



Hepatitis B

Monitoring Hepatitis B

Because hepatitis B is a liver disease, your medical provider will likely order regular blood tests to monitor your liver's health. Looking at lab tests may be overwhelming at first, but eventually they will be easier to understand. Lab and diagnostic tests determine which phase of chronic hepatitis B you have.

Before discussing specific lab tests, here are some important tips:

- Keep copies of your lab results. Ask your provider for copies of your labs and keep them in one place. You may download a [tracking tool](#) to help you record your labs all in one place.
- Lab results should be read by your medical provider. Do not attempt to interpret results on your own.
- If you have questions about a test result, ask your provider about it.
- If you have an abnormal result, ask if there are factors that might affect the test, such as medications, supplements or food.
- Do not lose sleep over test results. An abnormal lab does not necessarily indicate a problem.
- Look for trends. Often a single abnormal lab is insignificant.
- Never let a lab test tell you how you feel. Plenty of people have abnormal labs but still feel good, or normal labs and feel lousy. Stay tuned to your body, not to your lab results.
- Sometimes the worst part about getting lab tests is waiting for results. Try not to put your life on hold while waiting for results. The results will be what they will be.

If you have chronic hepatitis B, your health care provider will usually order additional tests to determine whether the infection is active, such as:

- HBeAg and anti-HBe: HBeAg is the hepatitis B envelope antigen, and anti-HBe are the antibodies produced against this antigen. If HBeAg is detectable in a blood sample, this means

that the virus is still active in the liver (and can be transmitted to others). If HBeAg is negative and anti-HBe is positive, this generally means that the virus is inactive. However, this is not always the case. Some people with chronic hepatitis—especially those who have been infected with HBV for many years—may have what is known as a precore or core variant mutated form of HBV. This can cause HBeAg to be negative and anti-HBe to be positive, even though the virus is still active in the liver.

- **HBV viral load:** This test measures the actual amount of hepatitis B in a blood sample, which helps determine whether HBV is reproducing in the liver. In a person with detectable HBeAg, an HBV viral load greater than 20,000 international units per milliliter (IU/mL) of blood indicates that the virus is active and has the greatest potential to cause damage to the liver. Similarly, in a person with an HBeAg-negative chronic hepatitis B, an HBV viral load of greater than 2,000 IU/mL indicates that the virus is active and has the potential to cause damage to the liver. Generally speaking, if the HBV viral load is above these numbers, treatment is considered necessary. However, HBV treatment decisions are based on multiple factors, and your medical provider may make recommendations based on other input.
- **Liver function tests:** One of the most important liver enzymes to look for is alanine aminotransferase (ALT), sometimes called SGPT on lab reports. An elevated ALT level indicates that the liver is not functioning properly and that there is a risk of permanent liver damage. During acute hepatitis B infection, ALT levels can be temporarily elevated, but this rarely leads to long-term liver problems. In chronic hepatitis B, ALT levels can be either periodically or consistently increased, indicating a higher risk of long-term liver damage.
- **HBV genotype:** There are 10 different types, or genotypes, of HBV in the world (labeled A through J). The differences among genotypes are based on differences in HBV's genetic structure. Certain HBV genotypes tend to be more common in various regions of the world. Genotype C is common in Asia, whereas genotype A occurs frequently in sub-Saharan Africa. All the genotypes have been found in the United States, but A, D and G are the most

prevalent. There is still some debate regarding whether it is important to know a patient's HBV genotype, but finding out the genotype may have some value when choosing treatments for hepatitis B

DIAGNOSTIC TESTS

Unfortunately, lab tests do not tell the whole story regarding the effect of hepatitis B on the health of the liver. Measuring HBV viral load and liver enzyme levels in the blood cannot determine if—and how much—damage has actually been done to the liver. To assess this, your doctor will need to order either a liver biopsy or noninvasive liver fibrosis test. Less riskier, non-invasive radiologic procedures such as the FibroScan and blood tests that estimate fibrosis, are replacing liver biopsies. If you have cirrhosis, you will also be monitored for hepatocellular carcinoma (liver cancer), usually done by ultrasound or other radiologic scan.

Imaging studies: Noninvasive imaging procedures may be used to monitor the health of your liver. The most common is ultrasound, which uses sound waves to produce an image of the liver. Ultrasound is useful for detecting tumors and can potentially detect cirrhosis. If the ultrasound test reveals a tumor, your doctor may want you to have a CT scan or an MRI. The CT scan (computed tomography or CAT scan) is a specialized X-ray that produces a picture of your liver. MRI (magnetic resonance imaging) also takes a picture, but it uses a magnetic field and radio wave pulses.

Liver biopsy: A biopsy allows experts to examine tissue taken from the liver and determine how healthy the liver is. A liver biopsy is often performed on an outpatient basis, usually in a hospital. A local anesthetic agent is used to numb the skin and tissue below. A thin, specially designed needle is inserted through the skin. This takes only one or two seconds. A slender piece of tissue is removed with the needle and then processed through a laboratory. From start to finish, the entire procedure lasts only 15 to 20 minutes. You will then be instructed to lie still, sometimes for several hours. There may be some discomfort in the chest or shoulder, but this is usually temporary. In rare cases, the provider conducting the procedure can nick a blood vessel, which can result in internal bleeding. It is common to feel mild soreness in the liver area for a day or two following the procedure. Biopsy results are usually available within a week and will be explained to you by your health care provider.

FibroScan: A newer method, called transient elastography, it uses ultrasound and low-frequency elastic waves to measure liver elasticity. FibroScan seems to be as accurate as a liver biopsy. The technician or physician applies gel to the skin and places the probe with a slight pressure on the liver area. The procedure is painless.

Blood tests: Various blood tests directly and indirectly estimate the amount of liver fibrosis. Although the tests vary in accuracy, they are usually good at estimating the degree of fibrosis. Some commonly used blood tests are FibroSpect, FibroSure and FibroTest.

Understanding Your Diagnostic Tests

Although there are various ways to evaluate the condition of your liver, the results will indicate how much scarring and inflammation you have. The results are interpreted using various scoring systems, of which the Metavir system is the most popular. Results from a FibroScan or other noninvasive test may be converted into a Metavir score.

Metavir gives you two numbers. The first is the grade, which rates how much inflammation is in the liver. The second number is the stage, which measures the degree of liver damage that has occurred because of the inflammation. This scale explains the Metavir scores:

Grade: liver inflammation or histological activity

A0 = no inflammation

A1 = mild inflammation

A2 = moderate inflammation

A3 = severe inflammation

Stage: degree of liver fibrosis, scarring or damage

F0 = no fibrosis

F1 = minimal fibrosis (medically described as portal fibrosis without septa)

F2 = fibrosis has occurred and spread inside the areas of the liver, including blood vessels (described as portal fibrosis with few septa)

F3 = fibrosis is spreading and connecting to other liver areas that contain fibrosis (bridging fibrosis or portal fibrosis with numerous septa)

F4 = cirrhosis

Your medical provider may tell you only which stage of liver disease you have because that indicates how much liver damage you have. However, the grade is important too because higher inflammation scores may mean a more aggressive form of liver disease.

Don't panic if the result is F4. Cirrhosis is a serious disease, but does not necessarily mean that your life is in immediate danger. Cases of cirrhosis need further monitoring to determine whether your liver is functioning adequately despite the seriousness of your liver disease. If you take care

of your health and don't drink alcohol, you may enjoy a good quality of life for many years with cirrhosis.

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