

NUTRITION

Guidelines for Children with Viral Hepatitis

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Parents of children infected with viral hepatitis often wonder if there are nutritional restrictions, supplements or changes they should know about.

The liver plays a key role in metabolizing foods, beverages and most medications. It's clear that children chronically infected with viral hepatitis, like all children, need to eat a well-balanced diet and receive adequate exercise and rest.

What's less clear is whether any nutritional intervention is needed when children are in the relatively asymptomatic stages of viral hepatitis, when no signs of liver damage are apparent.

Children with advanced end-stage liver disease may need to follow specific nutritional guidelines issued by their pediatric gastroenterologist or a registered dietitian who works closely with the child's specialist, but the vast majority of children and adolescents with viral hepatitis are not in this category. For most children, no special diet is currently recommended, but there are some issues worth considering.

Many of the issues in the following section apply to adults, because there is very little evidence-based data about nutrition for children with chronic viral hepatitis. Consultation with a pediatric gastroenterologist and a registered dietitian is the best way to ensure proper nutrition.

Weight

Weight has a direct impact on the health of children and adults with chronic viral hepatitis. Children with liver disease, like all children, should maintain a healthy weight. Too much or too little body mass can invite a multitude of health risks.

Extremely overweight or obese children with chronic viral hepatitis can add new complications to their liver, such as fatty deposits in the liver, and accompanying liver inflammation, called non-alcoholic steatohepatitis.

Some adult studies have found that an increasing body mass index as it relates to a

marker of obesity and advanced age at infection can play a role in the pathogenesis of steatosis in chronic hepatitis C and that steatosis may contribute to fibrosis of the liver and more rapid disease progression, suggesting that measures aimed at weight reduction may play a significant role in hepatitis C management. Parents should consult with their pediatric gastroenterologist and a registered dietitian before ever placing a child with viral hepatitis on a weight loss program.

Some children with chronic viral hepatitis experience a loss of appetite. Parents can try to encourage eating by serving several small meals during the day, which are more easily tolerated than three large meals.

An adequate amount of complex carbohydrates (e.g. pasta, rice, wholemeal breads potatoes and whole grain cereals) can provide calories and help maintain weight for those children who have difficulty maintaining body mass. Adequate rest and moderate exercise can also help.

There are several age-appropriate oral supplements available for those children who may require additional calories to gain or maintain weight above what they are able to consume in a normal diet. Consult with your gastroenterologist and a registered dietitian for recommendations.

Protein

Adequate protein intake is important to maintain muscle mass and to regenerate liver cells in patients without cirrhosis—just remember that more is not always better. Some children without cirrhosis may need up to two or three grams of protein per kilogram of body weight daily to regenerate liver cells; adults may sometimes require 1 to 1.5 grams of protein per kilogram of body weight.

Protein requirements vary with age and medical condition. The RDAs for protein: 1-10 years = 1-1.2 grams/kilogram and > 10 years = 0.8-1 gram/ kilogram. The bottom line is that protein intakes should not be increased beyond the RDA goals unless advised by a professional. Children with cirrhosis need an individual nutrition plan from their pediatric liver specialist and registered dietitian.

Iron

Excessive iron intake may damage the liver, and studies indicate high iron levels reduce the response rate of adult patients with hepatitis C to interferon treatment. People with chronic viral hepatitis infections should avoid iron supplements if they have elevated iron levels or cirrhosis.

Adult patients with cirrhosis should also restrict their intake of iron-rich foods, as advised by their doctor. Children with cirrhosis should follow a nutritional plan provided by their specialists.

A study, reported in *Hepatology*, followed six chimpanzees, four of which were infected with the hepatitis C virus. The animals were given iron supplements until they overloaded. The hepatitis-infected animals developed iron overload more quickly than the uninfected animals. The excess iron did not affect the animals' viral load (amount of virus in the bloodstream), but it did cause increased liver enzyme levels, which indicated liver cell damage.

Several studies have documented a correlation between iron overload and a poor response to interferon treatment. Articles in *Seminars in Liver Disease* and *Digestive Disease Science* indicate the need for additional research into an apparent link between excess iron levels and increased liver damage in adult patients with chronic viral hepatitis. Increased iron deposition in the liver may be associated with more advanced liver fibrosis in patients with HCV infections.

Some researchers have speculated that the monthly loss of iron due to menstrual flow may be one reason women tend to have lower liver enzymes and less severe liver damage from viral hepatitis than men. However, much more research is needed to understand the role of iron in the progression of viral hepatitis in humans.

There have also been studies evaluating the possible correlation between racial differences in the relationship between hepatitis C infection and iron stores. One study showed that a greater proportion of African Americans than persons of other races respond to HCV infection with an increase in iron stores. This may partially explain the reduced responses of African-American HCV-positive patients to antiviral treatment.

Another study showed that African American chronic HCV patients have milder liver fibrosis than Caucasian American patients with similar HCV durations. These differences in liver fibrosis were not explained by a change in hepatic iron loading. A great deal more research is required in this area to make firm recommendations about the role of iron in HCV management.

Salt

Cirrhotic patients with ascites (accumulation of fluid in the abdomen) should be on a salt-restricted diet. Consult your specialist and registered dietitian to determine the actual level of salt restriction required. Adherence to a salt restricted diet can sometimes severely reduce the caloric intake in children.

Medications

The liver is where most medications are metabolized, and some medications and herbs can be toxic to the liver. Parents of children with viral hepatitis must exercise caution when giving medications and herbal supplements to their child. Prescriptions and over-the-counter medications, including vitamins and herbal supplements, should be discussed with a doctor or pharmacist before being considered.

For most children with chronic viral hepatitis, occasional use of over-the-counter products to treat cold symptoms is probably safe, but asking the child's liver specialist about specific drugs is the best way to keep a child's liver healthy. Parents should read labels carefully and contact their pediatrician with any questions.

Occasionally, even asymptomatic viral hepatitis-infected children may have unrelated medical procedures and need anesthesia at some time in their lives. In those situations, parents should inform their child's anesthesiologist of the infection, so the doctor can make the safest medication choice for the child's liver.

Alcohol

For everyone with viral hepatitis, one of the most important toxins to avoid is alcohol, which can accelerate liver disease by adding more stress to the liver. As children with chronic viral hepatitis approach adolescence, they must be educated about the particular dangers that alcohol poses to their livers.

These adolescents and young adults have an even more compelling reason to never experiment with or abuse alcohol or drugs. Alcohol is a dangerous ingredient in the lifestyle of any young person, but that danger is magnified for the infected adolescent or teen.

Illicit drugs are toxins that are also processed through the liver, and should likewise be discussed during adolescence or earlier and strongly discouraged.

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