Liver Cancer Overview

This overview is based on the more detailed information in our document, *Liver Cancer*. You can get this document and other information by calling 1-800-227-2345 or visiting our website at www.cancer.org.

What is cancer?

The body is made up of trillions of living cells. Normal body cells grow, divide to make new cells, and die in an orderly way. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out, damaged, or dying cells.

Cancer begins when cells in a part of the body start to grow out of control. There are many kinds of cancer, but they all start because of this out-of-control growth of abnormal cells.

Cancer cell growth is different from normal cell growth. Instead of dying, cancer cells keep on growing and form new cancer cells. These cancer cells can grow into (invade) other tissues, something that normal cells cannot do. Being able to grow out of control and invade other tissues is what makes a cell a cancer cell.

In most cases the cancer cells form a tumor. But some cancers, like leukemia, rarely form tumors. Instead, these cancer cells are in the blood and bone marrow.

When cancer cells get into the bloodstream or lymph vessels, they can travel to other parts of the body. There they begin to grow and form new tumors that replace normal tissue. This process is called *metastasis*.

No matter where a cancer may spread, it is always named for the place where it started. For instance, breast cancer that has spread to the liver is still called breast cancer, not liver cancer. Likewise, prostate cancer that has spread to the bone is called metastatic prostate cancer, not bone cancer.

Different types of cancer can behave very differently. For example, lung cancer and breast cancer are very different diseases. They grow at different rates and respond to

different treatments. That is why people with cancer need treatment that is aimed at their own kind of cancer.

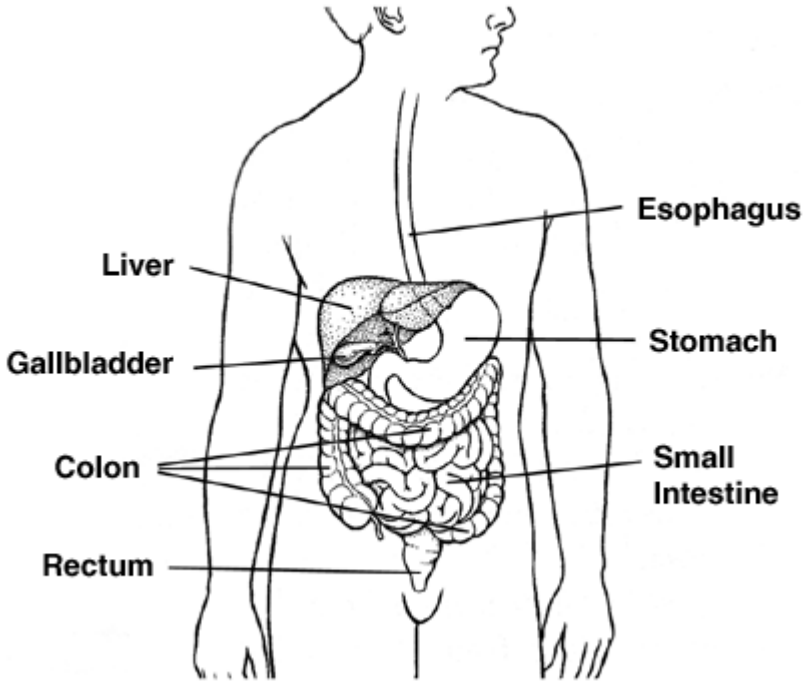
Not all tumors are cancerous. Tumors that aren't cancer are called *benign*. Benign tumors can cause problems – they can grow very large and press on healthy organs and tissues. But they cannot grow into other tissues. Because of this, they also can't spread to other parts of the body (metastasize). These tumors are almost never life threatening.

What is liver cancer?

Liver cancer starts in the liver. To understand liver cancer, it helps to know something about how the normal liver looks and works.

About the liver

The liver is the largest organ inside the body. It lies under your right ribs, just below the right lung. The liver is shaped like a pyramid and is divided into right and left lobes.



Unlike most other organs, the liver gets blood from 2 sources. The hepatic artery supplies the liver with blood that is rich in oxygen. The portal vein carries nutrient-rich blood from the intestines to the liver.

You cannot live without your liver. It has many necessary jobs:

- It breaks down and stores many of the nutrients absorbed from the intestine.
- It makes some of the clotting factors needed to stop bleeding from a cut or injury.
- It makes bile that goes into the intestine to help absorb nutrients.
- It filters out and breaks down toxic wastes in the blood, which are then removed from the body.

Because the liver is made up of different types of cells, many types of tumors can form in the liver. Some of these are cancer and some are not. The outlook for your health or your recovery (*prognosis*) depends on what type of tumor you have.

Primary liver cancers (cancers that start in the liver)

Hepatocellular carcinoma (HCC)

This is the most common form of liver cancer in adults. It begins in the hepatocytes, the main type of liver cell. About 4 out of 5 cancers that start in the liver are this type.

Bile duct cancer (cholangiocarcinoma)

Bile duct cancers account for 1 or 2 out of every 10 cases of liver cancer. These cancers can start in the small tubes (called bile ducts) that carry the bile that is made in the liver to the gallbladder or from the gallbladder to the intestines. For more information on this type of cancer, please see our document *Bile Duct (Cholangiocarcinoma) Cancer*.

Rare types of primary liver cancers

Angiosarcomas and hemangiosarcomas are rare cancers that start in the cells lining the blood vessels of the liver. These tumors grow quickly. Often by the time they are found they are too widespread to be removed. Treatment may help slow the disease, but these cancers are usually very hard to treat.

Hepatoblastoma is a very rare kind of liver cancer that is usually found in children younger than 4 years old. About 2 out of 3 children with these tumors have good outcomes with surgery and chemotherapy, although the tumors are harder to treat if they have spread outside of the liver.

Secondary liver cancers

The place where a cancer starts is called the *primary* site. If a cancer starts somewhere else and then spreads to the liver, it is called *secondary liver cancer*. Secondary liver cancer is much more common than cancer that starts in the liver (primary liver cancer).

Many common types of cancer, including colon, rectum, lung, and breast, spread to the liver. Secondary liver cancer is very different from primary liver cancer. The cancer cells still look and act like cancer cells from the part of the body that they came from, and they need treatments aimed at that kind of cancer, not liver cancer.

To learn more about cancer that has spread to the liver, please see *Advanced Cancer*, as well as the document about the specific type of the primary cancer.

The rest of the information here refers only to hepatocellular cancer (HCC).

How many people get liver cancer?

The American Cancer Society's estimates for primary liver and bile duct cancers in the United States for 2014 are:

- About 33,190 new cases of primary liver cancer and bile duct cancer
- About 23,000 deaths from these cancers

This cancer is more common in men than in women. The average age when liver cancer is found is 63.

This cancer is much more common in countries in sub-Saharan Africa and Southeast Asia than in the United States. In many of these countries it is the most common type of cancer.

What are the risk factors for liver cancer?

A *risk factor* is anything that affects a person's chance of getting a disease. Different cancers have different risk factors. Some risk factors like smoking can be controlled. Others, like a person's age or family history, can't be changed. But risk factors don't tell us everything. Having a risk factor, or even several, does not mean that a person will get cancer. And some people who get the disease have few or no known risk factors.

The most common risk factors for liver cancer are:

- Gender: this cancer is more common in men than women
- Where you live: this cancer is much more common in countries in sub-Saharan Africa and Southeast Asia than in the United States.
- Ethnicity: In the United States, Asian Americans and Pacific Islanders have the highest rates of liver cancer
- Long-term infections with hepatitis B and/or C

- Cirrhosis
- Heavy alcohol use
- Being obese (very overweight)
- Type 2 diabetes
- Certain inherited conditions, such as hereditary hemochromatosis
- Arsenic exposure, which can come from drinking water
- Exposure to the solvent vinyl chloride
- Using anabolic steroids
- Tobacco use

For people who live outside the United States, exposure to aflatoxins, which can contaminate nuts and grains, is also a risk factor. So is infection with the parasitic worm that causes schistosomiasis, a disease that can affect the liver.

Can liver cancer be prevented?

Many liver cancers could be prevented by avoiding exposures to known risk factors for this disease.

Avoiding and treating hepatitis infections

Worldwide, the biggest risk factor for liver cancer is infection with the hepatitis B or C virus. There is a vaccine to prevent hepatitis B. All children, as well as adults at high risk, should get this vaccine.

There is no vaccine for hepatitis C. Preventing hepatitis C (and hepatitis B in people who have not had the vaccine) is based on knowing how it spreads. The viruses are spread through blood transfusions, from sharing dirty needles (as in drug use), by having unprotected sex, and through childbirth. In the United States the risk of getting a hepatitis infection from a blood transfusion is very low.

Hepatitis C infections can often be cured with drug treatment, but this can be hard to take. Drugs can also be used to help treat hepatitis B, but they do not cure it. If you have hepatitis B or C you should talk to your doctor about these drugs.

Limiting alcohol and tobacco use

In the United States, alcohol abuse is a major cause of cirrhosis, which can lead to liver cancer. Not drinking alcohol or drinking only in moderation could help prevent liver cancer.

Since smoking also increases the risk of liver cancer, not smoking will also prevent some of these cancers. If you smoke, quitting will help lower your risk of this cancer, as well as many other cancers and life-threatening diseases.

Getting to and staying at a healthy weight

Avoiding obesity might be another way to help protect against liver cancer. People who are obese are more likely to have fatty liver disease and diabetes, both of which have been linked to liver cancer.

Signs and symptoms of liver cancer

Most of the time liver cancer does not cause symptoms in the early stages. The symptoms below could be caused by liver cancer, but they can also be caused by other cancers or conditions. Still, if you have any of these problems, see a doctor right away.

- Weight loss (when you're not trying to lose weight)
- Lack of appetite
- Feeling very full after a small meal
- Nausea or vomiting
- Fever
- A swollen liver or a mass that can be felt under the ribs on the right side
- A swollen spleen, felt as a mass under the ribs on the left side
- Pain in the belly (abdomen) or near the right shoulder blade
- Swelling in your belly
- Itching
- Yellowing of the skin and eyes (jaundice)
- Swollen veins on the belly that can be seen through the skin
- Becoming sicker if you have chronic hepatitis or cirrhosis

Some liver tumors make hormones that act on organs other than the liver. These hormones may cause:

- High blood calcium levels that can cause nausea, confusion, constipation, weakness, or muscle problems
- Low blood sugar levels, which can make you feel very tired or faint
- Breast enlargement and/or shrinking of the testicles in men
- High counts of red blood cells which can cause someone to look red and flushed
- High cholesterol levels

These findings may cause doctors to suspect a disease of the nervous system or other problems, rather than liver cancer.

How is liver cancer found?

Liver cancer often does not cause symptoms until it is in its later stages, so it is seldom found early. Small tumors are hard to find by physical exams.

Many patients who develop liver cancer have had cirrhosis for a long time. If you have cirrhosis it gets worse for no known reason, your doctor may need to do tests to look for liver cancer.Screening for liver cancer

Screening tests are not advised for people at average risk for liver cancer, but they may be done in people at high risk. (*Screening* is testing people for a disease before they have symptoms.) Many doctors recommend testing for certain high-risk groups, such as people with cirrhosis and certain people with chronic hepatitis B infections.

For other people at higher risk, the benefits of screening may not be as clear. If you think you are at high risk for liver cancer, talk to your doctor about whether screening is a good idea for you.

The tests used most often to screen for liver cancer are the AFP test and ultrasound of the liver.

AFP test

A protein called *AFP* (*alpha-fetoprotein*) is considered a tumor marker for liver cancer. In adults, high blood levels can be a sign of certain types of cancer, including liver cancer.

Blood tests for AFP may be used to look for early tumors in people at high risk for liver cancer. This test isn’t perfect, though. Some cancers do not make much of this protein.

Also, some liver diseases that are not cancer can also raise AFP levels. For these reasons, AFP blood tests are not advised for everyone.

Ultrasound

An ultrasound test uses sound waves to make pictures of organs inside the body. For a liver ultrasound, you lie on a table while a wand is moved around on the skin over the right side of the belly. Any masses (tumors) seen in the liver can then be tested for cancer if needed.

Tests to get a better look at liver cancer

If you have any symptoms or if there is any reason to suspect liver cancer, your doctor will use one or more tests to find out if you really have the disease. You will have a physical exam, and your doctor will ask you questions about your health. Some of the tests that may be done are described below.

Imaging tests

These tests create pictures of the inside of your body. They may be done to help find tumors that might be cancer, to learn how far cancer may have spread, or to help find out if treatment is working.

Ultrasound: This test is used to find tumors in the liver. Sound waves are used to make a picture of the inside of the body. Most people know about ultrasound because it is often used to look at the baby during a pregnancy. This is an easy test to have. You lie on a table, a gel is put on your skin, and a kind of wand is moved over your belly (abdomen).

CT scan (computed tomography): A CT scan uses x-rays to take many pictures of your insides. The pictures are then put together to show images of slices of the part of your body being studied. CT scans can give precise information about the size, shape, and place of any tumors in the liver or other places.

CT scans take longer than regular x-rays. You need to lie still on a table while they are being done. During the test, the table slides in and out of the scanner, a ring-shaped machine that surrounds the table. You might feel a bit confined by the ring you have to lie in while the pictures are being taken.

You may also have an IV (intravenous) line through which you get a dye. This helps better outline structures in your body. Some people are allergic to the dye and get hives or, rarely, problems like trouble breathing and low blood pressure. Be sure to tell the doctor if you have any allergies or have ever had a problem from any dye used for x-rays. You may also be asked to drink 1 to 2 pints of a liquid that helps outline the intestine so that it is not mistaken for tumors.

MRI (magnetic resonance imaging): MRI scans can be very helpful in looking at liver cancers. Sometimes they can tell a benign tumor from one that is cancer. They can also be used to look at blood vessels in and around the liver and can help show if liver cancer has spread to other parts of the body.

MRI scans use radio waves and strong magnets instead of x-rays to take pictures. A computer makes the pattern of radio waves into a detailed picture of parts of the body. MRI scans take longer than CT scans. You may be inside a large tube-like machine for the scan, which some people do not like. Newer, more open MRI machines can sometimes be used instead.

Angiography: Angiography is an x-ray method used to look at blood vessels. A dye is put into (injected) an artery before the x-rays are taken. The dye outlines the blood vessels on the pictures, showing which ones take blood to the liver cancer. This can help surgeons decide whether the cancer can be removed and, if so, how best to plan the operation.

This test can be uncomfortable because a tiny tube (catheter) has to be threaded from the groin up into the liver artery. Usually drugs are used to numb the groin area before this is done.

Angiography may also be done with a CT or MRI scanner. These are often used instead of x-rays because they can outline the blood vessels in the liver without the need for a catheter in the groin.

Bone scan: A bone scan can help look for cancer that has spread to bones. Doctors might not order this test unless you have symptoms such as bone pain, or if there's a chance you could have a liver transplant to treat your cancer.

For this test, a small amount of low-level radioactive substance is put into a vein. The substance settles in areas of damaged bone throughout the entire skeleton over the course of a couple of hours. You then lie on a table for about 30 minutes while a special camera detects the radioactivity and creates a picture of the skeleton. Bone changes appear as "hot spots" on the skeleton. This may suggest the cancer has reached the bones, but other bone diseases can also cause the same pattern. To find out for sure, other tests such as plain x-rays or MRI scans, or even a bone biopsy might be needed.

Other methods

Other types of tests may be done if your doctor thinks you might have liver cancer but the imaging test results can’t tell for sure.

Laparoscopy: In a laparoscopy the doctor uses a thin, lighted tube with a tiny camera on the end to look at the liver and other organs. The tube is put in through a small cut (incision) in the front of the belly (abdomen). This can help the doctor plan surgery or

other treatments. Also, doctors can use small instruments through this tube to take out tissue samples to be looked at under the microscope (see biopsy below).

This test is done in the operating room. You will be given drugs to make you relaxed or asleep during the test. You should be able to go home after you recover.

Biopsy: Other tests can suggest that you may have liver cancer, but sometimes the only way to be sure is to take out a piece of the tumor and look at it under a microscope. This is called a *biopsy*. (But in some cases, such as in people with cirrhosis whose CT or MRI tests show a liver tumor that is most likely cancer, a biopsy may not be done.)

There are different ways to get the tumor sample. In some cases, a biopsy sample may be taken during surgery to treat the tumor. Another option may be to place a hollow needle through the skin in the belly (abdomen) and into the liver to get a small biopsy sample. The skin where the needle is placed is first numbed. Biopsy samples can also be taken during laparoscopy (see above), when the doctor looks at the surface of the liver and takes samples from any areas that look abnormal.

Lab tests

Blood tests can be done to check for a substance called *AFP* (alpha-fetoprotein). People with liver cancer often have high AFP levels. Doctors also can compare the AFP levels before and after treatment to see how well the treatment is working.

Other tests can also help the doctor learn how well your liver is working, and how well your other organs are working. This information can help doctors decide whether surgery is an option for you.

Staging of liver cancer

The stage of a cancer is a description of how widespread it is. The stage of a liver cancer is one of the most important factors in looking at treatment options. Not all doctors use the same system to stage liver cancer.

One major system used to describe the stages of liver cancer is the American Joint Committee on Cancer (AJCC) TNM system. Stages are labeled using Roman numerals I through IV (1-4). Some stages are further sub-divided into A and B or even C. For the most part, the lower the number, the less the cancer has spread. A higher number, such as stage IV (4), means a more advanced cancer.

The staging systems for most types of cancer depend only on the extent of the cancer, but most patients with liver cancer have damage to the rest of their liver along with their cancer. This means that the liver might not be working as well as it should, which also affects treatment options and the outlook for the patient.

Although the AJCC system defines the extent of liver cancer in some detail, it does not consider liver function. Several other staging systems include both of these factors.

For treatment purposes, doctors often group liver cancers by whether or not they can be entirely cut out. *Resectable* is the medical term meaning that the cancer can be removed by surgery. For example, if the cancer is in a small part of the liver and if the rest of your liver is healthy, then you might be able to have surgery to remove the cancer. Doctors often call this type of cancer *localized resectable*.

Sometimes, for various reasons, an earlier-stage cancer cannot be removed by surgery. For example, a person might not have enough healthy liver to remove part of it to get rid of the cancer. These cancers are called *localized unresectable*.

Cancers that have spread throughout most of the liver or have spread to other organs are called *advanced*.

Since symptoms of liver cancer often do not appear until the disease is advanced, only a small number of liver cancers are found early enough to be removed with surgery.

Because people with liver cancer often have livers that don’t work well because of cirrhosis, doctors treating liver cancer want to know how well the liver is working. They use a system called the Child-Pugh score, which measures several different substances in the blood, fluid in the belly, and brain function to do this.

Be sure to ask your doctor to explain the stage of your cancer in a way you understand. This will help you both decide on the best treatment for you.

Liver cancer survival rates

Some people with cancer may want to know the survival rates for their type of cancer. Others may not find the numbers helpful, or may even not want to know them. If you do not want to read about the survival statistics for liver cancer, stop reading here and skip to the next section.

The 5-year survival rate refers to the percentage of patients who live at least 5 years after their cancer is diagnosed. Five-year rates are used as a standard way to discuss prognosis. Of course, some people live much longer than 5 years. Five-year *relative* survival rates compare the number of people who are still alive 5 years after their cancer was found to the survival of others the same age who don't have cancer. This is a better way to see the impact that cancer can have on survival.

Studies have shown that patients with small, resectable tumors (tumors that can be removed), who do not have cirrhosis or other serious health problems, are likely to do well if their cancers are removed. Their overall 5-year survival is over 50%. For people with early-stage liver cancers who are able to have a liver transplant, the 5-year survival rate is in the range of 60% to 70%.

But only a small number of liver cancers are found in the early stages and can be removed with surgery. For all stages combined, the relative 5-year survival rate from liver cancer is about 15%. Part of the reason for this low survival rate is that most patients with liver cancer also have other liver problems such as cirrhosis, which itself can be fatal.

Each person is different

While numbers provide an overall picture, keep in mind that every person's situation is unique and statistics can't predict exactly what will happen in your case. Talk with your cancer care team if you have questions about your own chances of a cure, or how long you might survive your cancer. They know your situation best.

How is liver cancer treated?

This information represents the views of the doctors and nurses serving on the American Cancer Society's Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.

The treatment information in this document is not official policy of the Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor.

Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Making treatment decisions

After liver cancer is found and staged, your doctor will talk to you about treatment options. Choosing a treatment plan is a big decision. Take time and think about all of your choices.

You may have different types of doctors on your treatment team. These doctors may include:

- A surgeon: a doctor who treats diseases with surgery.
- A radiation oncologist: a doctor who treats cancer with radiation.
- A medical oncologist: a doctor who treats cancer with medicines such as chemotherapy.
- A gastroenterologist: a doctor who specializes in treating diseases of the digestive system, including the liver.

Many other experts may be involved in your care as well, including nurse practitioners, nurses, nutrition specialists, social workers, and others.

When planning your treatment, it is important to take into account the stage (extent) of the cancer and how well your liver is working. But you and your cancer care team will also want to think about your age, general state of health, and personal preferences.

Based on these factors, treatment options may include:

- Surgery
- Other local treatments, such as ablation or embolization
- Radiation
- Targeted therapy
- Chemotherapy

In some cases, doctors may recommend more than one of these treatments. It is important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. It's also very important to ask questions if there is anything you're not sure about. You can find some good questions to ask in the section, "What should you ask your doctor about liver cancer?"

If time permits, it might be a good idea to get a second opinion, especially from a doctor experienced in treating liver cancer. A second opinion can give you more information and help you feel more certain about the treatment plan you pick.

Surgery for liver cancer

At this time, surgery offers the only likely chance to cure liver cancer. Surgery is done either to remove the tumor or to do a liver transplant.

Removing part of the liver (partial hepatectomy)

Surgery to remove the part of the liver with the cancer is called a *partial hepatectomy*. If all of the cancer the surgeon can see at the time of the operation can be removed, you have the best outlook. But most liver cancers cannot be completely removed. Often the cancer is large, is in many different parts of the liver, or has spread beyond the liver. Also, many people with cirrhosis do not have enough healthy liver to be able to remove even part of it to get rid of the cancer.

Risks and side effects: People with liver cancer often have damage in other parts of their liver. Surgeons have to remove enough of the liver to try to get all of the cancer, yet leave enough behind for the liver to work the way it needs to.

A lot of blood passes through the liver at any given time, and bleeding after surgery is a major concern. On top of this, the liver makes substances that help the blood clot.

Damage to the liver (both before the surgery and during the surgery itself) can add to possible bleeding problems. Another concern is that because the remaining liver still contains the damage that led to the cancer, a new liver cancer may develop later.

Liver transplant

A liver transplant may be an option for some people with small liver cancers. For now, transplant is usually saved for those with a few small tumors that cannot be totally removed, either because of where they are found or because not enough normal liver would be left.

Not many livers are available for transplant for patients with cancer because they are most often used for more curable diseases. Patients often must wait a long time – often too long – for a liver to be found. For this reason, some doctors suggest other treatments while a person is waiting for a new liver. Or a person may get a partial hepatectomy first and then a transplant if the cancer comes back.

Most livers for transplants come from people who have just died. But in recent years, a small number of patients have received part of a liver from a living donor (usually a close relative). The liver can regain some of its lost function over time if part of it is removed. Still, the surgery does have some risks for the donor. A few hundred living donor transplants are done in the United States each year, but only a small number of them are for people with liver cancer.

Possible risks and side effects of a liver transplant: People who get a liver transplant have the same surgery risks as listed above. They also have to be given drugs to help suppress the immune system and prevent the body from rejecting the new organ. These drugs have their own risks and side effects, especially the risk of getting serious infections. Some of the drugs used to prevent rejection can also cause other health problems.

Tumor ablation for liver cancer

Ablation is treatment that destroys the tumor without removing it. There are a number of ways to do this:

- Heating with radio waves
- Injecting the tumor with alcohol (ethanol)
- Heating with microwaves
- Freezing (cryosurgery)

These treatments are most often used for patients with only a few small tumors that cannot be taken out with surgery. They are also sometimes used to treat liver cancer in

patients waiting for a liver transplant. These methods are not as likely to cure the cancer as surgery, but they can still be very helpful for some people.

Possible side effects after ablation treatment include belly pain, infection in the liver, and bleeding in the chest or abdomen. Serious complications are rare.

Embolization therapy for liver cancer

Embolization is another treatment for tumors that cannot be removed. A substance is put into the artery that carries blood to the tumor. This substance blocks the blood flow, which makes it harder for the tumor to grow.

Chemoembolization adds a chemo drug to embolization. Studies are now going on to see if this works better than embolization alone.

Radioembolization combines embolization with radiation treatment. It is done by putting small radioactive beads into the artery that feeds the liver. This allows small amounts of radiation to only get at the tumor sites.

Problems after embolization could include abdominal pain, fever, nausea, infection in the liver, gallbladder swelling, and blood clots in the liver. Serious complications are rare, but they can happen.

Radiation treatment for liver cancer

Radiation therapy is treatment that uses high-energy rays to kill cancer cells or shrink tumors. *External beam radiation* aims radiation at the cancer from outside the body. Liver cancer cells can be killed by radiation, but this treatment can't be used at very high doses because normal liver tissue is killed, too. This type of radiation may be used to shrink a liver tumor or to relieve symptoms like pain, but it is not used as often as other local treatments such as ablation or embolization.

Before your treatments start, the radiation team will take careful measurements to figure out the correct angles for aiming the radiation beams and the proper dose of radiation. Having the treatment is painless. Each treatment lasts only a few minutes, although the setup time – getting you into place for treatment – usually takes longer. Most often, radiation treatments are given 5 days a week for several weeks.

Stereotactic body radiation therapy (SBRT) is a way of giving radiation that aims many beams of radiation at the tumor from different angles. This allows high doses of radiation to be focused on the tumor. The entire treatment is given over only a few days.

Possible side effects of radiation treatment

Side effects of radiation treatment might include sunburn-like skin problems at the place where the radiation enters the body, nausea, vomiting, and tiredness. Often these go away after treatment is finished. Radiation might also make chemo side effects worse.

Targeted therapy for liver cancer

As researchers have learned more about the changes in cells that cause cancer, they have been able develop newer drugs that are aimed at these changes. Targeted drugs do not work the same as standard chemotherapy (chemo) drugs (which are described in the section about chemotherapy). They tend to focus on killing the cancer cells and cause less damage to normal tissues. And they often have different, and less severe, side effects.

Like chemo, these drugs enter the bloodstream and travel throughout the body. This makes them useful against cancers that have spread to distant organs.

If you'd like more information on a drug used in your treatment or a specific drug mentioned in this section, see our Guide to Cancer Drugs , or call us with the names of the medicines you're taking.

Sorafenib (Nexavar®) is a targeted drug used to treat advanced liver cancer. It is also being studied to see if it could help for earlier stage disease.

Chemotherapy for liver cancer

Chemotherapy (or "chemo") is the use of drugs to kill cancer cells. Usually the drugs are given into a vein or by mouth. Once the drugs get in the blood, they spread throughout the body. This makes them useful for cancer that has spread to distant organs.

If you'd like more information on a drug used in your treatment or a specific drug mentioned in this section, see our Guide to Cancer Drugs , or call us with the names of the medicines you're taking.

Although chemo is sometimes used to treat liver cancer, it is often not very helpful. Most studies have shown that chemo does not help liver cancer patients to live longer.

Hepatic artery infusion: Because standard chemo does not work very well for liver cancer, doctors have studied putting chemo drugs right into the blood vessel that feeds the tumor in the liver. This is called *hepatic artery infusion* (HAI). Often, the healthy liver can break down most of the chemo drug before it can reach the rest of the body. This gets more chemo to the tumor and may cause fewer or less severe side effects.

Although early studies have found that HAI works to shrink tumors, it isn't clear that patients live longer with this treatment. A drawback of this approach is that surgery is

needed to put in the catheter into the right blood vessel. Many liver cancer patients may not be able to withstand this surgery.

Possible side effects of chemo

Chemo can have side effects like these:

- Mouth sores
- Loss of appetite
- Hair loss
- Nausea and vomiting
- Diarrhea
- A higher chance of infection (from a shortage of white blood cells)
- Easy bleeding or bruising (from a shortage of blood platelets)
- Tiredness and shortness of breath (from low red blood cell counts)

Along with the side effects in the list above, some drugs may have their own specific side effects. Most side effects go away once treatment is over. If you have side effects, be sure to tell your doctor or nurse. There are often ways to help.

Clinical trials for liver cancer

You might have had to make a lot of decisions since you've been told you have cancer. One of the most important decisions you will make is deciding which treatment is best for you. You may have heard about clinical trials being done for your type of cancer. Or maybe someone on your health care team has mentioned a clinical trial to you.

Clinical trials are carefully controlled research studies that are done with patients who volunteer for them. They are done to get a closer look at promising new treatments or procedures.

If you would like to take part in a clinical trial, you should start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service for a list of clinical trials that meet your medical needs. You can reach this service at 1-800-303-5691 or on our website at www.cancer.org/clinicaltrials. You can also get a list of current clinical trials by calling the National Cancer Institute's Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237) or by visiting the NCI clinical trials website at www.cancer.gov/clinicaltrials.

There are requirements you must meet to take part in any clinical trial. If you do qualify for a clinical trial, it is up to you whether or not to enter (enroll in) it.

Clinical trials are one way to get state-of-the art cancer treatment. Sometimes they may be the only way to get some newer treatments. They are also the only way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

You can get a lot more information on clinical trials in our document called *Clinical Trials: What You Need to Know*. You can read it on our website or call our toll-free number (1-800-227-2345) and have it sent to you.

Complementary and alternative therapies for liver cancer

When you have cancer you are likely to hear about ways to treat your cancer or relieve symptoms that your doctor hasn't mentioned. Everyone from friends and family to Internet groups and websites may offer ideas for what might help you. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

What are complementary and alternative therapies?

It can be confusing because not everyone uses these terms the same way, and they are used to refer to many different methods. We use *complementary* to refer to treatments that are used *along with* your regular medical care. *Alternative* treatments are used *instead of* a doctor's medical treatment.

Complementary methods: Most complementary treatment methods are not offered as cures for cancer. Mainly, they are used to help you feel better. Some examples of methods that are used along with regular treatment are meditation to reduce stress, acupuncture to help relieve pain, or peppermint tea to relieve nausea. Some complementary methods are known to help, while others have not been tested. Some have been proven not to be helpful, and a few are even harmful.

Alternative treatments: Alternative treatments may be offered as cancer cures. These treatments have not been proven safe and effective in clinical trials. Some of these methods may be harmful, or have life-threatening side effects. But the biggest danger in most cases is that you may lose the chance to be helped by standard medical treatment. Delays or interruptions in your medical treatments may give the cancer more time to grow and make it less likely that treatment will help.

Finding out more

It is easy to see why people with cancer think about alternative methods. You want to do all you can to fight the cancer, and the idea of a treatment with few or no side effects sounds great. Sometimes medical treatments like chemotherapy can be hard to take, or

they may no longer be working. But the truth is that most of these alternative methods have not been tested and proven to work in treating cancer.

As you think about your options, here are 3 important steps you can take:

- Look for “red flags” that suggest fraud. Does the method promise to cure all or most cancers? Are you told not to have regular medical treatments? Is the treatment a “secret” that requires you to visit certain providers or travel to another country?
- Talk to your doctor or nurse about any method you are thinking of using.
- Contact us at 1-800-227-2345 to learn more about complementary and alternative methods in general and to find out about the specific methods you are looking at.

The choice is yours

Decisions about how to treat or manage your cancer are always yours to make. If you want to use a non-standard treatment, learn all you can about the method and talk to your doctor about it. With good information and the support of your health care team, you may be able to safely use the methods that can help you while avoiding those that could be harmful.

You can learn more about specific complementary and alternative therapies on our website or read our document *Complementary and Alternative Methods and Cancer*.

What are some questions I can ask my doctor about liver cancer?

As you cope with liver cancer and its treatment, you need to have honest, open talks with your doctor. You should feel free to ask any question that's on your mind, no matter how small it might seem. Here are some questions you might want to ask. Be sure to add your own questions as you think of them. Nurses, social workers, and other members of the treatment team may also be able to answer many of your questions.

- Would you please write down the exact type of cancer I have?
- Where in the liver is my cancer? Has it spread beyond the liver?
- What is the stage of my cancer? What does that mean to me?
- How well is my liver working?
- Will I need any other tests before we can decide on treatment?
- Will I need to see other doctors?

- How much experience do you have treating this type of cancer?
- What treatment choices do I have?
- Can my cancer be removed by surgery?
- What do you recommend and why?
- What is the goal of this treatment?
- What should I do to get ready for treatment?
- How long will treatment last? What will it be like? Where will it be done?
- What are the risks or side effects of different treatments?
- How will treatment affect my daily life?
- What are the chances my cancer will come back with the treatment you suggest?
- What would we do if the treatment doesn't work or if the cancer comes back?
- What type of follow-up would I need after treatment?
- What are my chances of survival, based on my cancer as you see it?

Add your own questions below:

Moving on after treatment for liver cancer

For some people with liver cancer, treatment may remove or destroy the cancer. Completing treatment can be both stressful and exciting. You may be relieved to finish treatment, but find it hard not to worry about cancer growing or coming back. (When cancer comes back after treatment, it is called a *recurrence*.) This is a very common worry for people who have had cancer.

It may take a while before your fears lessen. But it may help to know that many cancer survivors have learned to live with this uncertainty and are leading full lives. Our document, *Living With Uncertainty: The Fear of Cancer Recurrence* gives more details about this.

For others, the liver cancer may never go away completely. You may get regular treatment with targeted therapy, chemo, or other treatments to try to help keep the cancer in check. Learning to live with cancer that does not go away can be hard and very

stressful. It has its own type of uncertainty. Our document, *When Cancer Doesn't Go Away*, talks more about this.

Follow-up care

If you have finished treatment, your doctors will still want to watch you closely. During these visits, your doctors will ask about symptoms, do physical exams, and order blood tests or imaging tests (like CT scans or MRIs). Follow-up is needed to watch for treatment side effects as well as to check for cancer that has come back or spread. If you were treated with a liver transplant, you will need special follow-up to check for signs that your new liver is working well.

Almost any cancer treatment can have side effects. Some may last for a few weeks or months, but others can be permanent. Please tell your cancer care team about any symptoms or side effects that bother you so they can help you manage them. Use this time to ask your health care team questions and talk about any concerns you might have.

It is also important to keep health insurance. While you hope your cancer won't come back, it could happen. If it does, you don't want to have to worry about paying for treatment. Should your cancer come back, our document *When Your Cancer Comes Back: Cancer Recurrence* can help you manage and cope with this phase of your treatment.

Seeing a new doctor

At some point after your cancer is found and treated, you may find yourself in the office of a new doctor. It is important that you be able to give your new doctor the exact details of your diagnosis and treatment. Gathering these details soon after treatment may be easier than trying to get them at some point in the future. Make sure you have this information handy and always keep copies for yourself:

- A copy of your pathology report from any biopsy or surgery
- Copies of imaging tests (CT or MRI scans, etc.), which can usually be stored on a CD, DVD, etc.
- If you had surgery, a copy of your operative report
- If you stayed in the hospital, a copy of the discharge summary that the doctor wrote when you were sent home
- If you had radiation treatment, a summary of the type and dose of radiation and when and where it was given
- If you had chemo or targeted therapies, a list of your drugs, drug doses, and when you took them

Lifestyle changes after liver cancer

You can't change the fact that you have had cancer. What you can change is how you live the rest of your life – making choices to help you stay healthy and feel as well as you can. This can be a time to look at your life in new ways. Maybe you are thinking about how to improve your health over the long term. Some people even start during cancer treatment.

Make healthier choices

For many people, finding out they have cancer helps them focus on their health in ways they may not have thought much about in the past. Are there things you could do that might make you healthier? Maybe you could try to eat better or get more exercise. Maybe you could cut down on alcohol, or give up tobacco. Even things like keeping your stress level under control might help. Now is a good time to think about making changes that can have positive effects for the rest of your life.

You can start by working on those things that worry you most. Get help with those that are harder for you. For instance, if you are thinking about quitting smoking and need help, call us at 1-800-227-2345.

Eating better

Eating right can be hard for anyone, but it can get even tougher during and after cancer treatment. Treatment may change your sense of taste. Nausea can be a problem. You may not feel like eating and lose weight when you don't want to. Or you may have gained weight that you can't seem to lose. All of these things can be very frustrating.

If treatment caused weight changes or eating or taste problems, do the best you can and keep in mind that these problems usually get better over time. You may find it helps to eat small portions every 2 to 3 hours until you feel better. You may also want to ask your cancer team about seeing a dietitian, an expert in nutrition who can give you ideas on how to deal with these treatment side effects.

One of the best things you can do after treatment is to put healthy eating habits into place. You may be surprised at the long-term benefits of some simple changes. Getting to and staying at a healthy weight, eating a healthy diet, and limiting your alcohol intake may lower your risk for a number of types of cancer, as well as having many other health benefits.

Rest, fatigue, and exercise

Feeling tired (fatigue) is a very common problem during and after cancer treatment. This is not a normal type of tiredness but a “bone-weary” exhaustion that doesn't get better with rest. For some people, fatigue lasts a long time after treatment and can keep them

from staying active. But exercise can actually help reduce fatigue and the sense of depression that sometimes comes with feeling so tired.

If you are very tired, though, you will need to balance activity with rest. It is OK to rest when you need to. To learn more about fatigue, please see our document, *Fatigue in People With Cancer* and *Anemia in People With Cancer*.

If you were very ill or weren't able to do much during treatment, it is normal that your fitness, staying power, and muscle strength declined. You need to find an exercise plan that fits your own needs. Talk with your health care team before starting. Get their input on your exercise plans. Then try to get an exercise buddy so that you're not doing it alone.

Exercise can improve your physical and emotional health.

- It improves your cardiovascular (heart and circulation) fitness.
- It can help you get to and stay at a healthy weight.
- It makes your muscles stronger.
- It reduces fatigue.
- It can help lower anxiety and depression.
- It can make you feel happier.
- It can help you feel better about yourself.

Long term, we know getting regular physical activity plays a role in helping to lower the risk of some cancers, as well as having other health benefits.

How about your emotional health after liver cancer?

Once your treatment ends, you may be surprised by the flood of emotions you go through. This happens to a lot of people. You may find yourself thinking about death and dying. You may find that you think about the effect of your cancer on things like your family, friends, and career. Money may be a concern as the medical bills pile up. Unexpected issues may also cause concern – for instance, as you get better and need fewer doctor visits, you will see your health care team less often. This can be hard for some people.

This is a good time to look for emotional and social support. You need people you can turn to. Support can come in many forms: family, friends, cancer support groups, church or spiritual groups, online support communities, or private counselors. Whatever your source of strength or comfort, make sure you have a place to go with your concerns.

The cancer journey can feel very lonely. You don't need to go it alone. Your friends and family may feel shut out if you decide not to include them. Let them in – and let in

anyone else who you feel may help. If you aren't sure who can help, call your American Cancer Society at 1-800-227-2345 and we can put you in touch with a group or resource that may work for you.

What if treatment for liver cancer stops working?

When a person has had many different treatments and the cancer has not been cured, over time the cancer tends to resist all treatment. At this time you may have to weigh the possible benefits of a new treatment against the downsides, like treatment side effects and clinic visits.

This is likely to be the hardest time in your battle with cancer – when you have tried everything within reason and it's just not working anymore. Your doctor may offer you a new treatment, but you will need to talk about how likely the treatment is to improve your health or change your outlook for survival.

No matter what you decide to do, it is important for you to feel as good as possible. Make sure you are asking for and getting treatment for pain, nausea, or any other problems you may have. This type of treatment is called *palliative care*. It helps relieve symptoms but is not meant to cure the cancer. It can be given along with cancer treatment, or can even be cancer treatment. But its main goal is to improve the quality of your life, or help you feel as good as you can for as long as you can.

At some point you may want to think about hospice care. Most of the time this is given at home. Your cancer may be causing symptoms or problems that need to be treated. Hospice focuses on your comfort. You should know that having hospice care doesn't mean you can't have treatment for the problems caused by your cancer or other health issues. It just means that the purpose of your care is to help you live life as fully as possible and to feel as well as you can. You can learn more about this in our document, *Hospice Care*.

Staying hopeful is important, too. Your hope for a cure may not be as bright, but there is still hope for good times with family and friends – times that are filled with joy and meaning. Pausing at this time in your cancer treatment gives you a chance to focus on the most important things in your life. Now is the time to do some things you've always wanted to do and to stop doing the things you no longer want to do. Though the cancer may be beyond your control, there are still choices you can make.

What's new in liver cancer research?

There is always research going on in the area of liver cancer. Scientists are looking at the causes of liver cancer, ways to prevent it, and ways to improve treatments.

Prevention

Researchers are looking at ways to prevent or treat hepatitis before it causes liver cancer. Research is being done to make a vaccine to prevent hepatitis C. Progress is also being made in treating chronic hepatitis with drugs that make the patient's immune system stronger. Some believe that vaccines and better treatments for hepatitis could prevent about half of liver cancer cases worldwide.

Finding liver cancer early

Some new blood tests are being studied to see if they can find liver cancer earlier than the tests used now.

Treatment

Surgery

Newer methods are being explored to make all kinds of liver surgery safer and more effective.

Liver transplant: Only a small portion of patients with liver cancer can be considered for a liver transplant at this time because of the strict rules they need to meet (based mainly on the size and number of tumors). Some doctors are now looking to see if these rules can be enlarged, so that people who are fairly healthy but have slightly larger tumors might also be eligible.

Even for people who are eligible, there can be a long wait before a liver becomes available. Doctors are looking at using other treatments, such as ablation, to help keep the cancer in check until a new liver is available.

Radiation treatment

The main problem with using radiation against liver cancer is that it also harms healthy liver tissue. Researchers are now working on ways to focus radiation just on the cancer, sparing the nearby normal liver tissue. Some new methods of giving radiation are being tried, such as using drugs (called *radiosensitizers*) that make cancers more open to radiation.

Targeted therapy

New drugs are being made that work in a different way from standard chemo drugs. These newer drugs are aimed at (target) exact parts of cancer cells.

Tumor blood vessels are the target of some newer drugs. Liver tumors need new blood vessels in order to grow. The drug sorafenib (Nexavar®), which is already used for some liver cancers that can't be removed, works in part by keeping new blood vessels from forming. This drug is now being studied for use earlier in the course of the disease. Doctors are also looking at whether giving it along with chemo or with other targeted drugs may help it work better.

Bevacizumab (Avastin®) and other drugs that target blood vessel growth are also being studied for use against liver cancer.

Some new drugs have different targets. For instance, a drug called erlotinib (Tarceva®), which targets a protein called EGFR on cancer cells, has shown to help some people with advanced liver cancer in early studies. Other targeted drugs are being studied, too.

Chemotherapy

New forms of chemotherapy, used along with other treatments, are being tested in clinical trials. A small number of tumors respond to chemo, but chemo has not yet been shown to help patients live longer.

Virus therapy

A newer approach to treatment is the use of a virus known as JX-594. This virus is the same one 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. It is injected into the blood and enters 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 against advanced liver cancer have been promising, even in patients who have already had other treatments, and larger studies of this treatment are now being done.

How can I learn more about liver cancer?

From your American Cancer Society

The following information may also be helpful to you. These materials may be ordered from our toll-free number, 1-800-227-2345.

Living with cancer

After Diagnosis: A Guide for Patients and Families (also in Spanish)

Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families (also in Spanish)

Living With Uncertainty: The Fear of Cancer Recurrence

When Your Cancer Comes Back: Cancer Recurrence

When Cancer Doesn't Go Away

Pain Control: A Guide for Those With Cancer and Their Loved Ones (also in Spanish)

Sexuality for the Man With Cancer (also available in Spanish)

Sexuality for the Woman With Cancer (also available in Spanish)

Understanding cancer treatments

Understanding Cancer Surgery: A Guide for Patients and Families (also in Spanish)

Understanding Chemotherapy: A Guide for Patients and Families (also in Spanish)

Understanding Radiation Therapy: A Guide for Patients and Families (also in Spanish)

Targeted Therapy

Cancer treatment side effects

Nausea and Vomiting

Anemia in People With Cancer

Fatigue in People With Cancer

Work, insurance, and finances

Health Insurance and Financial Assistance for the Cancer Patient

Returning to Work After Cancer Treatment

Working During Cancer Treatment

Family and caregiver concerns

Talking With Friends and Relatives About Your Cancer (also in Spanish)

What It Takes to Be a Caregiver

Helping Children When a Family Member Has Cancer: Dealing With Diagnosis (also available in Spanish)

When treatment is no longer working

Nearing the End of Life

Advance Directives

Hospice Care

Your American Cancer Society also has books that you might find helpful. Call us at 1-800-227-2345 or visit our bookstore online at cancer.org/bookstore to find out about costs or to place an order.

National organizations and websites*

Along with the American Cancer Society, other sources of information and support include:

American Liver Foundation
Toll-free number: 1-800-GO-LIVER (1-800-465-4837)
Website: www.liverfoundation.org

National Cancer Institute
Toll-free number: 1-800-4-CANCER (1-800-422-6237)
Website: www.cancer.gov

National Coalition for Cancer Survivorship
Toll-free number: 1-888-650-9127
1-877-NCCS-YES (622-7937) for some publications and Cancer Survivor Toolbox® orders
Website: www.canceradvocacy.org

United Network for Organ Sharing
Toll-free number: 1-888-894-6361
Website: www.unos.org

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at **1-800-227-2345** or visit www.cancer.org.

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For additional assistance please contact your American Cancer Society
1-800-227-2345 or www.cancer.org