

# Ribavirin (Ibavyr, Moderiba)

## Summary

Ribavirin is a medication used to treat hepatitis C. It is used in combination with other medications to cure people of the hepatitis C virus. Ribavirin is taken orally twice per day with food. Common side effects include fatigue, lower-than-normal levels of red blood cells (anemia), trouble sleeping and headache. Hepatitis C treatment can cure a person from hepatitis C. However, a person could become infected again.

## What is ribavirin?

Ribavirin is a medication that is used in combination with other medications to treat hepatitis C (Hep C). It is sold by itself under the brand name Ibavyr and Moderiba.

## How does ribavirin work?

Hep C is a disease of the liver that is caused by a virus. A virus is a very tiny germ that infects a cell and causes the cell to make copies of the virus in a process called replication. The hepatitis C virus has at least six different strains, which are also known as genotypes.

Ribavirin is a type of antiviral medication called a nucleoside analogue. It is not clear exactly how ribavirin works to stop the hepatitis C virus.

When taken by itself, ribavirin is a weak drug. However, when taken together with other medications the combination is powerful.

Hep C treatment can cure a person from Hep C. However, being cured of Hep C does not protect you from being reinfected in the future.

## How do people use ribavirin?

Ribavirin is taken as a pill twice daily. Doses usually range between 800 and 1,200 mg/day, depending on a person's weight.

## FACT SHEET

**Published**  
2017

## CONTACT US

**by telephone**  
1-800-263-1638  
416-203-7122

**by fax**  
416-203-8284

**by e-mail**  
info@catie.ca

**by mail**  
555 Richmond Street West  
Suite 505, Box 1104  
Toronto ON M5V 3B1

Ribavirin must be used in combination with other medications. These medications are called direct-acting antivirals (DAAs). In Canada, ribavirin is approved for use with the following drug combinations:

- Holkira Pak
- sofosbuvir (Sovaldi)
- Technivie
- Zepatier

The combination a person takes depends on which genotype they have, whether they have been treated before, the amount of liver injury and other issues.

When ribavirin is taken with other medications it may be approved only for people with certain genotypes of the hepatitis C virus and/or a severe degree of liver injury.

### How long is treatment?

Ribavirin is taken with other DAA medications. DAAs are a group of medications that directly attack the ability of a specific virus, such as hepatitis C, to make copies of itself. To find out the duration of treatment for a DAA taken with ribavirin see the drug fact sheet for the DAAs listed above.

### How do people take ribavirin?

Ribavirin is taken orally twice per day with food. The amount of ribavirin you take depends on your body weight. Your doctor or nurse will tell you how much to take.

### Sticking to treatment

All medications work best when they are taken exactly as prescribed and directed. This means taking the medications in the right amount and at the right time for the entire time that your treatment lasts. Skipping doses or stopping treatment altogether means that the treatment may not work as well and the chance of being cured is lower.

### What can you do if you forget to take your medication?

If you miss taking a dose of ribavirin and remember within six hours of when you were supposed to take it, take it as soon as possible. If more than six hours has passed from when you were supposed to take your dose, skip the missed dose and take the next dose at the regularly scheduled time. Do not take a double dose.

If you find that you are not able to take your medication as prescribed and directed, talk to your nurse or doctor. You can also check out the section “Tips for staying on track with treatment” in CATIE’s *Hepatitis C: An in-depth guide*.

### How likely is a cure from treatment that includes ribavirin?

Hep C treatment can cure a person from Hep C. For more information on the cure rates for combinations that include ribavirin, see the drug fact sheets on [www.catie.ca](http://www.catie.ca).

Sometimes in real life the cure rates can be lower than they are in clinical trials.

A cure for Hep C is also known as a sustained virological response (SVR). This is when the hepatitis C virus is no longer detected in the blood 12 or 24 weeks after treatment ends.

### Warnings

#### 1. Combination therapy

Ribavirin must be taken in combination with other medications such as Harvoni, sofosbuvir or Zepatier, so all of the warnings that apply to the other medications also apply to people considering ribavirin. For more information on hepatitis C medications, see the drug fact sheets on [www.catie.ca](http://www.catie.ca).

## 2. Pregnancy

If you are pregnant or think that you might be pregnant and you are taking ribavirin, talk to your doctor right away. This drug should not be used by the following people:

- pregnant people
- people who may become pregnant and their partners

This is because ribavirin can severely damage the fetus. Pregnancy should not be planned while you or your partner are on this therapy. If you are planning to have a baby, you should wait six months after therapy has been stopped. Ribavirin can also be toxic to sperm.

## 3. Breastfeeding/nursing

People with infants who are taking ribavirin should not breastfeed or nurse their children.

## 4. Heart problems

Some people who have low levels of red blood cells and/or iron in the blood (anemia) have developed heart problems, including heart attacks, when they used ribavirin. If you experience pain, pressure, burning or heaviness in the chest, sweating, trouble breathing, light-headedness or discomfort in your upper body, seek medical attention immediately.

## 5. Blood problems

Ribavirin can cause some of your red blood cells to die. Regular blood tests are important to monitor this problem. The dose of ribavirin may be reduced if your blood counts fall too low. Regular visits to your doctor for checkups and blood tests are very important while you are taking ribavirin.

Always tell your doctor and nurse about any side effects you are experiencing.

## 6. Lactic acidosis

Lactic acidosis is the name given to a condition where high levels of lactic acid build up in the blood. It may occur in people with HIV who use

ribavirin, particularly if they also use the HIV medicines ddI (didanosine, Videx EC) and/or d4T (stavudine, Zerit). The following signs/symptoms can develop when a person has lactic acidosis:

- unexpected tiredness
- nausea and/or vomiting
- abdominal pain
- shortness of breath

If you have these symptoms, talk to your doctor right away. Blood tests can help your doctor determine whether you have lactic acidosis.

## Special populations

Ribavirin has not been tested in the following populations:

- people who are pregnant
- people under the age of 18
- people with liver failure (decompensated cirrhosis)
- people who have had a liver transplant
- people with severe kidney impairment or disease
- people who are co-infected with hepatitis B

People with the following conditions should **not** take ribavirin:

- people with a history of significant or unstable heart disease
- people with serious kidney disease (estimated glomerular filtration rate or eGFR less than 50 mL/min)

## People over the age of 65

There is a risk of liver, kidney and heart problems and a greater risk of developing anemia for people over the age of 65 who are taking ribavirin.

## People co-infected with HIV

Ribavirin and sofosbuvir have been tested in people who are co-infected with HIV and Hep C. For more information, see the sofosbuvir fact sheet.

If you are in one of the groups listed under special populations, speak to your doctor about the most appropriate treatment options.

## Side effects

When ribavirin is taken with other medications, the most common side effects are:

- fatigue
- difficulty sleeping
- headache
- nausea
- low numbers of red blood cells and iron in blood (anemia)
- low white blood cells (neutropenia)
- low blood platelets (thrombocytopenia)

This is not a complete list of side effects for ribavirin.

## Drug interactions

Always consult your doctor and pharmacist about taking other prescription and non-prescription drugs, including methadone or opiate substitution therapies, herbs, supplements and street drugs.

Drug interactions occur when one medication affects how another is absorbed, used or flushed out of the body. Some drugs can interact with ribavirin, increasing or decreasing the level of one or both drugs in the body. Increased levels can lead to new or more severe side effects. Decreased levels may mean that the drug won't be as effective.

It is not recommended to use ribavirin with the following medications:

- the HIV medication didanosine (Videx EC)

When ribavirin is taken with the following medications, drug interactions may occur:

- the HIV medications:
  - AZT (zidovudine, Retrovir, and also found in the combination pills Combivir and Trizivir)
  - lamivudine (3TC)
  - stavudine (d4T, Zerit)
- the medication to lower immune response or prevent organ transplant failure, azathioprine

Ribavirin can temporarily weaken the bone marrow. Use of the anti-HIV drug AZT may make this worse.

Ribavirin may weaken the activity of the anti-blood-clotting drug warfarin (Coumadin).

This is not a complete list of possible drug interactions with ribavirin.

Talk to your nurse, doctor and pharmacist if you are taking any of these medicines. One way to manage drug interactions is to make sure that your doctor and pharmacist know about *everything* you are taking, including prescription drugs, over-the-counter drugs, street drugs, herbal medications, supplements or anything else. If you have more than one doctor or pharmacist, it is possible for drug interactions to get missed. If more than one doctor is writing prescriptions for you, let each one know about everything you are taking. If possible, use the same pharmacy for all your prescriptions.

## Availability

Ribavirin, manufactured by Pendopharm or AbbVie, has been approved by Health Canada and is available in Canada.

Your nurse, doctor or pharmacist can tell you more about availability and coverage of ribavirin in your region.

CATIE's online Treatment coverage in your region section of Hepatitis C: An in-depth guide contains information about provincial and territorial drug coverage.

## References

1. Pendopharm, Ribavirin (Ibavyr) *Product Monograph*, June 2014
2. Lafeuillade A, Hittinger G, Chadapaud S. Increased mitochondrial toxicity with ribavirin in HIV/HCV coinfection. *Lancet* 2001;357:280–281.
3. Kakuda TN, Brinkman K, Mitochondrial toxic effects and ribavirin. *Lancet* 2001;357:1802–1803.
4. Salmon-Céron D, Chauvelot-Moachon L, Abad S, et al. Mitochondrial toxic effects and ribavirin. *Lancet* 2001;357:1803–1804.
5. Guyader D, Poisignon Y, Cano Y, et. al. Fatal lactic acidosis in an HIV-positive patient treated with interferon and ribavirin for chronic hepatitis C. *Journal of Hepatology* 2002;37:289–292.
6. Bini EJ, Mehandru S. Incidence of thyroid dysfunction during interferon alfa-2b and ribavirin therapy in men with chronic hepatitis C: a prospective cohort study. *Archives of Internal Medicine* 2004 Nov 22;164(21):2371–2376.
7. Carella C, Maziotti G, Morisco F, et al. The addition of ribavirin to interferon-alpha therapy in patients with hepatitis C virus-related chronic hepatitis does not modify the thyroid autoantibody pattern but increases the risk of developing hypothyroidism. *European Journal of Endocrinology* 2002;146:743–749.
8. Narayana K, D’Souza UJA, Rao KPS. Ribavirin-induced sperm shape abnormalities in Wistar rat. *Mutation Research* 2002;193–196.
9. Schulman S. Inhibition of warfarin activity by ribavirin. *Annals of Pharmacotherapy* 2002;36(1):72–74.
10. Naggie S, Sulkowski M, Lalezari J, et al. Sofosbuvir plus ribavirin for HCV genotype 1-3 infection in HIV coinfecting patients (PHOTON-1). *21st Conference on Retroviruses and Opportunistic Infections*, Boston, 2014. Abstract 26.
11. Sulkowski M, Naggie S, Lalezari J, et al. Sofosbuvir and ribavirin for hepatitis C in patients with HIV coinfection. *JAMA* 2014 312:353-361.
12. Curry MP, Fornis X, Chung RT. Sofosbuvir and ribavirin prevent recurrence of HCV infection after liver transplantation: An open-label study *Gastroenterology* Vol 148 (1) January 2015, Pages 100–107

**Author(s): Anderson S**

## Disclaimer

Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV- and hepatitis C-related illness and the treatments in question.

CATIE provides information resources to help people living with HIV and/or hepatitis C who wish to manage their own health care in partnership with their care providers. Information accessed through or published or provided by CATIE, however, is not to be considered medical advice. We do not recommend or advocate particular treatments and we urge users to consult as broad a range of sources as possible. We strongly urge users to consult with a qualified medical practitioner prior to undertaking any decision, use or action of a medical nature.

CATIE endeavours to provide the most up-to-date and accurate information at the time of publication. However, information changes and users are encouraged to consult as broad a range of sources as possible. Users relying on this information do so entirely at their own risk. Neither CATIE, nor any of its partners, funders, employees, directors, officers or volunteers may be held liable for damages of any kind that may result from the use or misuse of any such information. The views expressed herein or in any article or publication accessed or published or provided by CATIE do not necessarily reflect the policies or opinions of CATIE nor the views of its partners and funders.

## Permission to reproduce

This document is copyrighted. It may be reprinted and distributed in its entirety for non-commercial purposes without prior permission, but permission must be obtained to edit its content. The following credit must appear on any reprint: *This information was provided by the Canadian AIDS Treatment Information Exchange (CATIE). For more information, contact CATIE at 1-800-263-1638.*

Production of this document has been made possible through a financial contribution from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.

CATIE Ordering Centre No: ATI-50249  
(aussi disponible en français, ATI-50250)

CATIE fact sheets are available for free at [www.catie.ca](http://www.catie.ca)

## CONTACT US

### by telephone

1-800-263-1638  
416-203-7122

### by fax

416-203-8284

### by e-mail

[info@catie.ca](mailto:info@catie.ca)

### by mail

555 Richmond Street West  
Suite 505, Box 1104  
Toronto ON M5V 3B1



Canada's source for  
HIV and hepatitis C  
information