

## **Hepatitis**

Hepatitis means inflammation of the liver, and it is a serious liver disease commonly caused by hepatitis A, B, and C viruses. Viral hepatitis is the leading cause of liver cancer, and it is very prevalent in the United States. It is estimated that 1.2 million Americans are living with chronic hepatitis B and 3.2 million are living with chronic hepatitis C. Because most people with chronic hepatitis do not have any symptoms, they do not know that they are infected. Thus, it is important to read information below, ask your doctor, get tested, and if available, get vaccinated.

### **Key Differences between Viral Hepatitis**

Hepatitis Types	Transmission (infected by)	Vaccination (protected by)
Hepatitis A	Contaminated fecal matter on food, drinks, and other objects	2 doses of hepatitis A vaccine.
Hepatitis B	Blood and other body fluids	3-4 doses of hepatitis B vaccine. HBIG may also be required.
Hepatitis C	Blood and other body fluids	No hepatitis C vaccine is available.

## **About Hepatitis A**

Hepatitis A is a contagious liver disease caused by the hepatitis A virus, which infects about 30,000 Americans each year. Hepatitis A can cause a mild to severe acute illness, lasting between couple weeks to several months. Like hepatitis B, there is a safe and effective vaccine available to protect people from hepatitis A.

### **Vaccination**

- The best way to prevent hepatitis A is by hepatitis A vaccination, which is a series of 2 shots administered 6 months apart. It is safe and effective, and it is recommended for all children, some international travelers, and people with certain risk factors and medical conditions. Please ask your doctor or ask local county health department about the hepatitis A vaccination.
- Hepatitis A can also be prevented by frequent hand-washing with soap and water, especially after using the bathroom, changing diapers, and before preparing and eating food.

### **Symptoms**

- People with hepatitis A may have mild to severe flu-like symptoms, including fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored bowel movements, joint pain, and jaundice (yellow color skin or eyes).
- Children under 6-years-old usually do not have any symptoms.

## **Transmission**

- Hepatitis A is usually spread when people ingest contaminated fecal matter on objects, food, or drinks. Thus, hepatitis A can be prevented by frequent hand-washing with soap and water, especially after using the bathroom, changing the diaper, and before preparing and eating food.
- Hepatitis A vaccination is the best way to stop its transmission.

## **Who is at Risk**

Anyone can be infected with hepatitis A, but following people are at a higher risk:

- Anyone who travel to or live in countries where hepatitis A is common.
- Men who have sexual contact with other men, especially oral-anal contact.
- People who have sexual contact with infected people.
- People who do not frequently wash hands, especially after using the bathroom, changing the diaper, or before preparing and eating food.
- People who use injection and non-injection illegal drugs.
- People with clotting factor disorders.

## **Treatment**

- There is no treatment available for hepatitis A, but people should be resting, have adequate nutrition and fluids, and may need to be hospitalized.

## **More Information**

**Centers for Disease Control and Prevention, Hepatitis Branch**

<http://www.cdc.gov/hepatitis/A/index.htm>

**Hepatitis Foundation International**

[http://www.hepfi.org/living/liv\\_abc.html](http://www.hepfi.org/living/liv_abc.html)

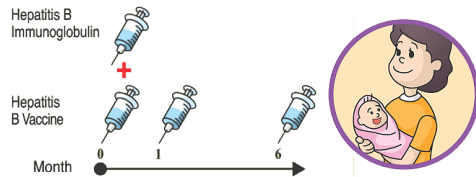
## **About Hepatitis B**

In the United States, 12.5 million Americans have been infected with hepatitis B virus at some point in their lifetime. About 1.2 million Americans are currently living with chronic hepatitis B. Most people with chronic hepatitis B do not know that they have been infected because most of them do not have any symptoms until liver has been severely damaged. Thus, 1 in 4 of those chronically infected with chronic hepatitis B will die from liver cancer or liver failure. Hepatitis B is a serious liver disease, but it is preventable with vaccination and it is treatable if needed.

## **Vaccination**

- The best way to prevent hepatitis B is by hepatitis B vaccination, which is a series of 3-4 shots administered over 6 months. It is safe and effective, and it is recommended for all infants, older children and adolescents who were not vaccinated previously, and adults at risk for hepatitis B infection.

- **For all newborns**, it is recommended that they receive their first dose of the vaccine at birth. For newborns with infected mother, they should receive first dose of vaccine and a shot of HBIG (hepatitis B immune globulin) within 12 hours of birth. For premature newborns with birth weight less than 4.4 lb (or 2000g), they should receive a total of 4 shots of vaccine.



- **For children under 18**, the hepatitis B vaccination is free of charge at their local health department and at their primary care physician's clinic.
- **For adults**, the hepatitis B vaccination is usually at a charge at local county health department
- People can receive both hepatitis A and B vaccine at the same time.
- Booster dose of hepatitis B vaccine is recommended only for hemodialysis patients and for people with a weakened immune system.

## Symptoms

- People with **acute hepatitis B** (infection within 6 months) may have no symptoms, or may have mild flu-like symptoms, including fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored bowel movements, muscle and joint pain, and jaundice (yellow color skin or eyes).
- People with **chronic hepatitis B** (infection longer than 6 months) usually do not have any symptoms, for as long as 20 to 30 years. Chronic hepatitis B may cause liver damage, liver failure, liver cirrhosis (liver scarring), liver cancer, and death.

## Acute to Chronic Hepatitis B

- The likelihood of acute hepatitis B become chronic hepatitis B depends upon the age at which when people were first infected. The younger the age when people were first infected, the greater the chance of them developing chronic hepatitis B. Most people with chronic hepatitis B were infected at birth or during early childhood.

Age When Infected	Chance of Becoming Chronic Hepatitis B
<1 years old	90%
Between 1-5 years old	25-50%
>5 years old	6-10%

## Transmission

Hepatitis B can be spread via blood, semen, vaginal fluid, or other body fluid, such as by

- Birthing
- Having unprotected sex
- Sharing contaminated needles, syringes, razors, toothbrushes

- Needlestick injuries in healthcare settings
  - Direct contact with the blood or open sores of an infected person
- Hepatitis B can NOT be spread by sharing utensils, breastfeeding, hugging, kissing, holding hands, coughing, or sneezing.

### Who is at Risk

Anyone can be infected with hepatitis B, but following people are at a higher risk:

- Infants born to infected mothers
- People who have unprotected sex with infected people
- Men who have sex with men
- Injection-drug users who share contaminated needle, syringes, or other drug equipments with infected people
- Healthcare workers who are exposed to blood on the job
- Hemodialysis patients
- People born in or travel to countries with high rates of hepatitis B. Countries in Asia, Pacific Islands, and in southern Africa all have greater than 8% of population infected with chronic hepatitis B. Many other countries also have high rates. For specific countries, please visit

<http://www.cdc.gov/hepatitis/HBV/PDFs/ChronicHepBTestingFlwUp.pdf>

### Tests to Diagnose Hepatitis B

There are many different blood tests available to diagnose hepatitis B. Below are some of the common tests and what they mean, but ask your doctor to explain which tests you need and to interpret your test results.

#### **Hepatitis B Surface Antigen (HBsAg).**

Positive test= is infected and need to see a doctor.

Negative test= not infected, but may be in incubation period.

This test is the primary way to diagnose chronic hepatitis B.

#### **Hepatitis B Surface Antibody (anti-HBs).**

Positive test= had vaccine or recovered from acute hepatitis.

Negative test= need to get vaccinated.

#### **Total Hepatitis B Core Antibody (anti-HBc).**

Positive test= currently infected or was infected.

#### **IgM Hepatitis B Core Antibody (IgM anti-HBc).**

Positive= acute infection, within the last 6 months.

#### **Hepatitis B “e” Antigen (HBeAg).**

Positive= high levels of virus.

#### **Hepatitis B e Antibody (HBeAb or anti-HBe).**

Positive= chronic HBV infection, but at lower risk of liver problems because of low level of HBV

## Tests to Monitor Hepatitis B

If you are tested positive for chronic hepatitis B, you should ask your doctor regarding which screening tests for liver disease that you should have, and how often you should have them. Below are some common tests used to monitor how your liver is doing.

**ALT (alanine aminotransferase)-** test for liver damage

**AFT (alpha-fetoprotein)-** test for liver cancer

**Liver Ultrasound-** test for liver cancer

**Hepatitis B Viral DNA .**

Positive= presence of hepatitis in the blood.

**Complete blood count with platelet-** includes red blood cell count, hematocrit and hemoglobin, white blood cell count, and platelet count.

**Prothrombin time (PT)-** measure of blood clotting time. Slower PT indicates advanced liver disease

**Liver (hepatic) panel-** includes ALT, AST (aspartate aminotransferase), ALP (alkaline phosphatase), bilirubin, albumin, total protein. Hepatic panel may also include gamma-glutamyl transferase (GGT), lactic acid dehydrogenase (LDH), prothrombin time (PT)

**Liver biopsy**

**HBsAg and anti-HBs**

**HBeAg and anti-HBe**

**anti-HBc**

## Treatment

- For **acute hepatitis B**, there is no treatment available, but people should be resting, have adequate nutrition and fluids, and may need to be hospitalized.
- For **chronic hepatitis B**, there are FDA approved medications, but not everyone with chronic hepatitis B needs treatment. If you have chronic hepatitis B, please ask your doctor to get tested for liver disease and to be evaluated for treatment. You should also take care of your liver by avoid drinking alcohol and taking other medications that can further damage the liver. You should also receive hepatitis A vaccine.

## FAQ

- If I have hepatitis B, can I donate blood?

*Once you have ever tested positive for the hepatitis B, it is recommended that you do not donate blood, organs, or semen because you could pass hepatitis B to the recipients.*

- If I have hepatitis B, should I have vaccines?

*Once you are infected with hepatitis B, you develop antibody for life, hence you can not be infected again. Once you are infected, you do not need the hepatitis B vaccines.*

- How do I clean blood spills?

*HBV is 50 to 100 times more infectious than HIV because it can survive outside the body for at least 7 days. Thus, all blood spills, including blood that has already been dried, should be cleaned with gloves and disinfected with 10% bleach.*

- What is antigen and antibody?

*Antigen is a substance on the virus that can be recognized by the body's immune system. Testing positive for hepatitis B antigen implies hepatitis B infection. Antibody is substance produced by body's immune system in response to a virus trying to protect the body. Testing positive for hepatitis B antibody implies the patient was vaccinated, was infected or currently infected.*

- What is HBIG?

*HBIG (Hepatitis B immune globulin) is a substance made from human blood samples that contains antibodies against the Hepatitis B virus. It can provide short-term protection (approximately 3 months) against Hepatitis B.*

- Why is the liver important?

*We cannot live without our liver. The liver filters blood to remove wastes and poisons, transforms food into energy, stores nutrients, fats, and vitamins, and makes proteins needed to help blood clot.*

## **Patient Support Groups**

### **Hepatitis B Information and Support List (HB-L)**

[www.hblist.org](http://www.hblist.org)

### **Hepatitis Foundation International**

[http://www.hepfi.org/support/support\\_us.html](http://www.hepfi.org/support/support_us.html)

### **Parents of Kids with Infectious Disease**

[www.pkids.org](http://www.pkids.org)

1-877-55-pkids

## **Information for Health Professionals**

CDC Interpretation of Hepatitis B Serologic Test Results

<http://www.cdc.gov/hepatitis/HBV/ProfResourcesB.htm>

CDC Recommended Doses of Hepatitis B Vaccines by Age Group and Vaccine Type

<http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm#recctbl>

CDC Recommendation for Routine Testing and Follow-up for Chronic Hepatitis B Virus Infection

<http://www.cdc.gov/hepatitis/HBV/ProfResourcesB.htm>

Physician's Guide to Hepatitis B

<http://liver.stanford.edu/Public/pguide.html>

Order Free Patient Brochures for Asian and Pacific Islanders and for Pregnant Women

<http://liver.stanford.edu/Public/brochureorder.html>

Handouts for Patients and Health Professionals

<http://www.immunize.org/handouts/hepatitis-b-vaccines.asp#u>

The Florida Hepatitis Prevention Program Presents: Hepatitis 101 Training

[http://www.doh.state.fl.us/disease\\_ctrl/aids/hep/](http://www.doh.state.fl.us/disease_ctrl/aids/hep/)

Continuing Medical Education Courses on Hepatitis B

[http://www.hepb.org/learning\\_guide/cme\\_course.htm](http://www.hepb.org/learning_guide/cme_course.htm)

Institute of Hepatitis and Virus Research

[www.ihvr.org](http://www.ihvr.org)

Hepatitis B Research Archive

[http://archive.mail-](http://archive.mail-list.com/hbv_research/minindex/hbv_research@20380101.000000.00000000.en.html)

[list.com/hbv\\_research/minindex/hbv\\_research@20380101.000000.00000000.en.html](http://archive.mail-list.com/hbv_research/minindex/hbv_research@20380101.000000.00000000.en.html)

### **More Information**

**Centers for Disease Control and Prevention, Hepatitis Branch**

<http://www.cdc.gov/hepatitis/HBV/index.htm>

**Hepatitis B Foundation**

<http://www.hepb.org/>

**American Liver Foundation**

[www.liverfoundation.org](http://www.liverfoundation.org)

**Asian Liver Center at Stanford University**

<http://liver.stanford.edu/>

**Immunization Action Coalition**

[www.immunize.org](http://www.immunize.org)

[www.vaccineinformation.org](http://www.vaccineinformation.org)

<http://www.hepprograms.org/>

**Florida Viral Hepatitis Council**

[http://www.doh.state.fl.us/disease\\_ctrl/aids/hep/hep\\_b.htm](http://www.doh.state.fl.us/disease_ctrl/aids/hep/hep_b.htm)

## **Perinatal Hepatitis B Prevention Program (PHBPP)**



About 16,000 - 20,000 hepatitis B infected women give birth in U.S. each year, and they can pass hepatitis B virus to their babies during birth. 90% of those babies infected at birth will develop chronic hepatitis B, which is a serious liver disease. Thus, all pregnant women should be tested for hepatitis B as part of their routine prenatal care. If pregnant women are tested positive for hepatitis B, their babies can be protected from it by receiving HBIG (Hepatitis B immune

globulin) and the first hepatitis B vaccine shot within 12 hours of birth, and then complete the vaccine series within 6 months.

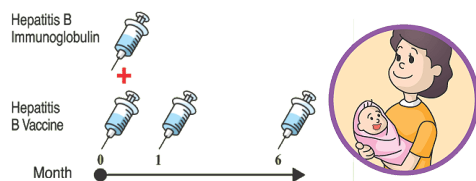
The Perinatal Hepatitis B Prevention Program (PHBPP) was launched to reduce the number of mother-to-child transmission of hepatitis B. This program ensures that all children born to hepatitis B positive mothers are properly vaccinated and immunized against hepatitis B. It also provides counseling and resources for mothers and their contacts, and coordinates with local health providers to emphasize the importance of screening and vaccination to all pregnant mothers and their newborns.

## Vaccination

Hepatitis B vaccination is the best way to prevent mother-to-child transmission of hepatitis B. It is safe and effective, and it is recommended for all infants. When infants have completed the series of 3-4 shots, they will have 95% chance of being protected from hepatitis B for life.

For newborn of **infected** mothers:

- 1<sup>st</sup> shot of hepatitis B vaccine + a shot of HBIG within 12 hours of birth
- 2<sup>nd</sup> shot of hepatitis B vaccine at month 1
- 3<sup>rd</sup> shot of hepatitis B vaccine at month 6
- Post-vaccination test to confirm immunity at month 9



For premature newborn (less than 2000g or 4.4lb) of **infected** mothers:

- 1<sup>st</sup> shot of hepatitis B vaccine + a shot of HBIG within 12 hours of birth
- 2<sup>nd</sup> shot of hepatitis B vaccine at month 1
- 3<sup>rd</sup> shot of hepatitis B vaccine at month 2
- 4<sup>rd</sup> shot of hepatitis B vaccine at month 7
- Post-vaccination test to confirm immunity at month 10

For newborn of **uninfected** mothers:

- 1<sup>st</sup> shot of hepatitis B vaccine after birth
- 2<sup>nd</sup> shot of hepatitis B vaccine at month 1
- 3<sup>rd</sup> shot of hepatitis B vaccine at month 6

## Transmission

- Newborn babies can get infected with hepatitis B when contacting with infected mother's blood and body fluids at the time of birth.
- Hepatitis B virus is not passed in breast milk, so it is okay for infected mothers to breast-feed their babies immediately after delivery. However, be careful to prevent cracking and bleeding around the nipple areas.



- Cesarean section (C-sections) has not been found to prevent mother-to-child transmission of hepatitis B. The best way to prevent transmission is by vaccination.

### Tests

- CDC recommends that all pregnant mothers are tested for hepatitis B (HBsAg). If the mother is tested positive for hepatitis B, her lab result is required by law to be reported to the local county health department. The health department will work with the mother's physician to ensure that the baby receive proper vaccination and HBIG within 12 hours of birth, and to ensure that the mother's household and sexual contacts are also tested for hepatitis B.
- Mothers with hepatitis B should be regularly monitored for liver damage and liver cancer. They should receive ALT and AFP tests twice a year, as well as liver ultrasound and HBV DNA once a year. They might also get other tests, such as complete blood count with platelets, prothrombin time, liver panel, and liver biopsy. Please ask your doctor regarding which screening tests you need, and how often you should have them.

### Treatment

- Hepatitis B treatment is currently not recommended during pregnancy. There are FDA approved medications for chronic hepatitis B, but not everyone with chronic hepatitis B needs treatment. Please ask your doctor whether or not you should be taking medications after delivery.

### More Information

#### **Florida Perinatal Hepatitis B Prevention Program (PHBPP)**

[http://www.doh.state.fl.us/disease\\_ctrl/immune/hep\\_b/index.htm](http://www.doh.state.fl.us/disease_ctrl/immune/hep_b/index.htm)

<http://www.cdc.gov/hepatitis/HBV/PerinatalXmtn.htm>

[http://www.doh.state.fl.us/disease\\_ctrl/aids/hep/hepBpreg.htm](http://www.doh.state.fl.us/disease_ctrl/aids/hep/hepBpreg.htm)

### **About Hepatitis C**

Hepatitis C is a serious liver disease caused by the hepatitis C virus. Hepatitis C infection sometimes causes an acute illness, but most often it becomes a chronic illness that can lead to liver cirrhosis (scarring) and liver cancer. It is estimated that 3.2 million Americans are currently living with chronic Hepatitis C, and about 8,000–10,000 people die every year from Hepatitis C related liver diseases. Unlike hepatitis A and B, there is no vaccination available to protect people for hepatitis C.

### Symptoms

- Most people with **acute hepatitis C** (within 6 months of infection) do not have any symptoms, so they do not know that they are infected. Some people may have a mild to severe flu-like symptoms, including fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored bowel movements, muscle and joint pain, and jaundice (yellow color skin or eyes).

- Most people with **chronic hepatitis C** (after 6 months of infection) also do not have any symptoms, even though chronic hepatitis C can cause liver damage, liver failure, liver cancer, and death. Thus, it is important to ask your doctor to get tested for hepatitis C if you are at risk for it.

### Transmission

Hepatitis C virus can be spread by

- Sharing contaminated needles, syringes, and other drug equipment
- Needlestick injuries in healthcare settings
- Receiving blood transfusion and organ transplant before 1992
- Being born to a mother who has Hepatitis C

Hepatitis C virus is less commonly spread by

- Sharing personal care items, such as razors or toothbrushes
- Having sexual contact with an infected person

Hepatitis C virus is not spread by sharing eating utensils, breastfeeding, hugging, kissing, holding hands, coughing, or sneezing. It is also not spread through food or water.

### Who is at Risk

Following people have higher risk of hepatitis C

- Injection-drug users who share contaminated needle, syringes, or other drug equipments with infected people
- People who receive body piercing or tattoos using contaminated needles
- Healthcare workers who are exposed to blood on the job
- Recipients of donated blood, blood products, and organs before 1992
- Hemodialysis patients
- Children born to mothers infected by HIV and hepatitis C

Following people have less common risk of hepatitis C

- Sharing personal care items, such as razors or toothbrushes
- Having sexual contact with an infected person

### Tests

- There are several different blood tests that are used to test for Hepatitis C, including liver enzyme test and antibody against hepatitis C. Please ask your doctor to get tested for hepatitis C. Hepatitis C is not part of routine prenatal care, so pregnant woman who are at risk for it should speak to her doctor about getting tested.

### Treatment

- For **acute hepatitis C**, there is no treatment available, but people should be resting and have adequate nutrition and fluids.
- For **chronic hepatitis C**, there are FDA approved medications, but not everyone with chronic hepatitis C needs treatment. If you have chronic hepatitis C, please ask your doctor to get tested for liver diseases and to be evaluated for treatment. You should also take care of your liver by avoid drinking alcohol and taking other medications that can further damage the liver. You should also receive both hepatitis A and B vaccinations.

## **More Information**

### **Centers for Disease Control and Prevention, Hepatitis Branch**

<http://www.cdc.gov/hepatitis/C/index.htm>

### **Hepatitis C Advocate**

<http://www.hcvadvocate.org/hepatitis/factsheets.asp>

### **Hepatitis C Connection**

<http://www.hepc-connection.org/default.asp?page=1110>

### **Hepatitis C Multicultural Outreach**

<http://www.hepcmo.org/>

### **HIV and Hepatitis Treatment Advocates**

[http://www.hivandhepatitis.com/hep\\_c/fa\\_questions.html](http://www.hivandhepatitis.com/hep_c/fa_questions.html)