



Canadian Liver Foundation  
Fondation canadienne du foie

*Bringing liver research to life*  
*Donner vie à la recherche sur le foie*

## Cirrhosis of The Liver

### What does the liver do?

Situated beneath the diaphragm in the upper right abdomen, the liver is the largest organ in the body (weighing 1-1.5 kg in adults). The liver receives an arterial blood supply from the hepatic artery, as well as blood from the intestinal tract via the portal vein. All digested and absorbed materials from the intestinal tract are processed, stored or excreted by the liver. Harmful materials, also carried to the liver in the blood from the intestines, are detoxified. Bile produced by the liver is expelled through the hepatic bile duct system into the intestines. Bile contains bile salts important for the digestion of fats and for the excretion of toxins.

### Is liver disease common?

There are over 100 known liver diseases that affect people of all ages. Today, one in four Canadians may be affected by liver disease. Each year, thousands of Canadians die from liver disease.

### What is cirrhosis of the liver?

The term cirrhosis refers to a state of advanced damage to the liver, where normal liver tissue has been replaced by scar tissue. Cirrhosis can have many effects on your body which are detailed below. Cirrhosis is a potentially life-threatening condition that can progress to liver failure.

### What are the most common causes of cirrhosis?

Cirrhosis is caused by long-term inflammation from various forms of liver disease. In Canada, major causes of cirrhosis include:

- viral infections caused by chronic viral hepatitis (types B and C)
- non-alcoholic fatty liver disease
- chronic alcoholism
- metabolic diseases such as alpha-1-antitrypsin deficiency, galactosemia and glycogen storage disorders
- inherited diseases such as Wilson disease and hemochromatosis
- bile duct disorders such as primary biliary cholangitis (PBC) and primary sclerosing cholangitis (PSC)
- toxic hepatitis caused by severe reactions to prescribed and over-the-counter medications, or prolonged exposure to environmental toxins
- repeated bouts of heart failure with liver congestion.

## **How do babies develop cirrhosis? Can they be treated?**

Biliary atresia, a condition caused by absent or injured bile ducts, is the most common cause of cirrhosis in babies. Babies suffering from this disease are jaundiced (yellowing of the skin and whites of the eyes) after their first month of life due to a build-up of bile in the liver. New ducts can be surgically formed in some cases restoring normal bile flow. When it proves difficult or impossible to achieve adequate bile flow and liver failure develops, liver transplantation is required.

## **What are the symptoms and complications of cirrhosis?**

People in the early stages of cirrhosis have few symptoms, if any. Over the years, as the scarring of the liver continues, symptoms and complications may include:

- loss of appetite, nausea and vomiting, weight loss
- jaundice, a yellow discoloration of the skin and whites of the eyes
- itching, caused by retention of bile products in the skin
- fluid build-up and painful swelling of the legs (edema) and abdomen (ascites)
- confusion and other mental changes, potentially leading to coma
- swelling or rupture of veins in the lower end of the esophagus from increased blood pressure in the blood vessels leading to the liver
- weakness.

## **What problems are associated with the advanced stages of cirrhosis?**

As the function of the liver deteriorates, fewer proteins such as albumin are produced, resulting in fluid accumulation in the legs known as edema. Similarly, fluid build-up known as ascites can occur in the abdominal cavity. Individuals with cirrhosis may bleed and bruise easily due to a decrease in proteins required for blood clotting. Some people may even experience intense itching due to bile salts that are deposited in the skin.

In the advanced stages of cirrhosis, jaundice occurs. A poorly-functioning cirrhotic liver no longer removes toxins effectively, leading to toxin accumulation in the blood. These accumulated toxins can impair mental function, and lead to personality changes and possibly coma. Early signs of toxin accumulation in the brain may include forgetfulness, concentration problems or changes in sleeping habits (sleep reversal patterns). These signs may progress to unresponsiveness and coma. Because the normal cleansing process is impaired by cirrhosis, some drugs are not properly filtered resulting in an increased sensitivity to certain drugs and their side-effects.



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Normally, blood from the intestines and spleen is pumped to the liver through the portal vein. However, cirrhosis impairs the normal flow of blood through the liver. Blood from the intestines, is then forced to find a new way around the liver through new blood vessels. Some of these new blood vessels called “varices”, which form primarily in the stomach and esophagus, may become quite large. These varices may rupture due to high blood pressure within them (portal hypertension) and thin vessel walls, causing internal bleeding in the stomach or esophagus.

## How is cirrhosis diagnosed?

- identifiable symptoms
- physical examination
- routine laboratory tests including liver biochemistry
- abdominal imaging (ultrasound, CAT scan, MRI)
- special tests such as FibroTest or FibroScan (special ultrasound)
- liver biopsy

## What treatments are used to for liver cirrhosis?

Treatments of cirrhosis are aimed at stopping or delaying the disease progression, minimizing liver cell damage and reducing complications. Thus, one must treat the underlying disease that caused the cirrhosis.

When cirrhosis is caused by alcohol, the patient must stop drinking to halt progression of the disease. For most other causes of cirrhosis, cessation of alcohol is also generally recommended. Cirrhosis caused by viral hepatitis may be treated with antiviral drugs to reduce liver cell injury.

Medications can also be given to control the symptoms of cirrhosis. For example, drugs called "diuretics" are used to remove excess fluid and to prevent edema and ascites from recurring. However, a low salt diet is also essential to treat those with ascites. Drug therapy can improve altered mental function associated with cirrhosis. Laxatives, such as lactulose, may be given to help absorb toxins and speed their removal from the intestines. A serious consequence of cirrhosis may be bleeding as a result of portal hypertension. Medications, such as beta blockers, may be prescribed to reduce portal hypertension.

Even when complications develop, they can often be treated. If the patient bleeds from the varices of the stomach or esophagus, the doctor can place rubber bands around these veins through a flexible tube (endoscope) that is inserted through the mouth and esophagus. Occasionally these veins are injected with a sclerosing (hardening) agent to stop bleeding.

In critical cases, a liver transplant may be necessary.



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## **If you have been diagnosed with cirrhosis, you must remember:**

- Do not drink alcohol.
- Minimize salt in your diet.
- Speak to your doctor about pain medications. It may be safer to take acetaminophen or Tylenol rather than aspirin or other anti-inflammatory medicines.
- Avoid sleeping pills and/or sedatives as they can have unanticipated effects.
- Do not take cough syrups that contain codeine.
- Do not take medications that contain narcotics.
- Avoid antibiotics called aminoglycosides.
- If you have varices, do not take Viagra.
- If you need surgery, please consult with your liver specialist first.
- Call your doctor or go to the emergency room if you have black stools.
- Book an ultrasound appointment every 6 months.
- Arrange to get your hepatitis A and B vaccinations.

Please discuss these recommendations with your doctor to ensure that they all apply to you.

*This information is current for March 2017.*