

## **Hepatitis Definitions**

**Liver:** The liver is a large organ that does many things to keep you alive. It helps to break down sugars and fats, filters toxins from your blood, and makes proteins to help your blood clot when you get a cut. The liver is in the upper right part of your abdomen (belly), under the ribs.

**Hepatitis:** “Hepat” = liver, “itis” = inflammation, so “hepatitis” means *inflammation* of the *liver*.

**Infection:** When a germ (usually either a virus or bacteria) gets into your body and makes you sick. Sometimes the germ can be in you but you don’t feel sick. Sometimes you can pass the germ to others even though you don’t know you have it. The germ then makes that person sick.

**Virus:** A kind of germ that can get inside you and make you sick or hurt your body. It is so small you cannot see it. Viruses have different ways to get inside you. Some viruses travel in blood, others can travel in mucus, saliva, body fluids, or semen. If one of the Hepatitis viruses (A, B or C) gets into your body, it can make your liver sick.

**Hepatitis A infection:** Hepatitis A is a virus that attacks the liver. People infected with hepatitis A usually get better on their own after a few months, but they can be very sick during infection (nausea, vomiting, tiredness, skin or eyes turning yellow, dark urine). Not everyone gets symptoms when they have hepatitis A. It is spread through food or water contaminated with hepatitis A virus. Frequent hand washing can help prevent the spread of hepatitis A. A vaccine can protect against hepatitis A.

**Hepatitis B infection:** Hepatitis B is a virus that attacks the liver. When a person has hepatitis B they may not feel sick but the virus can stay in their body for years and can damage the liver over time. The hepatitis B virus is spread through blood, semen or other body fluids (for example, having unprotected sex). A vaccine can protect against getting hepatitis B.

**Hepatitis C infection:** Hepatitis C is a virus that attacks the liver. If you have hepatitis C, you may not feel sick but the virus can stay in your body for years and damage the liver over time. Hepatitis C is spread through blood to blood contact. It is only spread through sex if there are open cuts or if someone has a sexually transmitted disease. There is no vaccine against hepatitis C. Treatment exists to get rid of hepatitis C although treatment at this time is very hard and can cause you to feel sick.

**Inflammation:** Think of when you have a cut and it gets red and swollen. This is how the body reacts when you have an infection or injury. When your liver has inflammation it is reacting to something that is hurting it and causing damage, like a virus or alcohol. The liver is irritated. Inflammation in the liver can lead to scarring, and scarred liver tissue does not work very well.

**Transmission:** The way a germ (virus or bacteria) spreads from one person to another. Transmission can be from blood to blood, blood to body fluid, body fluid to blood, or body fluid to body fluid - depending on the germ.

**Antibodies:** Particles in the blood that fight infection. Antibodies are formed when someone has been exposed to Hepatitis A, B or C. Certain antibodies can tell us if someone is immune to (protected against) Hepatitis A or B. There is no immunity to Hepatitis C.

**Fatty Liver:** When we eat more food than our body needs some of the extra calories may get stored in the liver as fat, leading to a condition called fatty liver. Fatty liver is often seen in persons who are overweight or have diabetes. Sometimes it can cause damage to the liver. Exercise and eating a healthier diet can help get this fat out of the liver. You don't have to be overweight to have fatty liver.

**Liver cancer:** When a tumor grows in the liver and it is malignant (bad). Sometimes the cancer starts in the liver. Sometimes the cancer starts somewhere else in the body and spreads to the liver.

**Hepatocellular Carcinoma (HCC):** This is a type of cancer that starts in the liver. People with Hepatitis B and Hepatitis C have a higher risk for this cancer. Also people with cirrhosis (scarring in the liver) have a higher risk of this type of cancer.

**Genotype:** Genotype describes variations of a virus. For example, Hepatitis C virus has 6 main variations or genotypes, which are numbered 1, 2, 3, 4, 5 and 6. Genotypes 1, 2 and 3 are the most common in the U.S. For someone with hepatitis C, it is important to know the genotype as it determines the treatment that is given and for how long. With Hepatitis B, some genotypes are more likely to cause liver cancer than others.

**Viral load:** This is a lab test that measures how much virus is in your blood at the time it is tested.

**PCR/RNA test:** This is another name for a **viral load** test for Hepatitis C. PCR is the *type* of test (PCR = Polymerase Chain Reaction). RNA are the parts of the virus that are measured to tell us how much virus there is in the blood (RNA = ribonucleic acid).

**Hepatitis B DNA test:** This is the way **viral load** is measured for Hepatitis B. (DNA = deoxyribonucleic acid)

**LFTs (Liver Function Tests):** This is a set of blood tests that tell how the liver is doing.

**Liver enzymes:** Liver enzymes are proteins that come out of the liver cells. There are always some enzymes leaking out of the liver cells, but when the numbers are high it means liver cells are *inflamed* or *injured* and they are leaking more of these enzymes.

**CBC (Complete Blood Count):** This blood test can tell us about your overall health and how well the liver is doing. It measures white blood cells (which fight infection), red blood cells (which carry oxygen in the blood), and platelets (which help the blood clot when you get cut).

**AFP (Alpha fetoprotein):** A blood test that helps screen for liver cancer. Sometimes the AFP will go up when a tumor is starting to grow in the liver. It also goes up when a woman is pregnant. It also can go up when the liver is scarred.

**Abdominal Ultrasound:** A test done in radiology (X-ray) where a technician rubs a little machine across the belly to measure sound waves bouncing off the organs inside. An ultrasound can show the texture of the organs and sometimes can show tumors. It can also show things like gallstones, cysts, and blood flow in the liver.

**Autoimmune Hepatitis (AIH):** When a person's immune system attacks the liver and causes liver damage. It is controlled with medications and is not contagious.

**Primary Biliary Cirrhosis (PBC) or Autoimmune Cholangitis (AIC):** A disease where a person's immune system attacks the bile ducts in the liver. Bile ducts are tubes that carry bile. Bile is a greenish-yellow fluid made by the liver that helps our body break down fat. When the bile ducts get damaged the bile leaks around the liver cells and cause inflammation and scarring in the liver. PBC/AIC is controlled with medications and is not contagious.

**Fibrosis:** Scar tissue that forms in the liver when something is hurting the liver (like alcohol, or a virus).

**Advanced fibrosis:** When the liver is building scar tissue and it is spreading throughout the liver. It is not cirrhosis yet, but it is getting there.

**Cirrhosis:** When the liver has been inflamed for a long time the good cells die off and scar tissue replaces them. When your liver has a lot of scar tissue it is called cirrhosis, and this means your liver doesn't have much healthy tissue left. The more scar tissue you have in your liver, the less able it is to work.

**Portal Vein Flow:** The portal vein is a large blood vessel that brings blood from the intestine to the liver. When a person has cirrhosis (lots of scar tissue) the blood has a hard time flowing through the liver and it can get backed up and not flow correctly. See **portal hypertension**.

**Portal hypertension:** When blood gets backed up in the liver it causes high blood pressure (hypertension) in the portal vein. Portal hypertension can lead to a swollen belly (**ascites**), abdominal pain or bloating, confusion (**encephalopathy**), or bleeding in the digestive tract (from **varices**).

**Ascites:** fluid building up in the belly (abdomen) causing swelling. This happens in advanced liver disease (cirrhosis).

**Encephalopathy:** This means confusion. When the liver is not working properly it can't get rid of toxins in the body. Toxins, like ammonia, build up in the blood and go to the brain – this can cause confusion. This happens in advanced liver disease (cirrhosis).

**Esophageal Varices:** Varices are swollen blood vessels. You may have heard of varicose veins that pop out in the legs. Esophageal varices are swollen blood vessels in the esophagus (the tube that carries food from your mouth to your stomach). These can happen in people with cirrhosis because the blood can't flow well into the liver so it backs up into the veins of esophagus. See **variceal bleed**.

**Variceal bleed:** When the varices (swollen blood vessels) in the esophagus get too large they can burst and bleed into the intestines. This is very dangerous and can be life-threatening.

**Spider Angioma:** Flattened blood vessels seen just under the skin with reddish extensions looking like a spider's web. They can be a sign of advanced liver disease (scarring of the liver), especially when they appear on the trunk of the body.

**Bridging fibrosis:** This is seen on a liver biopsy when there is a lot of scar tissue. It is a sign that the scarring is spreading (getting worse) and the person could develop **cirrhosis** in the next few years.

**CT scan:** CT stands for computed tomography. It is a form of x-ray that uses the help of a computer to get images (pictures) of sections of an area in the body so the radiologist can see inside the body without cutting it open. Sometimes dye (called contrast) is injected or swallowed to help light up certain areas of the image.

**MRI:** MRI stands for magnetic resonance imaging. This is a radiology technique that uses strong magnetic fields and radio waves to create images (pictures) of certain areas of the body. Sometimes contrast dye is used to help an image show up better; the dye is injected into the veins. One of these dyes is called Eovist and it is used to help look for liver tumors.

**RFA:** RFA stands for radiofrequency ablation. This is a technique used to get rid of liver tumors (cancer), as well as other kinds of tumors. A surgeon works with a radiologist to locate the tumor with ultrasound or CT. Then the surgeon sticks a probe (long pointy thing) into the tumor. Radiofrequency waves pass through the probe and increase the temperature inside the tumor to destroy it.

**Chemoembolization:** A type of intensive chemotherapy used to treat liver tumors (cancer). A highly concentrated dose of anti-tumor drug is delivered directly to the tumor. This treatment can slow or stop tumor growth, and sometimes shrink the tumor.

**Direct-acting Antivirals:** Medications that interfere with the reproduction of a virus (like hepatitis C virus) so that the virus cannot make more copies of itself.

**Protease Inhibitors:** These **direct-acting antivirals** prevent the virus from forming properly.

**Polymerase Inhibitors:** These **direct-acting antivirals** interfere with reproduction of the virus.

**Sofosbuvir:** A new oral medication approved by the FDA in December 2013 to treat hepatitis C. It is a **polymerase inhibitor**, which is a type of direct-acting antiviral medication. It is taken once a day in combination with other medications to treat hepatitis C. It can be used for genotypes 1, 2, 3 and 4.

**Telaprevir:** A **protease inhibitor** used in combination therapy to treat hepatitis C. Telaprevir is given as two pills taken three times day with 20 grams of fat in combination with pegylated interferon and ribavirin for the treatment of genotype 1. It has many serious side effects and drug interactions.

**Boceprevir:** A **protease inhibitor** used in combination therapy to treat hepatitis C. Boceprevir is given as 4 capsules taken three times a day, in combination with pegylated interferon and ribavirin for the treatment of genotype 1. It has many serious side effects and drug interactions.

**Simeprevir:** A newer **protease inhibitor** used in combination therapy to treat hepatitis C. Simeprevir is a capsule taken once daily in combination with pegylated interferon and ribavirin for the treatment of genotype 1 or 4. It has fewer side effects than earlier protease inhibitors, but photosensitivity and rash can occur, as well as drug interactions.

**Peginterferon (pegylated interferon):** An injectable medication given once a week in combination with oral medicines to treat hepatitis C. Starting in 2014 it will only be used for treating genotypes 1 and 4 (and possibly 3) at our facility. Interferons are proteins made naturally by the body to fight infection. Natural interferon causes body aches and fever, which means your immune system is fighting off an infection. Injectable peginterferon increases the amount of interferon in the body to help fight off infections, and causes the same symptoms of body aches and fever. A possible serious side effect of peginterferon is a decrease in white blood cells (which help fight infection); this should be watched for with regular blood tests. Peginterferon can also cause or worsen depression.

**Ribavirin:** This is an oral medication used along with other medications to treat hepatitis C. It helps the other medications to work more effectively by helping to stop reproduction of the virus. It can cause severe anemia, which should be watched for with regularly scheduled blood tests. It can also cause birth defects; therefore a person planning to use ribavirin must not get pregnant or get someone pregnant during treatment and for 6 months after the end of treatment.