

# Ribavirin (Ibavyr)

## Summary

Ribavirin is a type of antiviral medication. It is approved in Canada for the treatment of chronic hepatitis C when used in combination with direct-acting antiviral medications. Ribavirin is taken orally twice per day with food. Potential side effects include tiredness, lower-than-normal levels of red blood cells (anemia), trouble sleeping and headache. Hepatitis C treatments are highly effective and cure over 95% of people with hepatitis C.

## What is ribavirin?

Ribavirin is a type of antiviral medication called a nucleoside analogue. It is approved in Canada for the treatment of chronic hepatitis C when used in combination with direct-acting antiviral medications. Ribavirin is sold by itself under the brand name Ibavyr.

## How does ribavirin work?

It is not clear exactly how ribavirin works to stop the hepatitis C virus, but in combination with direct-acting antivirals, it blocks the ability of the hepatitis C virus to make copies of itself in the liver. Over time, these actions eliminate the hepatitis C virus from the body.

## Does ribavirin cure people of hepatitis C?

Hepatitis C treatments are highly effective and cure over 95% of people with hepatitis C. Ribavirin is used in combination with direct-acting antivirals to treat hepatitis C. However, on its own, ribavirin does not cure people of hepatitis C.

A cure for hepatitis C is also known as a sustained virological response (SVR). A person is cured if the hepatitis C virus is not detected in the blood 12 weeks after the end of treatment.

If a person is cured of hepatitis C, they can get hepatitis C again if they are exposed to the hepatitis C virus.

# FACT SHEET

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## CONTACT US

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

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

## How do people with hepatitis C use ribavirin?

Ribavirin is taken orally twice per day with food. Dosage recommendations are 1,000 mg for a person weighing under 75 kg (165 pounds) and 1,200 mg for a person weighing 75 kg (165 pounds) or more. A healthcare provider may suggest a different dosage depending on the specific situation.

Ribavirin must be used in combination with direct-acting antivirals. Certain combinations are approved only for people with certain genotypes of the hepatitis C virus and/or a severe degree of liver injury. In Canada, ribavirin is approved for use with the following direct-acting antivirals:

- Epclusa (velpatasvir and sofosbuvir)
- Harvoni (ledipasvir and sofosbuvir)
- Zepatier (elbasvir and grazoprevir)

Information about each of these direct-acting antivirals is included in separate fact sheets. The direct-acting antiviral regimen a person takes depends on which genotype they have, whether they have been treated before, the amount of liver injury, other health issues they have and other medications they are taking. The length of treatment will depend on which direct-acting antiviral regimen the healthcare provider prescribes.

## How important is it to stick to treatment?

All medications work best when they are taken exactly as prescribed and directed. People taking ribavirin and direct-acting antivirals should take all their pills every day, as prescribed by their healthcare provider. It is very important to finish the entire course of treatment. This gives the treatment the best chance of working to cure hepatitis C.

## What can be done about missed doses?

When a person taking ribavirin misses a dose and it is within six hours of when it should have been taken, it is important to take the missed dose immediately or as soon as possible. If it has been

more than six hours since a dose was supposed to have been taken, that dose should be skipped and the next dose should be taken at the appropriate time. A double dose should not be taken. A person should continue their treatment until all doses have been taken.

If a person finds it difficult to stick to treatment, it is important to discuss this with their healthcare provider. Tips for sticking to treatment can be found in CATIE's *Hepatitis C: An In-Depth Guide*.

## Warnings

### 1. Combination therapy

Ribavirin must be taken in combination with direct-acting antiviral medications such as Epclusa, Harvoni or Zepatier. All of the warnings that apply to those medications also apply to people considering ribavirin. For more information on hepatitis C medications, see the treatment fact sheets.

### 2. Pregnancy

Treatment that includes ribavirin must not be taken by anyone who is pregnant or planning a pregnancy. Ribavirin can cause severe birth defects and can also be toxic to sperm. Ribavirin should not be used by either partner for at least six months before trying to get pregnant. Two reliable forms of contraception (one for each partner) are recommended during treatment with ribavirin and for six months after treatment completion.

### 3. Breastfeeding/Chestfeeding

People with infants who are taking ribavirin should not breastfeed or chestfeed their children. It is not known whether the medication is present in human milk.

### 4. Cardiovascular effects

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. Anyone who experiences pain, pressure, burning or heaviness in the chest, sweating, trouble breathing, light-headedness or

discomfort in their upper body should seek medical attention immediately.

## 5. Blood problems

Ribavirin can cause some of the red blood cells to die, which can lead to anemia. Regular blood tests are important to monitor for this problem. The dose of ribavirin may be reduced if a person's blood counts fall too low. People taking ribavirin should regularly visit their healthcare provider for checkups and blood tests.

## 6. Lactic acidosis

Lactic acidosis is 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 other HIV medicines like ddI (didanosine, Videx EC) and/or d4T (stavudine, Zerit). The following symptoms can develop when a person has lactic acidosis:

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

Anyone experiencing any of these symptoms should talk to their healthcare provider immediately.

## 7. People under the age of 18 years

The safety and effectiveness of treatment with ribavirin for people under the age of 18 years has not been determined.

## 8. Special populations

People with the following conditions should speak with their healthcare provider about the most appropriate treatment options for them:

- liver problems other than hepatitis C
- severe liver injury such as decompensated cirrhosis
- previous liver, kidney or other organ transplant

- severe kidney injury or on dialysis
- history of significant or unstable heart disease
- co-infection with hepatitis B
- blood disorders such as thalassemia or sickle cell anemia

Ribavirin is generally safe. Anyone who is considering treatment that includes ribavirin should discuss all of their medical conditions with their healthcare provider.

## Side effects

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

- fatigue (extreme tiredness)
- difficulty sleeping
- headache
- nausea
- low numbers of red blood cells and iron in blood (anemia)
- shortness of breath
- lack of energy or strength

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

## Drug interactions

Some prescription drugs, over-the-counter drugs, herbs, supplements and other drugs (both legal and illegal) can interfere with the absorption and/or the effectiveness of ribavirin. This is called a drug interaction.

Some drugs taken for other conditions can interact with ribavirin by 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 important that people discuss all medications, supplements, herbs and other drugs (both legal and illegal) they are taking with their doctor, nurse

or pharmacist. If a person has more than one healthcare provider or pharmacist, it is possible for drug interactions to get missed. Using the same pharmacy for all prescriptions can be helpful.

This fact sheet is not comprehensive and lists only some of the potential and actual drug interactions with ribavirin. Speak with a pharmacist to find out more about drug interactions with ribavirin.

The following medications are contraindicated (should not be used) with ribavirin:

- HIV medications that contain ddl (didanosine, Videx EC)

When ribavirin is taken with the following medications it could potentially cause significant drug interactions:

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

## Availability

Ribavirin, manufactured by Pendopharm, has been approved by Health Canada and is available in Canada. Pharmacists are a good source of information about public and private health insurance coverage for ribavirin.

CATIE's online module "Federal, Provincial and Territorial Drug Access Programs" also contains information about Canadian drug coverage.

## Acknowledgement

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## Reference

Pendopharm. Ribavirin (Ibavyr). *Product monograph*. March 26, 2015.

**Author:** Kushner R

## 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.

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## CONTACT US

### by e-mail

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

### by mail

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

