

Q&A HEPATITIS B: WHAT YOU SHOULD KNOW

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Hepatitis B is a viral infection that attacks the liver. An infection can be short term or lead to a lifelong chronic infection resulting in scarring of the liver (cirrhosis) or liver cancer. More than half of those infected with hepatitis B do not exhibit symptoms, mostly children. The result is that many people never know they are infected with hepatitis B, and they unwittingly transmit the virus to others. For these reasons, the Centers for Disease Control and Prevention (CDC) recommends that all children receive three doses of the hepatitis B vaccine, with the first dose given no more than 12 hours after birth. In 2022, the CDC expanded hepatitis B recommendations for adults. Specifically, all adults up to 60 years of age are recommended to get vaccinated against hepatitis B if they have not previously done so, and those 60 years and older should be vaccinated if they are at high risk or if they simply wish to be protected against this infection.

Q. What is hepatitis B?

A. Hepatitis B is an infection of the liver caused by hepatitis B virus. Hepatitis B infections can cause no noticeable symptoms (asymptomatic), result in mild symptoms that last several weeks, or become a lifelong, chronic illness that results in scarring of the liver (cirrhosis) or liver cancer. The likelihood of developing a chronic hepatitis B infection increases when children are infected early in life. Ironically, this is the same group that is most likely to experience asymptomatic infection, so they often don't know they were infected. For example, about 90 of 100 infants less than 1 year of age and about 30 to 50 of 100 children infected between 1 and 5 years of age develop a chronic infection. However, only about 5 of 100 adult infections result in a chronic form of the disease.

Q. How is hepatitis B spread?

A. Hepatitis B is most commonly spread by blood from infected people. Of interest, because of the large quantities of hepatitis B virus in the blood during infection, it is actually more contagious than HIV. In fact, a teaspoon of blood from a person infected with hepatitis B virus can contain as many as 5 billion infectious virus particles! This means that exposure to even very small amounts of blood — not visible to the naked eye — can result in infection if someone is susceptible. Exposure to bodily fluids that contain small quantities of blood, such as saliva, semen, and vaginal fluids, can also spread the infection to others. In addition to its infectious nature, hepatitis B virus is hardy. It can remain viable for up to seven days on objects that might contain bodily fluids, such as washcloths, toothbrushes or razors. Hepatitis B virus is not spread by air, food or water. The virus is most commonly transmitted in one of the following ways: by exposure during birth in babies born to infected mothers, having sex with an infected partner, sharing injection drug equipment, or coming into contact with blood or sores of an infected person. The latter route of exposure is of particular concern for healthcare workers and frontline responders. Yet, the reality is that every year some people are infected without ever knowing where or by whom they were exposed to this virus.



Q. Is a vaccine available to prevent hepatitis B?

A. Yes. The hepatitis B vaccine is made by isolating the gene that makes the surface protein of the virus and inserting it into yeast cells. As the yeast cells replicate in the lab, they also produce the hepatitis B viral surface protein. The newly produced surface proteins are purified away from the other parts of the yeast cells to make the vaccine. In 2017, a new hepatitis B vaccine for adults became available that requires only two doses instead of three. The vaccine is made similarly to the existing version by producing the hepatitis B surface protein in yeast cells. The difference is the purified surface protein is mixed with a novel adjuvant based on repeated genetic patterns found in bacteria to which our innate, or non-specific, immune system responds. As a result, more adults develop protective immunity following receipt of the newer version compared with the older one.

Q. Who should get the hepatitis B vaccine?

A. The hepatitis B vaccine is recommended as a series of three doses for all children. The first dose is recommended to be given within 12 hours of birth, with the second dose at 1 to 2 months of age and the third dose between 6 and 18 months of age. Infants of mothers who were found to be infected with hepatitis B virus prior to or during pregnancy or whose previous exposure to hepatitis B virus is unknown are recommended to receive the third dose at 6 months of age. If older children did not receive the vaccine during infancy, they should receive the three-dose series as soon as is feasible.

Babies born to hepatitis B-positive moms should also receive hepatitis B immune globulin (HBIG) shortly after birth.

Adults up to 60 years of age who have not previously been immunized and those 60 and older who are high risk or simply wish to be protected from hepatitis B virus should get two or three doses of hepatitis B vaccine depending on which version they receive. High-risk individuals include people having sex with someone who is infected with hepatitis B virus; sexually active persons not in a long-term, mutually monogamous relationship; people at risk of or being treated for HIV or other sexually transmitted diseases; men who have sex with men; people living with someone infected with hepatitis B; healthcare and public safety workers at risk of exposure to blood or blood-contaminated body fluids; persons with type 1 diabetes or end-stage kidney disease; and international travelers to regions with an increased risk for exposure.

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Q. Is the hepatitis B vaccine safe?

A. Yes. About 3 to 9 of every 100 children will develop pain or soreness at the injection site or a mild fever. About 20 of every 100 children will experience headache, fatigue or irritability. In extremely rare cases — specifically, in about 1 of every 600,000 recipients — a severe allergic reaction called anaphylaxis may occur. While anaphylaxis can be treated, it is quite frightening. For this reason, people should remain at the doctor's office for about 15 minutes after getting this or any vaccine.

About 1 of 100 adults will develop redness or swelling following injection of the older version, whereas 2 to 4 of 100 who get the newer version will experience these symptoms. Pain at the injection site will occur in about 40 to 42 of 100 adults for either vaccine. Fatigue and headache will occur in more adults who get the older version (25 versus 21 of 100). Fever will occur in about 3 of 100 adults who get the older version and 1 to 2 following receipt of the new version.

Q. What is my child's risk of getting hepatitis B?

A. About 1 million people in the United States are chronically infected with hepatitis B virus. Because many of these people do not realize they are infected and because infected children often do not experience symptoms during infection, it is impossible to prevent exposure simply through vigilance. Further, as children get older and become more socially active, actions like sharing personal use items or experimenting with other high-risk activities may increase the likelihood of infection. Therefore, vaccinating infants immediately after birth protects them during all of these periods of risk.

Q. What if I get the hepatitis B vaccine but still don't have an adequate immune response?

A. Most people who get the hepatitis B vaccine will be protected. About 75 to 95 of every 100 people younger than 40 years old, including children, will develop adequate immunity after three doses of the older vaccine. The newer version of the vaccine, only licensed for adults, will protect 99 to 100 of 100 adults less than 40 years of age and more than 90 of 100 adults between 41 and 70 years of age.

For those who are not protected after getting three doses of the vaccine, they may be recommended to get additional doses, depending on their situation. Adults who did not respond to the older version may be more likely to develop immunity if they get the newer version.

Q. Why should newborns get a hepatitis B vaccine?

A. Before a hepatitis B vaccine was available, each year about 18,000 children were infected with hepatitis B during the first 10 years of life. About half of these children were infected with hepatitis B virus that was present in the mother's blood in the birth canal during delivery. The other half were infected by another household or family member or the source of their infection was never determined. Public health officials originally implemented recommendations to check the hepatitis B status of all women during pregnancy. Unfortunately, infants were still being infected by their mothers during birth when tests were not completed, results were wrong, or exposure to the virus occurred after the test but before delivery. In addition, this recommendation did not help the other 9,000 children infected every year by someone other than their mothers during birth. Therefore, it was determined that the best way to protect all children was to implement a universal newborn vaccination recommendation. Since implementation of this recommendation in 1991, hepatitis B disease has been virtually eliminated in children.



Some parents are hesitant to give consent for their new baby to get a vaccine so soon after birth, but the reality is that babies can be infected with the virus soon after birth — either because of exposure to the mother's contaminated blood during delivery or to someone else who is infected. Since most children do not show symptoms of infection, treatment is not typically an option. Sadly, every year adults are diagnosed with liver cancer or disease caused by chronic hepatitis B infections that they were not aware they had.

Q. Do I need to get hepatitis B vaccine if it has been a long time since I was immunized?

A. No. Studies have shown protection following hepatitis B vaccination is long lasting.

Pregnant women are recommended to be tested for hepatitis B during pregnancy even if they were previously vaccinated to ensure proper planning and care of the baby if mom tests positive for hepatitis B.

This information is provided by the Vaccine Education Center at Children's Hospital of Philadelphia. The Center is an educational resource for parents, the public and healthcare professionals and is composed of scientists, physicians, mothers and fathers devoted to the study and prevention of infectious diseases. The Vaccine Education Center is funded by endowed chairs from Children's Hospital of Philadelphia. The Center does not receive support from pharmaceutical companies. ©2022 Children's Hospital of Philadelphia. All Rights Reserved. 22175-06-22.