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Liver Cancer Early Detection, Diagnosis, and Staging

Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- [Can Liver Cancer Be Found Early?](#)
- [Signs and Symptoms of Liver Cancer](#)
- [Tests for Liver Cancer](#)

Stages of Liver Cancer

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- [Liver Cancer Stages](#)

Outlook (Prognosis)

Doctors often use survival rates as a standard way of discussing a person's outlook (prognosis). These numbers can't tell you how long you will live, but they might help you better understand your prognosis. Some people want to know the survival statistics for people in similar situations, while others might not find the numbers helpful, or might even not want to know them.

- [Liver Cancer Survival Rates](#)

Questions to Ask About Liver Cancer

Here are some questions you can ask your cancer care team to help you better understand your liver cancer diagnosis and treatment options.

- [Questions to Ask About Liver Cancer](#)

Can Liver Cancer Be Found Early?

It is often hard to find liver cancer early because signs and symptoms often do not appear until it is in its later stages. Small liver tumors are hard to detect on a physical exam because most of the liver is covered by the right rib cage. By the time a tumor can be felt, it might already be quite large.

At this time, there are no widely recommended screening tests for liver cancer in people who are at average risk. (Screening means testing for cancer in people who have no symptoms or history of cancer.) But testing might be recommended for some people at higher risk.

Testing people at high risk for liver cancer

Many patients who develop liver cancer have long-standing cirrhosis (scar tissue formation from liver damage). Doctors may do tests to look for liver cancer if a patient with cirrhosis gets worse for no apparent reason.

For people at higher risk of liver cancer because they have cirrhosis (from any cause), hereditary hemochromatosis, or chronic hepatitis B infection (even without cirrhosis), some experts recommend screening for liver cancer with alpha-fetoprotein (AFP) blood tests and [ultrasound](#)¹ exams every 6 months. In some studies, screening was linked to improved survival from liver cancer.

AFP is a protein that can be measured in the blood of patients with liver cancer. But looking for high AFP levels isn't a perfect test for liver cancer. Many patients with early liver cancer have normal AFP levels. Also, AFP levels can be increased from other kinds of cancer as well as some non-cancerous conditions.

Hyperlinks

1. www.cancer.org/treatment/understanding-your-diagnosis/tests/ultrasound-for-cancer.html

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Signs and Symptoms of Liver Cancer

Having one or more of the symptoms below does not mean you have liver cancer. In fact, many of these symptoms are more likely to be caused by other conditions. Still, if you have any of these symptoms, it's important to have them checked by a doctor so that the cause can be found and treated, if needed. Signs and symptoms of liver cancer often do not show up until the later stages of the disease, but sometimes they may show up sooner. If you go to your doctor when you first notice symptoms, your cancer might be diagnosed earlier, when treatment is most likely to be helpful. Some of the most common symptoms of liver cancer are:

- Weight loss (without trying)
- Loss of appetite
- Feeling very full after a small meal
- Nausea or vomiting
- An enlarged liver, felt as fullness under the ribs on the right side
- An enlarged spleen, felt as fullness under the ribs on the left side
- Pain in the abdomen (belly) or near the right shoulder blade
- Swelling or fluid build-up in the abdomen (belly)
- Itching
- Yellowing of the skin and eyes (jaundice)

Other symptoms can include fever, enlarged veins on the belly that can be seen through the skin, and abnormal bruising or bleeding.

People who have chronic hepatitis or cirrhosis might feel worse than usual or might just have changes in lab test results, such as liver function tests or alpha-fetoprotein (AFP) levels.

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

- High blood calcium levels (hypercalcemia), which can cause nausea, confusion, constipation, weakness, or muscle problems
- Low blood sugar levels (hypoglycemia), which can cause fatigue or fainting
- Breast enlargement (gynecomastia) and/or shrinkage of the testicles in men
- High counts of red blood cells (erythrocytosis) which can cause someone to look red and flushed
- High cholesterol levels

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Abou-Alfa GK, Jarnigan W, Dika IE, D'Angelica M, Lowery M, Brown K, et al. Ch. 77 - Liver and Bile Duct Cancer. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020:1314–1341.

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Tests for Liver Cancer

Some liver cancers can be found by testing people at high risk who don't have symptoms ([screening](#)), but most liver cancers are found because they are causing symptoms. If you have possible signs or symptoms of liver cancer, see your doctor, who will examine you and may order some tests.

Medical history and physical exam

Your doctor will ask about your medical history to learn more about your symptoms and possible [risk factors](#)¹. Your doctor will also examine you to look for signs of liver cancer and other health problems, probably paying special attention to your abdomen and checking your skin and the whites of your eyes looking for jaundice (a yellowish color).

If symptoms and/or the results of the physical exam suggest you might have liver cancer, more tests will probably be done. These might include imaging tests, lab tests, and/or biopsies of liver tissue.

Imaging tests

[Imaging tests](#)² use x-rays, magnetic fields, or sound waves to create pictures of the inside of your body. Imaging tests maybe done for a number of reasons both before and after a diagnosis of liver cancer, including:

- To help find suspicious areas that might be cancer
- To help a doctor guide a biopsy needle into a suspicious area to take a sample
- To learn how far cancer might have spread
- To help guide certain treatments in the liver
- To help determine if treatment is working
- To look for possible signs of cancer coming back after treatment

Ultrasound

[Ultrasound](#)³ is often the first test used to look at the liver. It uses sound waves to create an image on a computer screen. This test can show tumors growing in the liver, which then can be tested for cancer, if needed.

Computed tomography (CT)

The [CT scan](#)⁴ is an x-ray test that makes detailed images of your body. A CT scan of the abdomen can help find many types of liver tumors. It can give specific information about the size, shape, and location of any tumors in the liver or elsewhere in the abdomen, as well as nearby blood vessels. CT scans can also be used to guide a biopsy needle precisely into a suspected tumor (called a **CT-guided needle biopsy**). If you are found to have liver cancer, a CT of your chest may also be done to look for possible cancer spread to the lungs.

Magnetic resonance imaging (MRI)

Like CT scans, [MRI scans](#)⁵ provide detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays. MRI scans can be very helpful in looking at liver tumors. Sometimes they can tell a benign tumor from a malignant one. They can also be used to look at blood vessels in and around the liver to

see any blockages, and can help show if liver cancer has spread to other parts of the body.

Angiography

An [angiogram](#)⁶ is an x-ray test that looks at blood vessels. Contrast medium, or dye, is injected into an artery to outline blood vessels while x-ray images are taken.

Angiography can be used to show the arteries that supply blood to a liver cancer, which can help doctors decide if a cancer can be removed and to help plan the operation. It can also be used to help guide some types of non-surgical treatment, such as embolization (see [Embolization Therapy for Liver Cancer](#)⁷).

Angiography can be uncomfortable because a small catheter (a flexible hollow tube) must be put into the artery leading to the liver to inject the dye. Usually the catheter is put into an artery in your groin and eased up into the liver artery. You have to stay very still while the catheter is in place. A local anesthetic is often used to numb the area before inserting the catheter. Then the dye is injected quickly to outline all the vessels while the x-rays are being taken.

Angiography can also be done with a CT scanner (CT angiography) or an MRI scanner (MR angiography). These techniques are often used instead of x-ray angiography because they can give information about the blood vessels in the liver without the need for a catheter in the groin. You will still need an IV line in your arm so that a contrast dye can be injected into the blood during the test.

Bone scan

A [bone scan](#)⁸ can help look for cancer that has spread (metastasized) to bones. Doctors don't usually order this test for people with liver cancer unless you have symptoms such as bone pain, or if there's a chance you may qualify for a liver transplant to treat your cancer.

Other tests and procedures

Other types of tests may be done if your doctor thinks you might have liver cancer but the imaging results aren't certain.

Biopsy

A biopsy is the removal of a sample of tissue to see if it is cancer. Sometimes, the only way to be sure that liver cancer is present is to take a biopsy and look at it in the pathology lab. But in some cases, doctors can be fairly certain that a person has liver cancer based on the results of imaging tests such as CT and MRI scans. In these cases, a biopsy may not be needed.

Doctors are often concerned that sticking a needle into the tumor or otherwise disturbing it without completely removing it might help cancer cells spread along the needle's path. This is a major concern if surgery or a liver transplant might be an option to try to cure the cancer, as any spread of the cancer might make the person ineligible for a transplant. That is why some experts recommend that patients who could be transplant candidates only have biopsies done at the center where the transplant will be done.

If a biopsy is needed, it can be done in several ways.

Needle biopsy: A hollow needle is placed through the skin in the abdomen and into the liver. The skin is first numbed with local anesthesia before the needle is placed. This type of biopsy is typically done with the help of an ultrasound or CT scan to guide the needle.

Laparoscopic biopsy: Biopsy specimens can also be taken during [laparoscopy](#)⁹. This lets the doctor see the surface of the liver and take samples of abnormal-appearing areas.

Surgical biopsy: An incisional biopsy (removing a piece of the tumor) or an excisional biopsy (removing the entire tumor and some surrounding normal liver tissue) can be done with surgery.

For more information about biopsies and how they are tested, see [Testing Biopsy and Cytology Specimens for Cancer](#)¹⁰.

Lab tests

Your doctor could order lab tests for a number of reasons:

- To help diagnose liver cancer
- To help determine what might have caused your liver cancer
- To learn how well your liver is working, which can affect what treatments you can have
- To get an idea of your general health and how well your other organs are working,

which also could affect what treatments you can have

- To see how well treatment is working
- To look for signs that the cancer has come back after treatment

Alpha-fetoprotein blood (AFP) test

AFP is a protein that can be found in high levels in adults with liver disease, liver cancer, who are pregnant, or other cancers.

If AFP levels are very high in someone with a liver tumor, it can be a sign that liver cancer is present. But liver cancer isn't the only reason for high AFP levels. Many patients with early liver cancer have normal levels of AFP, so high AFP levels aren't very helpful in determining if a liver mass might be cancer.

This test, however, is sometimes useful in people already diagnosed with liver cancer. The AFP level can help determine treatment options. During treatment, the test can be used to give an idea of how well it is working, as the AFP level should go down if treatment is effective. The test can also be used after treatment, to look for possible signs that the cancer has come back (recurred).

Other blood tests

Tests for viral hepatitis: Your doctor might order blood tests to check for hepatitis B and C.

Liver function tests (LFTs): Because liver cancer often develops in livers already damaged by hepatitis and/or cirrhosis, doctors need to know the condition of your liver before starting your treatment. If the part of your liver not affected by cancer isn't working well, you might not be able to have surgery to try to cure the cancer, as the surgery might require removal of a large part of your liver. Other treatment options such as certain [targeted therapy](#)¹¹ or [chemotherapy](#)¹² may also not be good choices if your liver is not working well.

Blood clotting tests: The liver also makes proteins that help blood clot when you bleed. A damaged liver might not make enough of these clotting factors, which could increase your risk of bleeding. Your doctor may order blood tests to help measure this risk.

Kidney function tests: Tests of blood urea nitrogen (BUN) and creatinine levels are often done to assess how well your kidneys are working.

Complete blood count (CBC): This test measures levels of red blood cells (which carry oxygen throughout your body), white blood cells (which fight infections), and platelets (which help the blood clot). It gives an idea of how well the bone marrow (where new blood cells are made) is functioning.

Blood chemistry tests and other tests: Blood chemistry tests check the levels of a number of substances in the blood, some of which might be affected by liver cancer. For example, liver cancer can raise blood levels of calcium, while blood glucose levels may fall. Liver cancer can also sometimes raise cholesterol levels, so this may be checked as well.

For more information about tests see [Exams and Tests for Cancer](#)¹³.

Hyperlinks

1. www.cancer.org/cancer/liver-cancer/causes-risks-prevention/risk-factors.html
2. www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html
3. www.cancer.org/treatment/understanding-your-diagnosis/tests/ultrasound-for-cancer.html
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Liver Cancer Stages

After someone is diagnosed with liver cancer, doctors will try to figure out if it has spread, and if so, how far. This process is called **staging**. The stage of a cancer describes how much cancer is in the body. It helps determine how serious the cancer is and how best to [treat](#)¹ it. Doctors also use a cancer's stage when talking about survival statistics.

Liver cancer stages range from stage I (1) through IV (4). As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. Although each person's cancer experience is unique, cancers

with similar stages tend to have a similar outlook and are often treated in much the same way.

How is the stage determined?

There are several staging systems for liver cancer, and not all doctors use the same system. The staging system most often used in the United States for liver cancer is the AJCC (American Joint Committee on Cancer) **TNM** system, which is based on 3 key pieces of information:

- The extent (size) of the **tumor (T)**: How large has the cancer grown? Is there more than one tumor in the liver? Has the cancer reached nearby structures like the veins in the liver?
- The spread to nearby lymph **nodes (N)**: Has the cancer spread to nearby lymph nodes?
- The spread (**metastasis**) to distant sites (**M**): Has the cancer spread to distant lymph nodes or distant organs such as the bones or lungs?

The system described below is the most recent AJCC system, effective January 2018.

Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person's T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. For more information see [Cancer Staging](#)².

Liver cancer is usually staged based on the results of the physical exam, [biopsies](#)³, and [imaging tests](#)⁴ (ultrasound, CT or MRI scan, etc.), also called a clinical stage. If surgery is done, the **pathologic stage** (also called the **surgical stage**) is determined by examining tissue removed during an operation.

Cancer staging can be complex, so ask your doctor to explain it to you in a way you understand.

AJCC Stage	Stage grouping	Stage description*
IA	T1a	A single tumor 2 cm (4/5 inch) or smaller that hasn't grown into blood vessels (T1a).
	N0	It has not spread to nearby lymph nodes (N0) or to distant sites

	M0	(M0).
IB	T1b	A single tumor larger than 2cm (4/5 inch) that hasn't grown into blood vessels (T1b).
	N0	The cancer has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	M0	
II	T2	Either a single tumor larger than 2 cm (4/5 inch) that has grown into blood vessels, OR more than one tumor but none larger than 5 cm (about 2 inches) across (T2).
	N0	It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	M0	
IIIA	T3	More than one tumor, with at least one tumor larger than 5 cm across (T3).
	N0	It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	M0	
IIIB	T4	At least one tumor (any size) that has grown into a major branch of a large vein of the liver (the portal or hepatic vein) (T4).
	N0	It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	M0	
IVA	Any T	A single tumor or multiple tumors of any size (Any T) that has spread to nearby lymph nodes (N1) but not to distant sites (M0).
	N1	
	M0	
IVB	Any T	A single tumor or multiple tumors of any size (any T).
	Any N	It might or might not have spread to nearby lymph nodes (any N).
	M1	It has spread to distant organs such as the bones or lungs (M1).

* The following additional categories are not listed on the table above:

- TX: Main tumor cannot be assessed due to lack of information.
- T0: No evidence of a primary tumor.
- NX: Regional lymph nodes cannot be assessed due to lack of information.

Other liver cancer staging systems

The staging systems for most types of cancer depend only on the extent of the cancer, but liver cancer is complicated by the fact that most patients have damage to the rest of their liver along with the cancer. This also affects treatment options and survival outlook.

Although the TNM system defines the extent of liver cancer in some detail, it does not take liver function into account. Several other staging systems have been developed that include both of these factors:

- The Barcelona Clinic Liver Cancer (BCLC) system
- The Cancer of the Liver Italian Program (CLIP) system
- The Okuda system

These staging systems have not been compared against each other. Some are used more than others in different parts of the world, but at this time there is no single staging system that all doctors use. If you have questions about the stage of your cancer or which system your doctor uses, be sure to ask.

Child-Pugh score (cirrhosis staging system)

The Child-Pugh score measures liver function, especially in people with cirrhosis. Many people with liver cancer also have cirrhosis, and in order to treat the cancer, doctors need to know how well the liver is working. This system looks at 5 factors, the first 3 of which are results of blood tests:

- Blood levels of bilirubin (the substance that can cause yellowing of the skin and eyes)
- Blood levels of albumin (a major protein normally made by the liver)
- The prothrombin time (measures how well the liver is making blood clotting factors)
- Whether there is fluid (ascites) in the abdomen
- Whether the liver disease is affecting brain function

Based on these factors, there are 3 classes of liver function. If all these factors are

normal, then liver function is called class A. Mild abnormalities are class B, and severe abnormalities are class C. People with liver cancer and class C cirrhosis are often too sick for surgery or other major cancer treatments.

The Child-Pugh score is actually part of the BCLC and CLIP staging systems mentioned previously.

Liver cancer classification

Formal staging systems (such as those described before) can often help doctors determine a patient's prognosis (outlook). But for treatment purposes, doctors often classify liver cancers more simply, based on whether or not they can be cut out (resected) completely. Resectable means able to be removed by surgery.

Potentially resectable or transplantable cancers

If the patient is healthy enough for surgery, these cancers can be completely removed by surgery or treated with a liver transplant. This would include most stage I and some stage II cancers in the TNM system, in patients who do not have cirrhosis or other serious medical problems. Only a small number of patients with liver cancer have this type of tumor.

Unresectable cancers

Cancers that have not spread to the lymph nodes or distant organs but cannot be completely removed by surgery are classified as unresectable. This includes cancers that have spread throughout the liver or can't be removed safely because they are close to the area where the liver meets the main arteries, veins, and bile ducts.

Inoperable cancer with only local disease

The cancer is small enough and in the right place to be removed but you aren't healthy enough for surgery. Often this is because the non-cancerous part of your liver is not healthy (because of cirrhosis, for example), and if the cancer is removed, there might not be enough healthy liver tissue left for it to function properly. It could also mean that you have serious medical problems that make surgery unsafe.

Advanced (metastatic) cancers

Cancers that have spread to lymph nodes or other organs are classified as advanced.

These would include stages IVA and IVB cancers in the TNM system. Most advanced liver cancers cannot be treated with surgery.

Hyperlinks

1. www.cancer.org/cancer/liver-cancer/treating.html
2. www.cancer.org/treatment/understanding-your-diagnosis/staging.html
3. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html
4. www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html

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Liver Cancer Survival Rates

Survival rates can give you an idea of what percentage of people with the same type and stage of cancer are still alive a certain length of time (usually 5 years) after they were diagnosed. They can't tell you how long you will live, but they may help give you a better understanding of how likely it is that your treatment will be successful.

Keep in mind that survival rates are estimates and are often based on previous outcomes of large numbers of people who had a specific cancer, but they can't predict what will happen in any particular person's case. These statistics can be confusing and may lead you to have more questions. Your doctor is familiar with your situation; ask how these numbers may apply to you.

What is a 5-year relative survival rate?

A **relative survival rate** compares people with the same type and stage of cancer to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of liver cancer is 30%, it means that people who have that cancer are, on average, about 30% as likely as people who don't have that cancer to live for at least 5 years after being diagnosed.

Where do these numbers come from?

The American Cancer Society relies on information from the SEER* database, maintained by the National Cancer Institute (NCI), to provide survival statistics for different types of cancer.

The SEER database tracks 5-year relative survival rates for liver cancer in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by [AJCC TNM stages](#) (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** There is no sign that the cancer has spread outside of the liver.
- **Regional:** The cancer has spread outside the liver to nearby structures or lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body, such as the lungs or bones.

5-year relative survival rates for liver cancer

These numbers are based on people diagnosed with cancers of the liver (or intrahepatic

bile ducts) between 2011 and 2017.

SEER stage	5-year relative survival rate
Localized	35%
Regional	12%
Distant	3%
All SEER stages combined	20%

In general, survival rates are higher for people who can have [surgery](#)¹ to remove their cancer, regardless of the stage. For example, studies have shown that patients with small, resectable (removable) tumors who do not have cirrhosis or other serious health problems are likely to do well if their cancers are removed. For people with early-stage liver cancers who have a liver transplant, the 5-year survival rate is in the range of 60% to 70%.

Understanding the numbers

- **People now being diagnosed with liver cancer may have a better outlook than these numbers show.** Treatments improve over time, and these numbers are based on people who were diagnosed and treated at least five years earlier.
- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.
- **These numbers don't take everything into account.** Survival rates are grouped based on how far the cancer has spread, but your age, overall health, how well the cancer responds to treatment, and other factors will also affect your outlook.

*SEER = Surveillance, Epidemiology, and End Results

Hyperlinks

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Questions to Ask About Liver Cancer

It's important to have honest, open discussions with your cancer care team. They want to answer all of your questions, so that you can make informed treatment and life decisions. Here are some questions to consider:

When you're told you have liver cancer

- What [kind](#)¹ of liver cancer do I have?
- Has the cancer spread beyond my liver?
- What is the [stage](#) of my cancer?
- How well is my liver working?
- Will I need other [tests](#)² before we can decide on treatment?
- Will I need to see other doctors or health professionals?
- If I'm concerned about the costs and insurance coverage for my diagnosis and treatment, who can help me?

When deciding on a treatment plan

- What are my [treatment](#)³ choices?
- What do you recommend and why?
- How much experience do you have treating this type of cancer?
- What is the goal of the treatment?
- Can the cancer be removed with [surgery](#)⁴?
- Will I need a [liver transplant](#)⁵?
- Should I get a [second opinion](#)⁶? How do I do that? Can you recommend a doctor or cancer center?
- What risks or side effects should I expect? How long are they likely to last?
- How quickly do we need to decide on treatment?
- Should I think about taking part in a [clinical trial](#)⁷?
- How soon do I need to start treatment?
- What should I do to be ready for treatment?
- How long will treatment last? What will it be like? Where will it be done?
- Will treatment affect my daily activities?
- What will we do if the treatment doesn't work or if the cancer [comes back](#)⁸?

During treatment

Once treatment begins, you'll need to know what to expect and what to look for. Not all of these questions may apply to you, but asking the ones that do may be helpful.

- How will we know if the treatment is working?
- Is there anything I can do to help manage [side effects](#)⁹?
- What symptoms or side effects should I tell you about right away?
- How can I reach you on nights, holidays, or weekends?
- Do I need to change what I eat during treatment?
- Are there any limits on what I can do?
- Will my treatment affect my daily activities?
- Can I exercise during treatment? If so, what can I do, and how often?
- Can you suggest a mental health professional I can see if I start to feel [overwhelmed, depressed, or distressed](#)¹⁰?
- What if I need social support during treatment because my family lives far away?

After treatment

- Will I need a special diet after treatment?
- Are there limits on what I can do?
- What symptoms should I watch for?
- What kind of exercise can I do now?
- How often will I need to have follow-up exams and tests?
- How will we know if the cancer has come back? What should I watch for?
- What will my options be if the cancer comes back?
- What type of [follow-up](#)¹¹ will I need after treatment?

In addition to these examples, you might want to write down some of your own. For instance, you might want more information about recovery times.

Hyperlinks

1. www.cancer.org/cancer/liver-cancer/about/what-is-liver-cancer.html
2. www.cancer.org/treatment/understanding-your-diagnosis/tests.html
3. www.cancer.org/cancer/liver-cancer/treating.html
4. www.cancer.org/cancer/liver-cancer/treating/surgery.html
5. www.cancer.org/cancer/liver-cancer/treating/surgery.html
6. www.cancer.org/treatment/treatments-and-side-effects/choosing-your-treatment-team/seeking-a-second-opinion.html
7. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
8. www.cancer.org/treatment/survivorship-during-and-after-treatment/long-term-health-concerns/recurrence.html
9. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
10. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/changes-in-mood-or-thinking.html
11. www.cancer.org/cancer/liver-cancer/after-treatment/follow-up.html

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Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

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