Liver Cancer Early Detection, Diagnosis, and Staging

Know the signs and symptoms of liver cancer. Find out how liver cancer is tested for, diagnosed, and staged.

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 thut 1bout thpt 1 0 0 1 87.6 349

- 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?

- Testing people at high risk for liver cancer

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

Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/tests/imaging-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

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Tests for 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.

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.

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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

AJCC Stage	Stage grouping	Stage description*
IA	**T1a** **N0** **M0**	A single tumor 2 cm (4/5 inch) or smaller that hasn't grown into blood vessels (T1a). It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IB	**T1b** **N0** **M0**	A single tumor larger than 2cm (4/5 inch) that hasn't grown into blood vessels (T1b). The cancer has not spread to nearby lymph nodes (N0) or to distant sites (M0).
II	**T2** **N0** **M0**	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). It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IIIA	**T3** **N0** **M0**	More than one tumor, with at least one tumor larger than 5 cm across (T3). It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IIIB	**T4** **N0** **M0**	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). It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IVA	**Any T** **N1** **M0**	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).
IVB	**Any T** **Any N**	A single tumor or multiple tumors of any size (any T). 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 classC. 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

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/types/liver-cancer/treating.html
2. www.cancer.org/cancer/diagnosis-staging/staging.html
3. www.cancer.org/cancer/diagnosis-staging/tests/biopsy-and-cytology-tests.html
4. www.cancer.org/cancer/diagnosis-staging/tests/imaging-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. Ask your doctor how these numbers might 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 Surveillance, Epidemiology, and End Results (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 2013 and 2019.

SEER* stage	5-year relative survival rate
Localized	37%
Regional	14%
Distant	4%
All SEER stages combined	22%

*SEER = Surveillance, Epidemiology, and End Results

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.

Hyperlinks

1. www.cancer.org/cancer/types/liver-cancer/treating/surgery.html

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Questions to Ask About Liver Cancer

- When you’re told you have liver cancer

- When deciding on a treatment plan
- During treatment
- After treatment

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?

- 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/types/liver-cancer/about/what-is-liver-cancer.html
2. www.cancer.org/cancer/diagnosis-staging/tests.html
3. www.cancer.org/cancer/types/liver-cancer/treating.html
4. www.cancer.org/cancer/types/liver-cancer/treating/surgery.html
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