

# Hepatitis Basics



Keeping  
Your Liver  
Healthy

## What Are Fibrosis & Cirrhosis?

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**H**epatitis B infection can lead to liver damage including *fibrosis* (light to medium scarring of the liver), *cirrhosis* (extensive scarring of the liver) and *liver cancer*. It is estimated that only 1.5% of those who acquired the hepatitis B virus (HBV) as adults and 18% of those who acquired HBV infection as newborns will have serious disease progression that can lead to cirrhosis, liver cancer and death. This fact sheet will discuss fibrosis and cirrhosis – their causes, disease progression, and treatment.

### The Liver

The liver works to make us healthy by performing over 500 chemical functions. Almost everything that goes into the body is processed by the liver. This means that food, alcohol, medicines, fumes, chemicals or anything that one breathes, eats, drinks, or gets on the skin is processed by the liver to keep the body healthy. When large amounts of harmful substances are ingested, inhaled or get on the skin the liver is overwhelmed. It may be unable to reduce the amount of these substances in your

body to safe levels. This can lead to the death of liver cells (hepatocytes).

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### How Do Fibrosis and Cirrhosis Develop?

Liver fibrosis begins when the liver becomes inflamed (irritated and swollen) due to hepatitis B, hepatitis C, drinking alcohol (especially drinking a lot of alcohol over many years), toxins such as chemicals and fumes, and other factors.

Hepatitis B is one of the major causes of fibrosis and cirrhosis. When a virus enters the body it needs to find a cell to invade and infect in order to multiply and survive. The hepatitis B virus can multiply in different types of cells in the body, but the

main cell that it multiplies in is a liver cell. When the hepatitis B virus enters the liver cell it uses the chemicals in the cell to multiply and make more copies of itself. Eventually the new viruses are released back into the bloodstream. During the process it may kill the liver cell it has invaded. It is at this point that the body's immune system sends chemicals to the liver cells to try to repair the damage, but something goes wrong – the area around the liver cell becomes inflamed and irritated. Eventually, the area around the cell is surrounded by a type of tissue that may eventually form light scarring. As more and more liver cells are destroyed by the virus, the scarring starts to spread and it connects with other damaged and scarred cells.

After many years of infection the liver can be so damaged that it can not perform all of the functions needed to keep us healthy. The light to medium scarring of the liver is called fibrosis. The liver is also called a “non-complaining organ” so most people who develop fibrosis do not know that there is damage occurring.



## What Are Fibrosis / Cirrhosis?

After a period of time (usually many years) the fibrosis can become so severe that it spreads and connects to other liver tissue and forms extensive scarring. This is called cirrhosis. There are two types of cirrhosis – compensated and decompensated. **Compensated** cirrhosis means that the liver is heavily scarred but can still perform most of the functions that keep people healthy. **Decompensated** cirrhosis means that the liver is so scarred that blood can not flow through it which causes the liver functions to break down. When it reaches this stage, there are many conditions and symptoms that can occur.

### Tests

There are certain tests that may be performed by a doctor or nurse to tell how much the liver is damaged. Generally, a series of blood tests will be performed that will tell a doctor or nurse how the liver is functioning. Another test called a liver biopsy can tell the amount of liver damage HBV has caused. The liver biopsy is performed by taking a tiny sample or piece of the liver through a needle. A medical professional examines it under a microscope to look for damage, and a report is issued that describes how much (or how little) the liver is damaged.

### Progression

In general, it usually takes many years before someone develops the severe type of fibrosis that leads to cirrhosis. The worsening of fibrosis does not happen at the same rate for everybody. However, once fibrosis develops, its progress appears

to speed up as damage occurs. For example, it may take some people 10 years to form light scarring, but more severe scarring can occur within a shorter period of time.

### ***There are many factors that speed up the development of scarring in people with hepatitis B including:***

- Drinking large amounts of alcohol over a long period of time
- People who have been infected for a longer period of time and are older
- Smoking tobacco
- Being infected with a certain strain of HBV called genotype C
- High HBV viral load over a long period of time
- Being infected with HBV as well as hepatitis C (HCV), HIV, or hepatitis D (HDV) (called coinfection)
- A fungal infection caused by aflatoxins that infects the liver

### ***Once the liver is heavily scarred many conditions and symptoms can develop including:***

- Severe high blood pressure because blood cannot pass through the liver. This is called *portal hypertension*.
- Bleeding problems because the liver cannot produce substances that help the blood clot. This is called *coagulopathy*.
- Weakened blood vessels in the esophagus (tube leading from the

### ***Compensated cirrhosis:***

means that the liver is scarred, but it can still perform most of the functions that keep the body healthy. A person who has compensated cirrhosis may have few or no symptoms.

### ***Decompensated cirrhosis:***

means that the liver is so scarred and damaged that it is unable to function properly. People who have this type of severe scarring and damage can develop many signs and symptoms such as bleeding from the blood vessels in the throat, retaining a large amount of fluid or liquid around the stomach, and even a type of brain disease that causes mental confusion.



## What Are Fibrosis / Cirrhosis?

- mouth to the stomach), the stomach, and other areas in the digestive tract because blood is prevented from entering and leaving the liver due to severe scarring. This is called *varices*.
  - A build-up of fluid in the general area of the stomach because the liver cannot make enough of a chemical that helps the cells to maintain the proper balance of fluids within the cell. This is called *ascites*.
  - Infection when the fluid from ascites becomes infected from bacteria traveling from the intestines. This is called *spontaneous bacterial peritonitis*.
  - Swelling of the hands, legs and feet, which is called *edema*.
  - Brain disease because the liver cannot process the toxins in the body and these may eventually go to the brain. The liver also processes old red blood cells through a process that creates a chemical called ammonia. When the liver cannot process and remove this chemical, it can go to the brain. Symptoms of this condition are decreased intelligence, changes in the way people act, confusion, and possibly coma. This is called *hepatic (liver) encephalopathy*.
  - Problems with male and female sex hormones because the liver cannot make some hormones or regulate others. Men might develop breasts (called *gynecomastia*) and women may have *irregular periods* or menstrual cycles.
  - Itching all over the body because a substance called bile (produced by the liver to aid digestion of fat) gets into the skin. This is called *pruritus*.
  - The kidneys may be damaged and unable to function. This is called *renal disease*.
  - Enlargement of an organ called the spleen that stores red and white blood cells as well as cells that help the blood clot (platelets). This is caused by blood backing up into the organ due to portal hypertension. This is called *splenomegaly*.
- Any of these symptoms can be controlled by drugs or medical procedures. Unfortunately, when people reach this stage (called *end-stage liver disease*) there is no treatment that can reverse these conditions and eventually a liver transplant will be required.
- However, if fibrosis is identified, there are many steps that people can take to manage it including:

- Stop drinking alcohol and smoking tobacco or greatly cut back on the amount consumed
- Eat a healthy diet
- Perform light to moderate exercise
- Reduce stress
- Treatment with antivirals or interferon
- Regular check-ups with a doctor

## Fibrosis Treatment

Scientists used to believe that if someone developed scarring of the liver, it could never be reversed or healed.

However, there is now proof that when someone clears HBV or greatly reduces the HBV viral load due to treatment, the irritation, inflammation, and even light scarring can stop and can even be reversed. This is why it is important to monitor the health of the liver, and, if liver damage has occurred, to seek treatment to reduce the risk of developing cirrhosis.



The information in this fact sheet is designed to help you understand and manage HBV and is not intended as medical advice. All persons with HBV should consult a medical practitioner for diagnosis and treatment of HBV.

For more information about the hepatitis B, visit the following websites.  
**Hepatitis B Foundation: [www.hepb.org](http://www.hepb.org) • [HIVandHepatitis.com](http://HIVandHepatitis.com)**

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