

# Hepatitis B Fact Sheet

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a series of fact sheets written by experts in the field of liver disease



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## Which Hepatitis B Drug Treatment to Use First

Today, there are several antivirals and one interferon medication used to treat people infected with the hepatitis B virus (HBV). Despite the number of treatment options available, it is important to carefully select which drug to use first. For example, use the wrong antiviral and an individual could end up “resistant” to other antiviral drugs.

The choices are complex and highly dependent on the individual’s gender, hepatitis B “e” antigen status (HBeAg), viral load (HBV DNA), HBV genotype or strain, and length of infection. The first treatment used should quickly lower viral load without causing viral resistance, and strengthen a person’s immune system so it can control or contain the infection by producing antibodies and attacking HBV-infected liver cells.

To accomplish those goals, experts recommend either of two potent antivirals – entecavir (Baraclude) or tenofovir (Viread) – or pegylated interferon (Pegasys), which boosts the immune system to fight infection. This recommendation applies to everyone no matter if they test positive or negative for HBeAg. Here is additional information about these three options:

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**Pegylated interferon (Pegasys):** Interferon is a substance that stimulates and boosts the immune system to fight infections. Pegylated interferon is administered through a weekly injection right under the skin and appears to work best in people whose ALT levels are elevated. Elevated ALT levels indicate the immune system is already fighting the infection and potentially could benefit from interferon’s “boosting” effect. It also works best in people with HBV genotype A or B, so a genotype test should be performed prior to starting interferon treatment to make sure

this is the right choice. Unlike antivirals, interferon causes side effects and is a costly treatment option.

### Those who should be treated with pegylated interferon include:

- People who are HBeAg-positive, have elevated ALT levels, and have HBV genotype A or B may benefit from interferon treatment over a 24- to 48-week period. One study found that 25% of HBeAg-positive people treated with pegylated interferon achieved undetectable HBV DNA, 27% lost HBeAg and developed “e” antibodies, and 39% achieved normal ALT levels.
- People who are HBeAg-negative may also benefit from interferon. Studies show that 63% treated with pegylated interferon achieved undetectable HBV DNA, and 38% achieved normal ALT.



### Which Antiviral to Use First

Pegylated interferon has been reported to enable 3% of those treated to clear the virus – clearing the hepatitis B surface antigen and producing surface antibodies. Because interferon is not a direct antiviral medication, people who are treated with it do not develop drug resistance.

**Antiviral medications entecavir and tenofovir:** These drugs, administered orally, interrupt important steps in the virus's reproduction process by stopping or interfering with the DNA formation or replication. Each type or class of antiviral disrupts a different "step" in HBV's complicated reproduction cycle. Some antivirals work in similar ways and, over time, HBV can develop mutations that enables it to reproduce despite treatment with that class of antiviral. HBV has a weak genetic blueprint, and with millions of HBVs generated daily, some inevitably have mutations that allow them to "resist" an antiviral's reproductive roadblock.

Because a person may end up taking antiviral medication for many years, it is important to select the "first" antiviral carefully to lower the risk of developing drug resistance later in life. This is a summary of

the top recommended antivirals for first-line treatment:

**Entecavir (Baraclude):** Approved in 2005, this 0.5-mg daily pill inhibits three steps in the viral replication process and reduces viral load and improves liver health faster than older antivirals, such as lamivudine and adefovir (Hepsera). Its rate of viral resistance is quite low – 1.25% after five years.

- In HBeAg-positive patients, it produced undetectable HBV DNA in 67% of those treated after 48 weeks, HBeAg loss in 22%, and ALT normalization in 68%.
- Among HBeAg-negative patients treated for 48 weeks, it generated undetectable HBV DNA in 51% and normal ALT levels in 78%.

While resistance to entecavir is low in those who have never been treated, those who have already developed resistance to lamivudine will quickly develop resistance to entecavir and should be treated with a different antiviral.

**Tenofovir (Viread):** This 300-mg daily tablet is the newest antiviral approved for hepatitis B treatment by the U.S. Food and Drug Administration. It is a potent antiviral, and has

been found to help a small percentage of people even clear the virus entirely out of the body – something only pegylated interferon has been found to do.

- In HBeAg-positive patients, tenofovir generated undetectable HBV DNA in 76% of those treated for 48 weeks, HBeAg loss in 22%, complete clearance of the virus (marked by loss of the hepatitis B surface antigen – HBsAg) in 3%, and normalization of ALT levels in 69%.
- Among HBeAg-negative patients, tenofovir produced undetectable HBV DNA in 93% and ALT normalization in 77%. Information on clearance of HBsAg is not yet available.

Resistance to tenofovir is so low that there is no consensus yet on its resistance rate.

Other antivirals approved by FDA for hepatitis B treatment, but not recommended as first-line treatment, include adefovir (Hepsera), telbivudine (Tyzeka), and lamivudine. These three antivirals are not recommended for first-line treatment because of their high rate of viral resistance.

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The information in this fact sheet is designed to help you understand and manage HBV and is not intended as medical advice. All persons with HBV should consult a medical practitioner for diagnosis and treatment of HBV.

For more information about hepatitis B, visit the following websites.  
**Hepatitis B Foundation: [www.hepb.org](http://www.hepb.org) • [HIVandHepatitis.com](http://HIVandHepatitis.com)**

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