

Hepatitis after Childhood Cancer

Treatment for childhood cancer often requires transfusions of blood and blood products. Unfortunately, some of these life-saving blood products may have contained viruses that can cause hepatitis (infection of the liver). There are two main types of hepatitis that can be transmitted through blood products (hepatitis B and hepatitis C). Before the blood supply was routinely screened for these infections, people who received blood products may have been infected with these viruses. In the United States, routine screening of blood donors for hepatitis B began in 1971. The most accurate screening test for hepatitis C has been in use since 1992. Survivors who received blood products prior to these dates may have been infected with these viruses. (Note: The dates that blood donor screening for hepatitis began in countries outside of the United States may be different.)

Hepatitis B and C can also be spread through other types of blood contact (such as needle-sharing among drug users, tattoos, body piercing, kidney dialysis and organ transplantation). These infections can also be spread through sexual contact, or passed from mother to newborn baby during the birth process, but this is more likely to occur with hepatitis B than with hepatitis C.

What is the liver?

The liver is a triangular-shaped organ tucked under the ribcage on the right side of the body. In an average adult, the liver is about the size of a football and weighs about three pounds. It is responsible for filtering out toxins from the blood, aiding with digestion and metabolism, and producing many important substances including blood-clotting proteins.

What are the signs and symptoms of hepatitis?

Many people do not have symptoms of hepatitis when first infected. Some people have symptoms similar to the flu, such as fatigue, loss of appetite, nausea, vomiting, or low-grade fever. Some people may have symptoms indicating that the liver is not working well, such as yellow eyes and skin (jaundice), dark urine, severe itching, or pale (clay-colored) stools. In rare cases, people may become seriously ill and develop liver failure.

Hepatitis may completely resolve and cause no further health problems. Unfortunately, many people who become infected with hepatitis B or C during childhood become "chronically" infected. People with chronic hepatitis may have no symptoms and feel

well, but they are at risk for scarring (cirrhosis) of the liver and other complications. In rare cases, liver cancer can develop. People with chronic hepatitis infections are also at risk for spreading the infection to others.

What are common findings in people with hepatitis?

Most people with chronic hepatitis have no signs or symptoms. Chronic infection over a long time may cause progressive liver damage. Signs of liver damage include enlargement of the liver and spleen, swelling or collection of fluid in the abdomen, yellow color of the eyes and skin (jaundice), and problems with blood clotting.

What tests are done to check for hepatitis?

A **blood test** can be done to check for viral hepatitis. A positive antibody test for hepatitis B or C means that the person has been exposed to the virus. Additional testing may then be done to determine if there is an active infection.

Who is at risk for hepatitis B and C?

Anyone who received the following blood or serum products are at risk for hepatitis B (if transfused before 1972) and hepatitis C (if transfused before 1993):

- Packed red blood cells
- Whole blood
- White blood cells (granulocytes)
- Platelets
- Fresh frozen plasma
- Cryoprecipitate
- Immunoglobulin preparations (IVIG, VZIG)
- Bone marrow or stem cells from an allogeneic donor (someone other than your self)

Other risk factors include:

- Blood clotting factors (such as Factor VIII or Factor IX) made before 1987
- Solid organ transplants (such as kidney, liver, or heart) before 1993
- Long-term kidney dialysis (lasting for at least several months)
- Shooting or snorting drugs
- Body piercing, tattoos
- Sharing razors, nail clippers, or toothbrushes with people who have hepatitis
- Occupational exposure to blood and body fluids

- High-risk sexual behavior (such as having multiple sexual partners, not using a condom, or having anal sex)

What follow up is needed for those at risk?

- Anyone who is at risk for hepatitis B or C should have blood tests done to see if they are infected.

If you have chronic hepatitis, you should also:

- See a liver specialist for evaluation and possible treatment.
- Tell your healthcare providers about all over-the-counter medications and supplements that you are taking.
- Do not drink alcohol, which can cause further liver damage.
- Avoid over-the-counter pain or fever-reducing medications containing acetaminophen (such as Tylenol® or "aspirin-free" products).
- Have a blood test to see if you have immunity to hepatitis A and B. If you do not have immunity, get immunized against these common infections in order to protect your liver (there is currently no vaccine to protect against hepatitis C).
- Discuss your hepatitis status with your healthcare providers. (If you are pregnant, discuss this with both your obstetrician and the baby's pediatrician).

How can the spread of chronic hepatitis be prevented?

Hepatitis B and C are not spread by casual contact, such as hugging or shaking hands. However, **if you have hepatitis B or C**, in order to prevent spreading the infection to others you should:

- Avoid direct contact of your blood and body fluids with others.
- Clean any spilled blood or body fluids with bleach.
- Cover cuts or other open sores.
- Avoid sharing sharp personal objects, such as razors, toothbrushes, nail clippers, ear or body rings, or any object that may come in contact with blood.
- Be sure that new sterile needles are used for body piercing, injections, tattoos, or acupuncture. Never share needles.
- Make sure all close household members and sexual partners are screened for hepatitis B. If they do not have immunity, they should be given the hepatitis B vaccine.
- If you are sexually active, use barrier precautions (such as latex condoms) during intimate sexual contact.

- Talk with your healthcare provider about whether your sexual partner should be tested for hepatitis C.

What else can I do to keep my liver healthy?

- Drink plenty of water.
- Eat a well-balanced, high-fiber diet.
- Cut down on fatty, salty, smoked and cured foods.
- Do not take more than the recommended doses of medications.
- Avoid taking unnecessary medications.
- Do not mix drugs and alcohol.
- Do not use illegal street drugs.
- Be careful about using herbs and natural supplements, especially when combined with medications.
- Avoid exposure to chemicals (solvents, aerosol cleaners, insecticides, paint thinners, and other toxins) that can be harmful to the liver. If you must use these substances, wear a mask and gloves and work in a well-ventilated area.

Written by Wendy Landier, RN, MSN, CPNP, CPON®, Survivorship Clinic, City of Hope National Medical Center, Duarte, CA.

Reviewed by: Melissa M. Hudson MD, Smita Bhatia MD, MPH, and Lisa Bashore MS, RN, CPNP, CPON®.

Additional health information for childhood cancer survivors is available at
www.survivorshipguidelines.org

Note: Throughout this *Health Links* series, the term "childhood cancer" is used to designate pediatric cancers that may occur during childhood, adolescence, or young adulthood. *Health Links* are designed to provide health information for survivors of pediatric cancer, regardless of whether the cancer occurred during childhood, adolescence, or young adulthood.

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