



## **Hepatitis C** **HCCAP**

### **Viral Hepatitis in Infants and Young Children: Risks, Recognition, & Prevention**

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*Originally published in Hepatitis Magazine, Fall 2003. Reprinted with permission.*

Many people think of hepatitis as an adult disease. However, children are just as susceptible to viral hepatitis as adults are. Despite this fact, the majority of research and information about viral hepatitis is limited to the adult population. Unfortunately, this means there are many unanswered questions about how these diseases affect children and how best to manage them in pediatric patients. Parents of children with viral hepatitis are often frustrated and confused about what to do and where to turn. This column provides basic information about viral hepatitis in children and preventing infection. Consult your child's doctor for medical advice and treatment.

#### Hepatitis A

Hepatitis A is the most common form of viral hepatitis among children. Further, the majority of hepatitis A cases occur in children. Children are particularly prone to hepatitis A infection primarily because of its route of transmission and the silent (asymptomatic) nature of the infection in most children. Hepatitis A virus (HAV) is contracted when food or water contaminated with fecal matter (stool) containing the virus is ingested by someone susceptible to the virus. This is called fecal-oral transmission. Because children of various ages may still be in the process of toilet training and learning personal hygiene skills, they are particularly susceptible to infections transmitted by a fecal-oral route.

Most children with hepatitis A do not feel or appear sick. This is particularly true for children six years of age or younger. Children who develop symptoms experience a mild illness

characterized by one or more of the following symptoms: low fever, tiredness, nausea, dark urine, and/or a yellowish discoloration of the whites of the eyes or skin (jaundice). The lack of symptoms in children often makes them unsuspected reservoirs of virus as they spread the infection to others. Hepatitis A is typically a mild, self-limited illness, meaning children who contract the virus will clear the virus from their bodies without any intervention or permanent harm. There is no chronic or long-term form of hepatitis A. However, children already infected with hepatitis B or C, human immunodeficiency virus (HIV), or afflicted with another chronic illness can experience severe illness from HAV infection. Children infected with hepatitis B and C can sustain rapidly progressing liver damage if they become co-infected with HAV.

The good news is that hepatitis A is completely preventable. Since 1995, a vaccine to protect against hepatitis A has been available in the United States. There are currently two versions of the HAV vaccine, which is given in two doses 6-12 months apart. The Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP) currently recommend vaccination against HAV for all children two years of age and older and adults with underlying chronic liver diseases. Vaccination is also recommended for children two years or older who live in areas with consistently high rates of HAV infection. Consult your pediatrician to see if the HAV vaccine is appropriate for your child.

## Hepatitis B

While hepatitis B is much less common among children in the U.S. than hepatitis A, it is potentially a much more serious health problem. The hepatitis B virus (HBV) is transmitted through contact with infected blood. Most older children and adults with healthy immune systems are able to fight off an infection with HBV without permanent damage. However, the immature immune systems of infants and young children often fail to recognize and fight-off the virus. As a result, the probability of becoming chronically infected with HBV decreases with increasing age (see Table 1).

**Table 1: Percent of Children Infected with HBV Who Go on to Develop Chronic Infection by Age at Exposure**

<b>Age Group</b>	<b>Percent Who Develop Chronic HBV</b>
infants born to HBV-infected mothers	90%
children infected at 1-5 years of age	30%
people infected after age 5	6%

Most children who contract HBV are infected during the birthing process, contracting the disease through contact with the HBV-infected blood of their mothers. This is called vertical or mother-to-child transmission. CDC estimates approximately 19,000 women chronically infected with HBV give birth each year in the U.S. Among people currently chronically infected with HBV, approximately 25-35% were infected during childhood. Therefore, HBV prevention efforts must include pregnant women, infants, and children.

Only 5-15% of children age one to five years experience symptoms when they are first infected

with HBV. Symptoms that may occur include mild flu-like symptoms, belly pain, nausea, and jaundice. With increasing years, the likelihood of symptoms from a new infection with HBV also increases. Approximately 30-50% of older children and adults experience symptoms of varying severity when infected with HBV. While the acute illness from an infection with HBV may be troublesome, the main concern is chronic infection, which results in serious liver disease in 20-35% of those who develop this complication. People with chronic HBV also face an increased risk of liver cancer.

Children chronically infected with HBV may remain largely asymptomatic during the first 10-20 years of life. However, liver damage may be occurring despite a lack of apparent symptoms. All children chronically infected with HBV should be monitored by a pediatric hepatologist or gastroenterologist.

The prevention of HBV in children is accomplished through several strategies. CDC recommends HBV testing for all pregnant women. The risk of vertical transmission of HBV from an infected mother to her infant ranges from 30-90% and is strongly influenced by the status of the infection in the mother. Therefore, all pregnant HBV-infected women should be under the care of an obstetrician with experience managing HBV-infected mothers. Delivery by C-section does not appear to reduce the risk of transmitting HBV compared to vaginal delivery. A combination of hepatitis B immune globulin (HBIG) and the first dose of the hepatitis B vaccine administered to a newborn infant within 12 hours of being born to an HBV-infected mother is 85-95% effective in preventing infection of the child. The second dose of the HBV vaccine should be administered at 1-2 months of age, and the final dose after six months of age. Most doctors routinely administer the first dose of the hepatitis B vaccine to all newborns before discharge from the hospital after delivery. However, some pediatricians wait a few

weeks. CDC recommends all infants receive their first dose of the hepatitis B vaccine by age two months. Consult your pediatrician to make sure your child gets the complete series of hepatitis B vaccines. An incomplete series of vaccinations could leave your child susceptible to HBV infection. All children with chronic hepatitis B should be vaccinated against HAV.

Despite the fact that HBV has been shown to be present in breast milk, HBV-infected mothers are encouraged to breast feed their infants as long as HBIG and the HBV-vaccines are given according to schedule.

### Hepatitis C

CDC and the National Institutes of Health estimate 240,000 children and adolescents in the U.S. have been exposed to the hepatitis C virus (HCV); approximately 150,000 are chronically infected. It is believed the majority of these young people were infected before testing of the blood supply for hepatitis C was implemented. Today, most new cases of hepatitis C among young children occur by vertical transmission from infected mother to child. Experts estimate 5-6% of infants born to HCV-infected mothers become infected with the virus during the birth process. One study found HCV-infected women who delivered their infants by elective C-section were less likely to transmit the virus than women who delivered vaginally or by emergency C-section. However, elective C-section is not routinely recommended for all HCV-infected mothers. According to CDC, breast-feeding is currently considered safe for HCV-infected mothers and infants. Mothers should take care to prevent nipple cracking or bleeding. Breast-feeding may need to be temporarily suspended if the nipples are bleeding because of the risk of viral transmission.

Although the initial infection with hepatitis C is typically silent (without symptoms) in infants and children, the majority of infants infected with HCV develop a chronic infection. The disease

progression and outcome of chronic hepatitis C in children is an area of active research. Most children chronically infected with HCV experience relatively mild liver damage during the first few decades of life. However, for reasons that are presently not well understood, some children develop rapidly progressive liver disease that can result in significant damage and cirrhosis at an early age. Coinfection with HCV and HBV or HIV is associated with more severe symptoms and more rapidly progressive liver disease than is observed with chronic hepatitis C alone. All children chronically infected with HCV should be monitored by a pediatric hepatologist or gastroenterologist.

Like HBV, HCV is a blood-borne infection. It is transmitted by contact with infected blood and body fluids. CDC reports household transmission of hepatitis C is rare. Precautions to eliminate sharing of potentially blood-contaminated household items are considered sufficient protection to prevent HCV transmission through casual contact. Unfortunately, there is currently no vaccine to prevent hepatitis C. Nonetheless, all children with chronic hepatitis C should be vaccinated against HAV and HBV.

### Finding Information and Support

Parents of children with chronic hepatitis sometimes feel alone or confused. There is often an overwhelming number of questions, but a paucity of answers. Common questions include:

- What is the likely course of the illness?
- What kind of care will my child need?
- What treatments are available?
- What special care or needs are required?
- Can my child lead a 'normal' life?
- Are there any activity restrictions I should impose?

Although pediatric hepatitis is not one of the more commonly known childhood illnesses, there are resources available. Three helpful organizations for parents of children with hepatitis are listed below. Your pediatrician may

be able to suggest other local resources. Keep in mind that you and your family are not alone. Others have been where you are now, and are ready, willing, and able to share their knowledge and experiences. Help is available and hope is ever-present.

**Children’s Liver Association for Support Services (CLASS)**

1-877-679-8256 [www.classkids.org](http://www.classkids.org)  
CLASS is an all-volunteer, nonprofit organization dedicated to serving the emotional, educational, and financial needs of families coping with childhood liver disease and transplantation.

**North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN)**

1-215-233-0808 [www.naspgn.org](http://www.naspgn.org)  
NASPGHAN is a professional organization of over 800 pediatric gastroenterologists dedicated to advancing the science and clinical practice of pediatric gastroenterology, hepatology, and nutrition in health and disease.

**Parents of Kids with Infectious Diseases (PKIDS)**

1-877-55-PKIDS [www.pkids.org](http://www.pkids.org)  
PKIDS supports families whose children have been affected by viral hepatitis, HIV/AIDS, and other diseases, and educates the public about effective disease prevention practices.