



# About Liver Cancer

## Overview and Types

If you have been diagnosed with liver cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Is Liver Cancer?](#)

## Research and Statistics

See the latest estimates for new cases of liver cancer and deaths in the US and what research is currently being done.

- [Key Statistics About Liver Cancer](#)
- [What's New in Liver Cancer Research?](#)

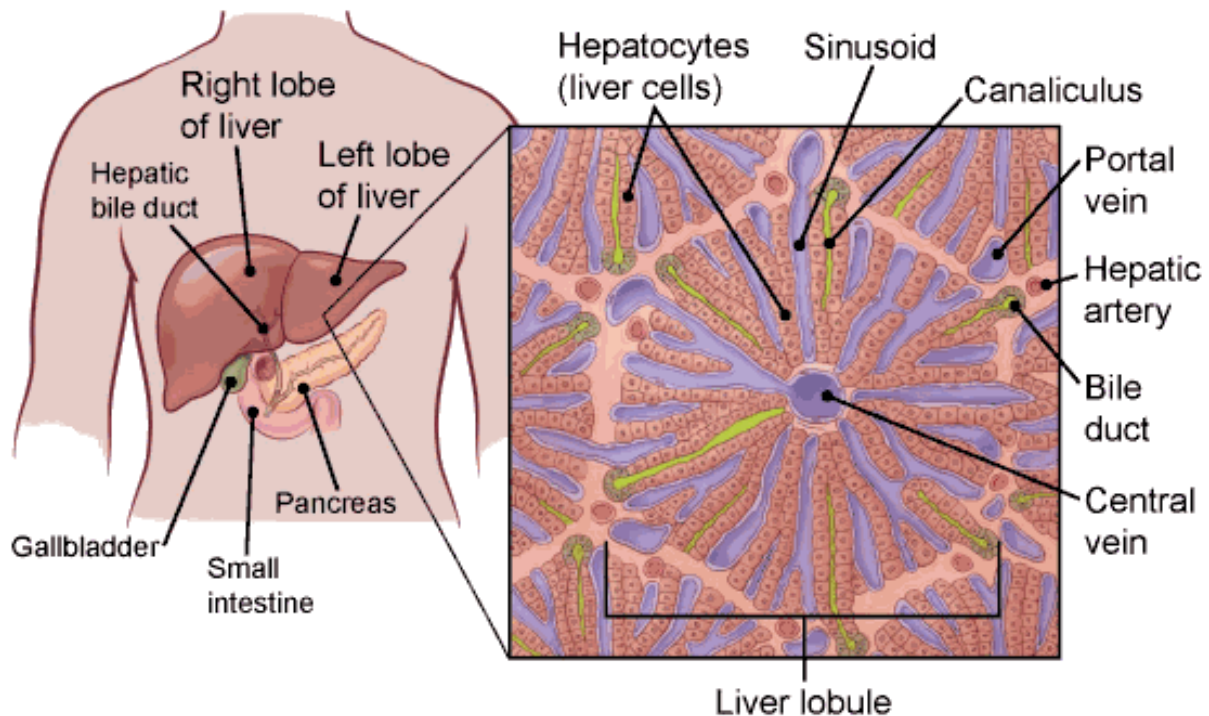
## What Is Liver Cancer?

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see [What Is Cancer?](#)

Only cancers that **start** in the liver are called liver cancer (primary liver cancer). To understand liver cancer, it helps to know about the normal structure and function of the liver.

## About the liver

The liver is the largest internal organ. It lies under your right ribs just beneath your right lung. It is divided into lobes.



You cannot live without your liver. It has several important functions:

- It breaks down and stores many of the nutrients absorbed from the intestine that your body needs to function. Some nutrients must be changed (metabolized) in the liver before they can be used for energy or to build and repair body tissues.
- It makes most of the clotting factors that keep you from bleeding too much when you are cut or injured.
- It secretes bile into the intestines to help absorb nutrients (especially fats).
- It breaks down alcohol, drugs, and toxic wastes in the blood, which then pass from the body through urine and stool

The liver is made up mainly of cells called *hepatocytes*. It also is made up of other types of cells, including cells that line its blood vessels and cells that line small tubes in the liver called *bile ducts*. The bile ducts extend out of the liver and carry bile from the liver to the gallbladder or directly to the intestines.

These different types of cells in the liver can form several types of malignant (cancerous) and benign (non-cancerous) tumors. These tumors have different causes, are treated differently, and have a different prognosis (outlook).

## Benign liver tumors

Benign tumors sometimes grow large enough to cause problems, but they do not grow into nearby tissues or spread to distant parts of the body. If they need to be treated, the patient can usually be cured with surgery.

### Hemangioma

The most common type of benign liver tumor, hemangiomas, start in blood vessels. Most hemangiomas of the liver cause no symptoms and do not need treatment. But some may bleed and need to be removed surgically.

### Hepatic adenoma

Hepatic adenoma is a benign tumor that starts from hepatocytes (the main type of liver cell). Most cause no symptoms and do not need treatment. But some eventually cause symptoms, such as pain or a mass in the abdomen (stomach area) or blood loss. Because there is a risk that the tumor could rupture (leading to severe blood loss) and a small risk that it could eventually develop into liver cancer, most experts will usually advise surgery to remove the tumor if possible.

Using certain drugs may increase the risk of getting these tumors. Women have a higher chance of having one of these tumors if they take birth control pills, although this is rare. Men who use anabolic steroids may also develop these tumors. Adenomas may shrink when the drugs are stopped.

### Focal nodular hyperplasia

Focal nodular hyperplasia (FNH) is a tumor-like growth made up of several cell types (hepatocytes, bile duct cells, and connective tissue cells). Although FNH tumors are benign, it can be hard to tell them apart from true liver cancers, and doctors sometimes remove them when the diagnosis is unclear. If you have symptoms from an FNH tumor, it can be removed with surgery.

Both hepatic adenomas and FNH tumors are more common in women than in men.

## Types of primary liver cancer

A cancer that starts in the liver is called *primary* liver cancer. There is more than one

kind of primary liver cancer.

## **Hepatocellular carcinoma (hepatocellular cancer)**

This is the most common form of liver cancer in adults.

Hepatocellular cancer (HCC) can have different growth patterns:

- Some begin as a single tumor that grows larger. Only late in the disease does it spread to other parts of the liver.
- A second type seems to start as many small cancer nodules throughout the liver, not just a single tumor. This is seen most often in people with cirrhosis (chronic liver damage) and is the most common pattern seen in the United States.

Using a microscope, doctors can distinguish several subtypes of HCC. Most often these subtypes do not affect treatment or prognosis (outlook). But one of these subtypes, *fibrolamellar*, is important to recognize. This type is rare, making up less than 1% of HCCs. This type is most often seen in women younger than age 35, and often the rest of the liver is not diseased. This subtype generally has a better outlook than other forms of HCC.

Here “liver cancer” is hepatocellular carcinoma.

## **Intrahepatic cholangiocarcinoma (bile duct cancer)**

About 10% to 20% of cancers that start in the liver are intrahepatic cholangiocarcinomas. These cancers start in the cells that line the small bile ducts (tubes that carry bile to the gallbladder) within the liver. (Most cholangiocarcinomas actually start in the bile ducts outside the liver.)

Although the rest of this document deals mainly with hepatocellular cancers, cholangiocarcinomas are often treated the same way. For more detailed information on this type of cancer, see our document, [Bile Duct \(Cholangiocarcinoma\) Cancer](#).

## **Angiosarcoma and hemangiosarcoma**

These are rare cancers that begin in cells lining the blood vessels of the liver. People who have been exposed to vinyl chloride or to thorium dioxide (Thorotrast) are more likely to develop these cancers. See the section "[Liver cancer risk factors](#)" Some other cases are thought to be caused by exposure to arsenic or radium, or to an inherited condition known as *hereditary hemochromatosis*. In about half of all cases, no likely

cause can be identified.

These tumors grow quickly and are usually too widespread to be removed surgically by the time they are found. Chemotherapy and radiation therapy may help slow the disease, but these cancers are usually very hard to treat. These cancers are treated like other sarcomas. For more information, see [Soft Tissue Sarcoma](#).

## Hepatoblastoma

This is a very rare kind of cancer that develops in children, usually in those younger than 4 years old. The cells of hepatoblastoma are similar to fetal liver cells. About 2 out of 3 children with these tumors are treated successfully with surgery and chemotherapy, although the tumors are harder to treat if they have spread outside the liver.

## Secondary liver cancer (metastatic liver cancer)

Most of the time when cancer is found in the liver it did not start there but has spread (metastasized) from somewhere else in the body, such as the pancreas, colon, stomach, breast, or lung. Because this cancer has spread from its original (primary) site, it is a secondary liver cancer. These tumors are named and treated based on their primary site (where they started). For example, cancer that started in the lung and spread to the liver is called *lung cancer with spread to the liver*, not liver cancer, and it is treated as lung cancer.

In the United States and Europe, secondary (metastatic) liver tumors are more common than primary liver cancer. The opposite is true for many areas of Asia and Africa.

For more information on liver metastases from different types of cancer, see specific cancer types, as well as [Advanced Cancer](#).

**Most of the remaining content refers only to hepatocellular carcinoma.**

- [References](#)

[See all references for Liver Cancer](#)

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# Key Statistics About Liver Cancer

## How common is liver cancer?

The American Cancer Society's estimates for primary liver cancer and intrahepatic bile duct cancer in the United States for 2018 are:

- About 42,220 new cases (30,610 in men and 11,610 in women) will be diagnosed
- About 30,200 people (20,540 men and 9,660 women) will die of these cancers

Liver cancer incidence has more than tripled since 1980. However, rates in young adults have recently begun to decline. Liver cancer death rates have increased by almost 3% per year since 2000. Liver cancer is seen more often in men than in women.

## Where is liver cancer more common?

Liver cancer is much more common in countries in sub-Saharan Africa and Southeast Asia than in the US. In many of these countries it is the most common type of cancer. More than 700,000 people are diagnosed with this cancer each year throughout the world. Liver cancer is also a leading cause of cancer deaths worldwide, accounting for more than 600,000 deaths each year.

Visit the [American Cancer Society's Cancer Statistics Center](#) for more key statistics.

- [References](#)

American Cancer Society. *Facts & Figures 2018*. American Cancer Society. Atlanta, Ga. 2018.

[See all references for Liver Cancer](#)

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# What's New in Liver Cancer Research?

Because there are only a few effective ways to prevent or treat liver cancer at this time, there is always a great deal of research going on in the area of liver cancer. Scientists are looking for causes and ways to prevent liver cancer, and doctors are working to improve treatments.

## Prevention

The most effective way to reduce the worldwide burden of liver cancer is to prevent it from happening in the first place. Some scientists believe that vaccinations and improved treatments for hepatitis could prevent about half of liver cancer cases worldwide. Researchers are studying ways to prevent or treat hepatitis infections before they cause liver cancers. Research into developing a vaccine to prevent hepatitis C is ongoing. Progress is also being made in treating chronic hepatitis.

## Screening

Several new blood tests are being studied to see if they can detect liver cancer earlier than using [AFP and ultrasound](#). One that is promising is called DKK1.

## Surgery

Newer techniques are being developed to make both partial hepatectomy and liver transplants safer and more effective.

## Adding other treatments to surgery

An active area of research uses *adjuvant* therapies – treatments given right after surgery – to try to reduce the chances that the cancer will return. Most of the studies so far using chemotherapy or chemoembolization after [surgery](#) have not shown that they help people live longer. Research studies are also looking into newer drugs, like targeted therapy and may prove to be more effective. Some promising results have also been seen with [radioembolization](#), but these need to be confirmed in larger studies. Another area of study has been the use of anti-viral therapy in people with liver cancer related to having viral hepatitis to see if it improves outcomes after surgery.

Doctors are also studying ways to make more liver cancers resectable by trying to shrink them before surgery. Studies are now looking at different types of *neoadjuvant* therapies (therapies given before surgery), including targeted therapy, chemotherapy, ablation, embolization, and radiation therapy. Early results have been promising but have only looked at small numbers of patients.

## **Laparoscopic surgery**

In laparoscopic surgery, several small incisions are made in the abdomen, and special long, thin surgical instruments are inserted to view and cut out the diseased portion of the liver. It does not require a large incision in the abdomen, which means there is less blood loss, less pain after surgery, and a quicker recovery.

At this time, laparoscopic surgery is still considered experimental for liver cancer. It is being studied mainly in patients with small tumors in certain parts of the liver that can be easily reached through the laparoscope.

## **Determining recurrence risk after surgery**

After a partial hepatectomy, one of the biggest concerns is that the cancer might come back (recur). Knowing someone's risk for recurrence after [surgery](#) might give doctors a better idea of how best to follow up with them, and may someday help determine who needs additional treatment to lower this risk.

Various researchers are studying ways to predict if the cancer may come back by testing the liver cells in the surgery sample through genetic profiling. . These studies are promising but will need to be confirmed in other larger studies before it is widely used.

## **Liver transplant**

Only a small portion of patients with liver cancer are candidates for a liver transplant because of the strict criteria they need to meet (based mainly on the size and number of tumors). Some doctors are now looking to see if these criteria can be expanded, so that people who are otherwise healthy but have slightly larger tumors might also be eligible.

## **Radiation therapy**

The main problem with using radiation therapy against liver cancer is that it also damages healthy liver tissue. Researchers are now working on ways to focus radiation



therapy more narrowly on the cancer, sparing the nearby normal liver tissue. One approach being studied is called brachytherapy. In this treatment, catheters (thin tubes) are placed in the tumor and then pellets that give off radiation are put into the catheters for a short time. After the treatment, both the pellets and the catheters are removed. This allows radiation to be targeted to the cancer with less harm to the normal liver.

## Targeted therapy

New drugs are being developed that work differently from standard chemotherapy drugs. These newer [targeted drugs](#) act on specific parts of cancer cells or their surrounding environments.

Tumor blood vessels are the target of several newer drugs. Liver tumors need new blood vessels to grow beyond a certain size. The drug sorafenib (Nexavar), which is already used for some liver cancers that can't be removed surgically, works in part by hindering new blood vessel growth. This drug is now being studied for use earlier in the course of the disease, such as after surgery or trans-arterial chemoembolization (TACE). Researchers are also studying whether combining it with chemotherapy may make it more effective.

Regorafenib (Stivarga) is a targeted drug that has shown promise in treating liver cancers that are no longer responding to sorafenib.

Cabozantinib is another targeted drug that has been shown to reduce tumor growth and stop new blood vessel growth in some studies.

## Chemotherapy

New forms of chemotherapy combined with other treatments are being tested in clinical trials. A small number of tumors respond to chemotherapy, although it has not yet been shown to prolong survival.

Chemotherapy drugs, such as oxaliplatin, capecitabine, gemcitabine, and docetaxel, are being tested against liver cancer in clinical trials. Oxaliplatin has shown promising results in early studies when given in combination with doxorubicin and also when given with gemcitabine and the targeted therapy drug cetuximab (Erbix).

## Virus therapy

A newer approach to treatment is the use of a virus, known as *JX-594*. This started as the same virus that was used to make the smallpox vaccine, but it has been altered in the lab so that it mainly infects cancer cells and not normal cells. A solution containing the virus is injected into liver cancers, and the virus can enter the cancer cells, where it causes them to die or to make proteins that result in them being attacked by the body's immune system. Early results of this treatment against advanced liver cancer have been promising, even in patients who have already had other treatments.

- [References](#)

[See all references for Liver Cancer](#)

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