

# LIVER CANCER

## Patient Information Fact Sheet

The liver is the largest internal organ in the body and is situated in the upper abdomen, on the right side of the body. It has many functions, including the production of bile, which is passed into the intestines, via a tube known as the bile duct. The liver filters toxins from the body. It is an essential organ in the conversion of food into energy and body tissue.

### What is liver cancer?

Liver cancer can either start within the liver itself (a primary cancer) or start elsewhere in the body and then spread to the liver (a secondary cancer or metastatic). The majority of cancers seen in the liver are of a secondary type. Generally, cancers within the liver can be very difficult to cure. However, clinicians and scientists are finding more ways in which both primary and secondary cancers may be treated. In 2012, more than 21,000 men and 7,000 women in the United States will be diagnosed with primary liver cancer, most of them being >64 years old.

### What is primary liver cancer?

The liver is a complex organ consisting of very many different types of cells. However, only the two principal cell types tend to form cancers. The cells, which perform the fundamental tasks of the liver, are called hepatocytes; the cancers these form are called hepatomas. The cells lining the bile ducts of the liver can also change into cancers; these are termed cholangiocarcinomas. Hepatomas almost always occur in the livers of people who have conditions that have damaged the liver over a long period of time. This damage causes scarring of the liver, known as cirrhosis. Any disease that causes cirrhosis of the liver can lead to a hepatoma. Fortunately, only a small number of people with cirrhosis actually get a hepatoma. Certain causes of cirrhosis have a higher chance of developing hepatomas. These are the viral infections hepatitis B and hepatitis C, the cirrhosis linked to excessive alcohol, and the cirrhosis of hemochromatosis (a condition wherein an excessive amount of iron is stored in liver cells). Currently we do not understand why cholangiocarcinomas develop. So, in most people there is no obvious reason why the cancer should form. It does occur more frequently in people who suffer a rare condition called sclerosing cholangitis, which causes slow and progressive damage to the bile ducts.

### What is secondary liver cancer?

Nearly any cancer in the body can spread to the liver. Cancers more likely to have secondary growths in the liver are those from the stomach, pancreas and large bowel (colon). This is because the blood stream away from these digestive organs flows directly to the liver. Hence, all cancer cells that break away from the original growth are carried to the liver where they can embed and grow. Breast and lung cancers are relatively common cancers that can also form secondary growths within the liver.

### What are the symptoms of liver cancer?

Early on in their growth liver cancers often produce no symptoms. Secondary cancers tend to be found only after the original cancer elsewhere in the body is diagnosed. A liver cancer may



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produce jaundice (a yellow coloring of the skin and eyes), often with a darkening of urine and a pale color to the stool (bowel motion). This is because the growth of the cancer blocks the drainage of bile from the liver and the bile's yellow pigment cannot get into the bowel to color the stool. Because of the blocked drainage, the bile's yellow pigment is subsequently eliminated through the kidneys, hence the dark urine. Other symptoms that may occur are liver pain (especially if the cancer is stretching the fibrous coating that surrounds the liver) and weight loss. Very occasionally a liver cancer causes vomiting. This is because the cancer grows out from the liver and pushes on the stomach, blocking the passage of food and liquids.

### What tests confirm a diagnosis of liver cancer?

Apart from hepatomas, there are no specific blood tests for the detection of liver cancer. However, a cancer in the liver might be suspected when an abnormality is seen in LFT's, or liver function tests. These blood tests merely detect that there is something wrong and an abnormality can show up for many other reasons besides cancer. In the case of hepatomas, a doctor may find an unusually high concentration of a substance produced by the hepatoma, called alpha-fetoprotein. However, this blood test is only an indication of the presence of a hepatoma and will not detect other cancers.

The best method of diagnosing a cancer is to detect it visually. This can be done using ultrasound, a CT scan X-ray or magnetic resonance imaging (MRI). Sometimes it is necessary to have pictures of the blood supply to the cancer, in which case an angiogram is performed. This entails putting X-ray dye into the blood vessels that supply the liver via a fine tube inserted into an artery, normally at the top of the leg.

If liver cancer is detected, specialists need to know what type of cell is forming the cancer. This means that a sample of the cancer is required. This involves introducing a needle into the cancer and then taking a small sample (biopsy), which is examined under a microscope.

### How is liver cancer treated?

Treatment depends on (a) the type of liver cancer and (b) the amount of the liver affected by the cancer. At this time, liver cancer can be cured only when it's found at an early stage and only if the people are healthy enough to have the surgery.

### Primary liver cancers

**Hepatomas.** Since most hepatomas start in people who have cirrhosis, doctors will regularly screen such patients in order to detect the occurrence of a hepatoma as soon as possible. This screening may involve regular ultrasound scans and blood testing for alpha-fetoprotein (as mentioned above). A number of treatments are available. First, if the cancer is small and the liver cirrhosis is not too severe, the part of the liver containing the cancer may be removed by an operation. If the cancer is small but the cirrhosis has severely affected the liver, then occasionally a liver transplant may be considered. There are many factors that are taken into account before considering liver transplantation. Other means of treating hepatomas include injecting substances directly into the cancer to attempt to kill the cancer cells, or injecting materials into the blood supply to the cancer. This stops blood getting to the cancer cells, which should kill them, or slow their growth.



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**Cholangiocarcinomas.** This type of primary liver cancer is very difficult to cure. The bile duct cells that have turned into a cancer often grow and block the main bile duct draining the liver. A blocked bile duct will cause jaundice. By inserting a tube (called a stent) through the blockage, the jaundice can be relieved. The size and position of the cancer can then be assessed with a view to the possibility of having an operation.

### Secondary liver cancers

When cancer of the colon or rectum (bowel cancer) is diagnosed, the doctor or surgeon will frequently check to see if the cancer has spread to the liver. If a secondary cancer is found it may be possible to surgically remove it. The removal of not only the original bowel cancer, but also the secondary liver growth, means a cure is possible. Most other types of secondary cancers in the liver are difficult to remove through surgery. These are usually treated with chemotherapy (drugs) in order to slow down the growth of cancer cells.

### Is liver cancer preventable?

With secondary cancers, it is important to try to prevent the original cancer from starting. Stopping smoking greatly reduces the risk of developing lung cancer and possibly stomach cancer. Eating more fresh fruit and vegetables reduces the chance of suffering from colon cancer. Reducing alcohol intake to within the recommended limits (2 drinks per day for men; 1 per day for women), will reduce the chance of liver cirrhosis and hence hepatomas arising. Preventing and treating viral hepatitis with a vaccination may also help reduce the risk of liver cancer.

Many liver cancers are currently very difficult to cure. A lot of research is being done on new ways to attack cancer cells that are growing in the liver. These ways include the development of new drug therapies, different surgical operations and even attempts to alter the DNA code within the individual cells in order to stop them growing.

Targeted cancer therapies are drugs that block the spread of cancer by interfering with specific molecules involved in tumor growth and progression. One example of an approved targeted therapy, **Sorafenib** (Nexavar), can be used in people with liver cancer who cannot have surgery or a liver transplant.

Another area of study is researching how and why these cancers start.

### Further information

National Cancer Institute: [www.cancer.gov](http://www.cancer.gov)

Pubmed Health: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001325/>

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