



Monitoring Your Hepatitis B

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. An ultrasound may be used to identify the best location to make the biopsy. The area of the skin where the biopsy will be done is carefully cleaned while you lie quietly on your back or slightly to the side. Then, a local anesthetic agent is used to numb the skin and tissue below. A thin, specially designed needle is inserted through the skin. Liver cells do not have nerves, so technically a liver biopsy would not hurt if doctors could perform a liver biopsy without puncturing the skin, membrane and surrounding tissue.

The physician will instruct you to take a deep breath and to hold it for about five seconds. The needle is advanced into and out of the liver. 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.

The results of the biopsy 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. The Veterans Health Administration uses a similar system called Batts and Ludwig. When your medical provider gives you the results, be sure to know which system is being used so you know where the results fit on the scale. 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.

Request copies of your test results. If the test is repeated, you can compare the results.

Lab and diagnostic tests determine which phase of chronic hepatitis B you have. The table below lists the phases of chronic hepatitis B infection.

Phases of Chronic HBV Infection

Phase	ALT	HBV Viral Load	HBeAg	Level of Inflammation/Fibrosis in the Liver
Immune-tolerant	Normal	Elevated, usually >1 million IU/mL	Positive	Minimal
HBeAg-positive immune-active	Elevated	Elevated, $\geq 20,000$ IU/mL	Positive	Moderate to severe inflammation or fibrosis
Inactive	Normal	Low or undetectable, <2000	Negative	Minimal inflammation but variable fibrosis
HBeAg-negative immune-reactivation	Elevated	Elevated, $\geq 20,000$ IU/mL	Negative	Moderate to severe inflammation or fibrosis

Phase: **Immune-tolerant**

ALT	Normal
HBV Viral Load	Elevated, usually >1 million IU/mL
HBeAg	Positive
Level of Inflammation/Fibrosis in the Liver	Minimal

Phase: **HBeAg-positive immune-active**

ALT	Elevated
HBV Viral Load	Elevated, $\geq 20,000$ IU/mL
HBeAg	Positive
Level of Inflammation/Fibrosis in the Liver	Moderate to severe inflammation or fibrosis

Phase: **Inactive**

ALT	Normal
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Phase: **Inactive**

HBV Viral Load	Low or undetectable, <2000
HBeAg	Negative
Level of Inflammation/Fibrosis in the Liver	Minimal inflammation but variable fibrosis

Phase: **HBeAg-negative immune-reactivation**

ALT	Elevated
HBV Viral Load	Elevated, $\geq 20,000$ IU/mL
HBeAg	Negative
Level of Inflammation/Fibrosis in the Liver	Moderate to severe inflammation or fibrosis

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<http://beta.docker.hepmag.com/basics/hepatitis-b-basics/hepatitis-b-diagnostic-tests>