



Published on The Well Project (<https://www.thewellproject.org>)  
<https://www.thewellproject.org/hiv-information/caring-your-liver>

## **Caring for Your Liver**

Submitted on Feb 20, 2024

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## Liver Basics

Your liver is one of the most important organs in your body. It is also the largest – about the size of a football. It is protected from injury behind the lower right section of your ribs.

The liver acts as your body's chemical processing plant. Its functions include:

- Changing food into chemicals and [nutrients](#) that your body needs to stay healthy
- Storing nutrients from the foods you eat
- Breaking down medications, drugs and alcohol
- Removing waste from your blood
- Producing enzymes and bile that help you digest food
- Making proteins needed by the [immune system](#) to help your body fight infection

For people living with HIV, the liver is especially important because it processes many of the medications used to treat HIV. Unfortunately, sometimes HIV drugs can cause liver damage, which can prevent the liver from working properly.

## Symptoms of Liver Damage

Often there are no symptoms. If symptoms do occur, they include:

- Pain
- Enlarged liver
- Fatigue (extreme tiredness)
- Nausea
- Dark urine
- Clay-colored stool
- Jaundice (yellowing of the skin, eyes, and mucous membranes)

If you have these symptoms, it is important that you contact your health care provider. However, often there are no obvious signs of liver damage until liver disease is quite bad. That is why it is important to have blood tests that can detect liver problems before there are symptoms.

## Tests for Liver Damage

Simple blood tests called liver function tests (LFTs) or liver enzyme tests are one of the best ways to find out if you have liver inflammation. LFTs should be part of routine HIV blood work. High enzyme levels can indicate liver inflammation caused by prescribed and over-the-counter medications, herbal supplements, alcohol, hepatitis viruses, street drugs, or other medical conditions such as non-alcoholic fatty liver disease.

High levels of bilirubin may indicate liver problems. Bilirubin is a blood pigment (coloring agent) that is produced when the body breaks down red blood cells. Some HIV drugs may increase bilirubin levels. It is important to talk with your health care provider if you experience any of the symptoms of liver damage listed above.

# The Liver and HIV

While it is possible for any HIV drug in any of the [HIV drug classes](#) to cause liver damage, some drugs are more likely than others to cause damage.

Some drugs are more likely than others to cause damage.

Certain drugs in the nucleoside reverse transcriptase inhibitor class (NRTI) are more likely to have side effects that may cause liver problems. One such side effect is called mitochondrial toxicity.

Mitochondria use oxygen and sugar in the blood to make energy, and produce lactic acid as a waste product. Normally, the body gets rid of that waste product.

In mitochondrial toxicity, the lactic acid is not removed. High levels of lactic acid can cause a rare, but serious, condition called lactic acidosis. That condition can result in liver problems. Lactic acidosis is more common in women than men, and especially in pregnant or very overweight women. For more information, see our fact sheet on [Lactic Acidosis](#).

Non-nucleoside reverse transcriptase inhibitors (NNRTIs), especially Viramune (nevirapine), can cause liver problems. Problems are more likely in women with more than 250 CD4 cells and men with more than 400 CD4 cells, and during the first six weeks of treatment. In the US, Viramune is no longer recommended as a first-time HIV treatment.

Protease inhibitors (PIs), especially full-dose Norvir (ritonavir) and Aptivus (tipranavir) given with Norvir, may also cause liver damage at any time during treatment. People who live with both HIV and [hepatitis C](#) may be at greater risk for developing liver damage while taking these drugs.

In addition, the liver of people living with HIV may be damaged or stressed because of:

- Other prescription medications, repeated doses of over-the-counter drugs such as Tylenol (acetaminophen), repeated use of antibiotics, or exposure to chemicals
- AIDS-related [opportunistic infections](#) (OIs) such as MAC (mycobacterium avium complex), TB ([tuberculosis](#)), CMV (cytomegalovirus), or cryptosporidiosis
- Hepatitis, usually caused by infection with the hepatitis [A](#), [B](#), or [C](#) virus
- [Alcohol or drug abuse](#)

## Liver Disease and Women

Some liver problems occur during [pregnancy](#) or affect women more often than men. These include:

- Biliary cirrhosis (damage to the bile duct)
- Autoimmune liver diseases (liver cells are attacked by the body's own immune cells)
- Non-alcoholic fatty liver disease
- Hepatic adenomas (non-cancerous fatty liver tumors)

Women tend to develop alcohol-related liver disease, particularly cirrhosis (scarring of the liver) and hepatitis (inflammation of the liver), more quickly than men.

Oral contraceptives ([birth control](#) pills) can cause an increase in hepatic adenomas (fatty liver tumors) and should not be used by women who have had these benign (non-cancerous) tumors.

## Caring for Your Liver

The liver has a special ability to repair itself under most circumstances. Unfortunately, permanent

damage can also occur.

Good nutrition and a healthy lifestyle will go a long way toward supporting this hardworking organ.

If your HIV drugs are causing damage to your liver, it may be possible to switch to other drugs. This may not be an option for everyone. It is important to balance the need for HIV drugs with their potential to cause liver damage. Talk with your health care provider so that you can make the best decision for you. There are many things you can do to protect your liver from damage, help it heal, and support its function.

## Avoid Alcohol and Street Drugs

- Heavy drinking of any type of alcohol can cause cirrhosis (scarring). In the US, it is recommended that women have no more than 1 drink a day, or seven in a week.
- Many HIV drugs and other medications should not be combined with alcohol
- Avoid alcohol completely if you also have hepatitis
- Using some street drugs may damage your liver

## Get Tested for Hepatitis

- Hepatitis [A](#) (HAV) and [B](#) (HBV)
  - If you test negative, get vaccinated against HAV and HBV. If you cannot get vaccinated, using [condoms](#) during sex can prevent infection. Hepatitis A is transmitted through contaminated food and the body generally gets rid of it on its own, although HAV can be more severe in people over 40 or people with other forms of hepatitis.
  - If you test positive for Hepatitis B, talk to your health care provider about treatment.
- [Hepatitis C](#) (HCV)
  - If you test negative, there is no vaccination. You can avoid exposure to the HCV virus by avoiding contact with infected blood or needles and using condoms during sex.
  - If you test positive, it is important that your health care provider monitor both HIV and HCV and provide appropriate care and treatment. HCV can be treated successfully, even in people living with HIV, and there are several new and effective HCV drugs with fewer side effects than older regimens.
  - Unlike HIV, successful treatment can cure HCV. For more information about HCV treatment, see our fact sheet on the [Treatment of Hepatitis C](#).

## Eat Healthy Food and Be Physically Active

- Maintain a healthy body weight through [healthy](#) foods and regular [physical activity](#)
- Eat plenty of fruits and vegetables, especially dark green leafy vegetables (such as spinach, kale, collard greens), and orange and red colored fruits and vegetables (such as oranges, beets, carrots)
- Drink lots of fluids, especially water
- Avoid high-fat dairy products, processed vegetable oils (hydrogenated fats), deep-fried foods, and fatty meats

## Be Cautious with Vitamins and Supplements

- Do not take high doses of vitamin A or carotenoids (beta-carotene) if you have liver disease
- Avoid iron supplements
- Herbal therapies, such as milk thistle (silymarin), have been widely used to treat liver problems. Some herbs can harm the liver, and some interact with HIV drugs. It is important to tell your health care provider if you are using any herbs or [supplements](#).

## Taking Care of Yourself

When your liver is damaged, it cannot perform all of its important functions properly. Since there may not be any obvious symptoms of liver damage, it is important to check your liver health with regular medical visits and lab tests. Talk with your health care provider to find the HIV drugs that are best for you and your liver. In addition, good nutrition and a healthy lifestyle will go a long way toward supporting this hardworking organ.

## Additional Resources

Select the links below for additional materials related to liver health.

- [Love Your Liver \(British Liver Trust\)](#)
- [Foods for Liver: 10 Foods for a Healthy and Clean Liver \(Huffpost\)](#)
- [HIV and Hepatotoxicity \(HIVinfo\)](#)
- [Liver Function Tests \(Mayo Clinic\)](#)
- [HIV and Your Liver \(Viral Hepatitis, Fatty Liver\) \(POZ\)](#)
- [Introduction to the Liver: Liver Basics \(US Department of Veterans Affairs\)](#)
- [Liver Function Tests \(aidsmap\)](#)
- [Fatty Liver Disease \(MedlinePlus\)](#)
- [Alcohol-Related Liver Disease \(DrinkAware\)](#)
- [Liver-Related Side Effects \(i-base\)](#)
- [Liver Health \(CATIE\)](#)
- [HIV and Fatty Liver Disease \(i-base\)](#)
- [Liver Disease, Hepatitis and HIV \(aidsmap\)](#)
- [The Impact of HIV/AIDS on the Liver \(Arizona Liver Health\)](#)
- [Fatty Liver Disease Is Common Among People With HIV \(POZ\)](#)



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