ablation and your doctor can explain if this would be helpful for you.

Chemoembolisation can cause side effects such as sickness, pain and a raised temperature. You will be given anti-sickness (antiemetic) drugs and painkillers to help control any side effects.

## Tumour ablation for primary liver cancer

Ablation means to destroy. There are two different ways of ablating primary liver tumours, using either alcohol or heat.

## Percutaneous ethanol injection

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This type of treatment is used for tumours less than 5cm (2in) in size. Alcohol (ethanol) is injected through the skin and into the tumour in the liver. The alcohol can destroy the cancer cells. This procedure is usually done in the scanning department so that ultrasound can be used to guide the needle directly into the tumour. You will be given a local anaesthetic. If the tumour grows again, the treatment can be repeated.

Side effects of percutaneous ethanol injection are usually mild and include pain and fever. Let your doctor know if you develop any side effects as they can usually be controlled with medication.

## Radiofrequency ablation (RFA)

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This treatment uses laser light or radio waves to destroy the cancer cells by heating them to a very high temperature. A fine needle is passed through the skin into the tumour in the liver. Powerful laser light or radio waves are then passed through the needle and into the tumour. These heat the cancer cells.

Like percutaneous ethanol injection, radiofrequency ablation is done in the scanning department using ultrasound or CT (computerised tomography) scanning so that the doctor can guide the needle directly into the tumour. You may be given a local anaesthetic or a general anaesthetic.

Side effects of RFA include pain and fever, but they are usually very mild and can be controlled with medicines.

The National Institute for Health and Clinical Excellence (NICE), which advises doctors about treatment, has issued guidance on the use of RFA for primary liver cancer. The guidance states that RFA can be helpful at destroying hepatocellular carcinoma, which may improve survival. The guidance also recommends that RFA is given using ultrasound or CT scanning, and that people having the treatment are cared for by a multidisciplinary team that includes a liver surgeon.

## Biological therapies for primary liver cancer

Biological therapies use substances that are produced naturally in the body, to destroy cancer cells. A biological therapy called sorafenib (Nexavar®) may be used to treat hepatocellular carcinoma.

Sorafenib is a cancer growth inhibitor. In order to grow and divide cancer cells 'communicate' with each other using chemical signals. Cancer growth inhibitors interfere with this process and so affect the cancer's ability to develop.

Sorafenib is a tablet that is usually taken twice a day. Side effects include tiredness, diarrhoea, feeling sick (nausea), high blood pressure and muscle pains.

Although sorafenib is licensed and can be prescribed in the UK, it has not yet been assessed by the National Institute for Health and Clinical Excellence (NICE). NICE gives

advice on which new drugs or treatments should be available on the NHS. As a result, sorafenib may not be widely available on the NHS.

## Radiotherapy for primary liver cancer

Radiotherapy treats cancer by using high-energy rays to destroy the cancer cells, while doing as little harm as possible to normal cells.

Radiotherapy is not often used to treat primary liver cancer because the liver can't tolerate very high doses of radiotherapy. It's sometimes used to treat cholangiocarcinoma, but not usually hepatocellular cancers.

Our section about radiotherapy gives more details about this treatment and its side effects.

## Other treatments for primary liver cancer

The following treatment is still being evaluated as part of research trials. Your cancer specialist will be able to discuss with you whether it may be helpful in your situation, and can refer you to a hospital that carries out this treatment.

### **Cryosurgery or cryotherapy**

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This treatment may be possible if you can't have surgery. A device called a cryoprobe is inserted into the centre of the tumour. Liquid nitrogen is then passed through the probe. This freezes the surrounding area and destroys the cancer cells. The treatment may be done during an operation or a laparoscopy.

Cryotherapy can be painful and you can be given painkillers if you need them. Some people also develop a fever. Let your doctor know if you notice any side effects.

## Research - clinical trials for primary liver cancer

Cancer research trials are carried out to try to find new and better treatments for cancer. Trials that are carried out on patients are known as clinical trials .

Clinical trials may be carried out to:

- test new treatments, such as new chemotherapy drugs, gene therapy or cancer vaccines
- look at new combinations of existing treatments, or change the way they are given, to make them more effective or to reduce side effects
- compare the effectiveness of drugs used to control symptoms
- find out how cancer treatments work
- see which treatments are the most cost-effective.

Trials are the only reliable way to find out if a different operation, type of chemotherapy, radiotherapy, or other treatment is better than what is already available.

## Taking part in a trial

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You may be asked to take part in a treatment research trial. There can be many benefits in doing this. Trials help to improve knowledge about cancer and develop new treatments. You will also be carefully monitored during and after the study. Usually, several hospitals around the country take part in these trials. It is important to bear in mind that some treatments that look promising at first are often later found not to be as good as existing treatments, or to have side effects that outweigh the benefits.

If you decide not to take part in a trial your decision will be respected and you don't have to give a reason. There will be no change in the way that you are treated by the hospital staff and you will be offered the standard treatment for your situation.

## Blood and tumour samples

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Many blood samples and bone marrow or tumour biopsies may be taken to help make the right diagnosis. You may be asked for your permission to use some of your samples for research into cancer. If you are taking part in a trial you may also be asked to give other samples which may be frozen and stored for future use, when new research techniques become available. These samples will have your name removed from them so you can't be identified.

The research may be carried out at the hospital where you are treated, or it may be at another hospital. This type of research takes a long time, and it can be a long time before the results are known. The samples will, however, be used to increase knowledge about the causes of cancer and its treatment. This research will, hopefully, improve the outlook for future patients.

## Current research

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We have information about various clinical trials databases, which you might find useful.

# Living with primary liver cancer

## Follow-up after treatment for primary liver cancer

After your treatment has ended, you may have regular check-ups (which will include a physical examination) and possibly scans or x-rays. These check-ups will probably continue for several years.

The appointments are a good opportunity to discuss with your doctor any worries or problems you may have. However, if you notice any new symptoms or are anxious about anything else between your appointments, you can contact your doctor or nurse for advice. Many people find that they get very anxious for a while before the appointments. This is



normal and it may help to get support from family, friends or a support organisation during this time.

If your treatment is finished apart from regular check-ups, our section on life after cancer treatment gives useful advice on how to keep healthy and adjust to life once the treatment has ended.

## Living with and after primary liver cancer

### Emotional effects

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Information on the emotions you might experience as a result of your cancer diagnosis, ways that you might manage them and other sources of support.

### Relationships and communication

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Advice on how to talk to other people, talking to children, relationships and sexuality.

***Note: JASCAP has booklets on each of the above subjects.***

## Questions you might like to ask your doctor

You can fill this in before you see the doctor or surgeon, and then use it to remind yourself of the questions you want to ask, and the answers you receive.

1. \_\_\_\_\_

Answer \_\_\_\_\_

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2. \_\_\_\_\_

Answer \_\_\_\_\_

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Answer \_\_\_\_\_

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5. \_\_\_\_\_

Answer \_\_\_\_\_

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## **JASCAP : We need your help**

We hope that you found this booklet useful.

To help other patients and their families we need and intend to extend our Patient Information Services in many ways.

Our Trust depends on voluntary donations. Please send your donation by Cheque or D/D payable in Mumbai in favour of "JASCAP".

### **Note for Reader**

This JASCAP booklet is not designed to provide medical advice or professional services and is intended to be for educational use only. The information provided through JASCAP is not a substitute for professional care and should not be used for diagnosing or treating a health problem or a disease. If you have, or suspect you may have, a health problem you should consult your doctor.

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