



INTERFERON AND RIBAVIRIN

STANDARD TREATMENT FOR HEPATITIS C

The standard treatment for hepatitis C (HCV) is the combination of interferon (IFN) and ribavirin (RBV) taken for 48 weeks. Unfortunately, this combination has serious side effects and is not very effective. These drugs are discussed below.

INTERFERON (IFN)

WHAT IS INTERFERON (IFN)?

IFN is a protein made by various cells of the immune system, including white blood cells. IFN is produced as a response to “foreign” cells including viruses, bacteria, parasites, and tumor cells. The name “interferon” comes from IFN’s ability to interfere with the multiplication of these foreign cells.

During an infection, IFN is released and increases the body’s immune response. This accounts for many of IFN’s side effects (see below.) There are different classes of IFN, including: alpha, beta gamma and lambda. Synthetic interferons have been developed using DNA technology. There are currently 12 types of interferon with more being studied.

Various types of interferon have been approved to treat different diseases. Recent research has focused on using interferon to enhance the effects of other therapies, for example to treat breast cancer.

HOW IS IFN USED?

IFN is injected under the skin three times a week. The usual dose is 3 million international units (MIU). IFN is provided as a powder that gets dissolved in sterile water, or in pre-filled syringes. The volume of IFN that gets injected is very small, about 0.5 mL or 10 drops. The needle is about ½ inch long. Dosing is normally based on patient weight.

In 2001, the FDA approved a new **pegylated** form of IFN. **Pegylated interferon stays in the body longer and can be injected just once a week.** Pegylation means attaching strands of polyethylene glycol (PEG) to a molecule. PEG-IFN has become the standard form of IFN to treat HCV. Interferon should be stored in the refrigerator but must be kept from freezing.

WHAT ARE THE SIDE EFFECTS?

IFN can cause a shortage of different types of blood cells. A shortage of a type of white blood cells called neutrophils (neutropenia) can reduce the ability to fight infections. A shortage of red blood cells is called anemia (see fact sheet 552.) A drop in platelets (thrombocytopenia) can lead to easy bleeding and bruising.

Flu-like symptoms follow each injection of interferon in about half of all patients. These include fatigue (see fact sheet 551,) fever, chills, headache, and muscle aches and pains. Some patients develop diarrhea (see fact sheet 554.) Many people find that these IFN side effects become less severe after repeated injections. They can be managed with simple pain relievers such as ibuprofen or antihistamines.

Depression, anxiety and thoughts of suicide have been reported. These might be caused by the diseases being treated or the IFN.

Because IFN is injected, former drug injectors may be uncomfortable about using needles and may prefer to have the dose administered by a health care provider.

RIBAVIRIN (RBV)

WHAT IS RIBAVIRIN (RBV)?

Ribavirin (RBV) is a drug that was discovered in 1970. The way it fights viruses is not well understood.

RBV was approved in 1985 in an inhaled form to fight a form of influenza in children. Used by itself, RBV is not effective against HCV.

HOW IS RBV USED?

RBV is taken by mouth as tablets, capsules, or in liquid form. It is normally taken twice a day with food.

The standard dose depends on the genotype of hepatitis C. It is normally between 800 mg and 1,400 mg per day. Tablets are 200 mg each. Current treatment guidelines recommend doses of RBV based on patient weight.

WHAT ARE THE SIDE EFFECTS?

The main side effect of RBV is anemia (reduction in the number of red blood cells, see fact sheet 552.) It usually shows up in

the first four weeks of treatment and then gets better. Anemia can worsen some heart conditions.

RBV can cause birth defects. Female patients taking RBV must not get pregnant during treatment and for 6 months after ribavirin is stopped. This is also true for female partners of male patients taking RBV.

COMBINATION IFN/RBV THERAPY

Studies of the combination of IFN and RBV showed that it worked better to treat HCV than either drug alone. The combination was approved by the FDA in 1998. It has become the standard treatment of HCV. The length of treatment can be from 12 to 48 weeks, depending on the HCV genotype (see fact sheet 674) and how well the treatment is working.

WHO SHOULD TAKE IFN/RBV?

The combination of IFN and RBV is the only therapy currently approved by the FDA to treat HCV. People who test positive for HCV might spontaneously (without medications) clear HCV. If they don’t, they should begin treatment with IFN/RBV within 12 weeks of infection.

HCV is more serious in people who also are infected with HIV. This is called “coinfection.” See fact sheet 507 for more information on HCV/HIV coinfection.

HOW DO IFN AND RBV REACT WITH HIV MEDICATIONS?

RBV intensifies the effect of ddI, a drug used to fight HIV (see fact sheet 413) and can cause dangerous side effects. They should not be used together. The anti-HIV drug zidovudine (see fact sheet 411) can cause anemia and should not be combined with RBV.

THE BOTTOM LINE

The combination of IFN and RBV is the standard treatment for HCV. The treatment can be difficult to take. About 15% of patients with HCV stop treatment due to side effects. A higher proportion of people who have both HIV and HCV experience serious side effects. Many other drugs are being studied to treat HCV.

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