

HEPATITIS B: Information for you and your children

By

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What is it?

An estimated 700 people become infected with the Hepatitis B virus (HBV) each year in Canada. World wide, it is estimated to be in the millions. In endemic regions such as China, southeast and central Asia, the prevalence is very high, with 70-90% of adults being infected at some time and 15% remaining chronically infected. Children who come from these areas of the world are at increased risk of being infected with HBV and should be tested upon their arrival in Canada and 6 months later, even if they tested negative in their home country.

Hepatitis B is a virus that enters the body via the blood stream and attacks the liver, causing inflammation. Over time, if the inflammation remains high, it can cause permanent damage. For adults and adolescents, who acquire the virus, approximately 80% will clear the virus after becoming acutely ill while 20% will remain chronically infected or chronic carriers. A chronic carrier is someone who remains infected with HBV for more than 6 months.

In the case of children, 90% of unimmunized infants born to HBsAg positive mothers, will become chronic carriers and will likely carry the virus for life. 30% of children who acquire the virus between the ages of 1 to 5, will remain chronic carriers, while 2 to 6% of those infected as older children will remain chronic carriers.

What happens when the liver stays inflamed?

When the liver stays inflamed for years, part of it develops scar tissue. This condition is called cirrhosis. Approximately 3/4 of the liver has to turn to scar tissue before it stops working and luckily for most people with chronic Hepatitis B, this is a very slow process. For this reason, most people with chronic Hepatitis B infection live a natural life span. Approximately 1-4% of chronically infected people can develop hepatocellular carcinoma or liver cancer, especially if the liver is exposed to harmful substances or alcohol, so a healthy life style is very important.

How does Hepatitis B get into the body?

Hepatitis B can enter the body through infected blood or body fluids. Some of the most common ways to become infected are by:

- Maternal transfer, i.e. mother to baby at birth
- Sexual contact
- Body piercing and tattooing, not only by the needle but contaminated ink as well
- Blood, breast milk
- Intravenous drug use or acupuncture with infected needles

You cannot get Hepatitis B by changing diapers, hugging and kissing, holding hands or sneezing and coughing.

Diagnosing Hepatitis B

Most people cannot tell they have Hepatitis B nor do they look any different. Some adolescents and adults who recently acquired the disease will feel unwell and have nausea, vomiting, joint aches, flu like symptoms, muscle aches, decreased weight and develop jaundice. More severe signs of infection may develop.

Those children who acquire HBV as infants or young children generally feel healthy well into their teens or early 20's. To diagnose Hepatitis B in this age group, it is important to take a blood sample not only to detect the presence of the virus but also to determine how well the liver is functioning.

The tests look for specific viral proteins called **antigens** and the presence or absence of **antibodies** to these antigens. There are also tests which look for actual genetic material or DNA.

The table below describes some of the tests used to detect and monitor Hepatitis B infection:

Test		Meaning
<u>Viral Testing</u>		
1	HBsAg (Hepatitis B surface antigen)	<ul style="list-style-type: none"> • The presence of this protein means the person has active Hepatitis B infection. • If it remains positive for more than 6 months, the person is considered a chronic Hepatitis B carrier.
2	Anti-Hbs (antibody to Hepatitis B surface antigen)	<ul style="list-style-type: none"> • After 18 months of age, presence of anti-Hbs means the person was infected and has cleared the virus, or he/she was immunized against HBV. • In the infant < 18 months of age, Anti-Hbs may be due to maternal antibodies which are still present. If the birth mother was immunized, or had Hep B and cleared the infection, these antibodies will disappear by 12-18 months. However, if the birth mother was truly infected (HBsAg positive), the baby has a very high likelihood of Hep B infection unless the baby was immunized and given Hep B immunoglobulin at birth. Further tests are required. • After 18 months of age, presence of Anti-Hbs (and negative HbsAg) means the person is now protected against further infection and not contagious.
3	HBV DNA - Hepatitis B virus DNA or genetic material of HBV	<ul style="list-style-type: none"> • Test detects the genetic material of virus • Indicates presence of virus in liver
4	HbeAg - Hepatitis B envelope Antigen	<ul style="list-style-type: none"> • Presence means increased infectivity or increased viral replication in the liver. Increased risk for transmitting the virus. Usually goes along with ⊕ DNA.
5	Anti-HbeAg - antibody to HbeAg	<ul style="list-style-type: none"> • Presence means decreased infectivity and decreased risk for transmitting the virus and low replication of the virus in the liver.

6	Other Hepatitis test may include - anti-HAV	<ul style="list-style-type: none"> • Presence means person had previous infection or immunization for Hepatitis A and is now protected against Hepatitis A.
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7	Anti-HCV - antibodies to Hepatitis C virus	<ul style="list-style-type: none"> • Indicates past or present infection with hepatitis C. Most people with Anti-HCV will still have virus in body. Children < 18 months of age could still have maternal antibodies in their circulation & these will disappear
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8	HCV-PCR - Hepatitis C polymerase chain reaction test for Hepatitis C virus	<ul style="list-style-type: none"> • Presence means you are carrying Hepatitis C virus in your liver. For children < 18 months of age, the absence of HCV-PCR means the antibodies present in blood are likely maternal.
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<u>Liver Function Testing</u>		
1	ALT and AST	High levels indicate liver damage and are often seen early in Hepatitis or with actively replicating virus. Levels will increase and decrease with level of inflammation in people with chronic Hepatitis.
2	Bilirubin	High levels suggest liver is no longer working well. Rarely seen in children.

How can you protect yourself and your family?

1. Hepatitis B vaccine

To stay safe from Hepatitis B, you and your children need to get vaccinated. It is more than 90% effective and is recommended for all persons who are at risk for exposure to Hep B. In the US, it is now recommended that all infants be immunized at birth. In Canada, each province has different guidelines but most are now recommending Hepatitis B immunization at some point during childhood. The Hepatitis B vaccine consists of three doses. The 2nd and 3rd doses should be given one month and six months after the 1st.

2. Who should not get the vaccine?

- People who have an allergy to yeast, thimerosal or aluminum
- People who have had Hepatitis B virus infection
- People who already had the three Hepatitis B vaccinations and have protective immunity above 10 iu/ml.

If you or your child has Hepatitis B, you should follow universal fluid precautions which include:

1. Cover cuts or sores
2. Do not share toothbrushes or razors
3. Soak blood-stained clothes in cold water and wash in hot soapy water
4. Clean up blood spills with gloves using paper towels. Wipe the area with diluted bleach, leave it for 10 minutes to kill the virus, rinse with water
5. Put blood-stained articles into a sealed plastic bag for disposal (eg. Bandages, sanitary pads, tampons, dental floss)

If your child has Hepatitis B virus, you do not need to disclose to the child's school or daycare as everyone needs to be using universal fluid precautions anyway when in contact with blood or body fluids.

If your daughter is HbsAg positive and becomes pregnant, she can still have healthy children because the baby can be protected at birth with the Hepatitis B vaccine and Hepatitis B immunoglobulin. Breastfeeding poses no additional risk to the infant as long as the infant has been vaccinated. For HbsAg children, who eventually become sexually active later in life, condoms are essential unless all partners have received their Hepatitis B vaccine.

Treatment

There is not enough information to know what proportion of children who are chronic Hepatitis B carriers will require treatment or at what age. In chronically infected people with abnormal liver enzymes, alfa-interferon has been shown to prevent this virus from replicating in 25% of patients, meaning the Hep B test will be antigen and PCR negative. The long-term effectiveness of this treatment, however, is unknown, particularly in children. Lamivudine or 3TC is also used in some cases but very little data is available. Children who have replicating virus in their liver and evidence of inflammation (ie increased ALT), will need to be followed on a regular basis. A liver biopsy may eventually be needed to determine the degree of inflammation before health professionals embark on a treatment plan with either of these drugs.

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