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hepatitis C
BASICS

Reading a Lab Report

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Staying on top of hepatitis C (HCV) treatment is a complicated process that includes using blood tests. These tests include liver function tests, chemistry panels and complete blood counts (CBC). This factsheet is meant to help you understand these blood tests. It is not intended as medical advice. All people with HCV should talk to a medical provider to see if they have HCV and to get information on treatment.

It is important to remember that lab results can be different between labs. So, the same lab should be used whenever possible. Information from blood tests over time will show a trend or pattern. Medical decisions should not usually be made on just one test result.

Three types of lab tests are used to check general health and liver health:

1. Liver biochemical/function tests measure various enzymes released by the liver into blood. They also measure other liver functions. Liver enzymes may be higher when damage occurs in the liver.

2. Complete blood counts (CBC) measures the three types of cells in the blood: red cells, white cells, and platelets.

3. Chemistry panels measure minerals (electrolytes), sugar (glucose) and fats (lipids) in the blood. They also measure how well the liver and kidneys are functioning.

Lab reports provide information that tells you what is "normal" for each function measured (reference range). This information is often found on the right side of the report. Many lab reports also have a column that lists out-of-range values. This makes it easy to see problems quickly. An out-of-range result can reveal a possible problem that should be looked at further.

This guide provides some information on what each section of the lab report means. It also provides some information on what out-of-range values could mean.

Liver Biochemical/Function Tests

ALT (alanine aminotransferase), previously called SGPT, is an enzyme produced in liver cells (hepatocytes). The level of ALT in the blood increases when hepatocytes are damaged or die at higher than normal rates. Drugs, alcohol use, toxins (poisons), viruses, and other substances can damage hepatocytes. The level of ALT may be related to the number of cells that die. It may also be connected to inflammation (the immune system's response to irritation or injury) in the liver. This is not always the case, though. For example, some people who have very damaged livers have normal ALT levels.

About one third of people with HCV have normal ALT levels. Most people with normal ALT levels on a regular basis have mild or no fibrosis. Their HCV disease progresses slower than patients with high ALT levels.

ALT levels are used to measure inflammation and damage to the liver at any one point in time. Normal ALT levels, like "normal" values for every lab test, can be different from lab to lab. Looking for a trend or pattern over time is more important than any single value. For example, a measure of 100 several times may seem high, but would be "normal" for someone who normally tests within this range. However, a measurement of 225 for this person would probably mean that there could be increased inflammation or cell death. In this case, it would be important to get further testing.

AST (aspartate aminotransferase), previously called SGOT, is an enzyme similar to ALT. It is different from ALT because it is less specific for liver disease. In many cases of liver inflammation, both the ALT and AST levels are high.

ALK (alkaline phosphotase) is an enzyme produced in the bile ducts and bone. It is found in the liver. Levels are higher in people with hepatitis, cirrhosis, and other illnesses. Some medications may also cause increased levels.

GGT or GGPT (gamma-glutamyl transpeptidase) is another enzyme produced in the bile ducts. This enzyme may be elevated in people with bile duct diseases. Hepatitis and heavy alcohol consumption also increase GGT.

Bilirubin is the main substance created when old red blood cells are broken down. First, the red blood cells are broken down into other substances. One of these substances is hemoglobin. The "heme" portion of hemoglobin is then broken down into bilirubin. When the liver is unable to work correctly (which happens in people with acute hepatitis or end stage liver disease), bilirubin starts to collect in the blood. This causes yellowing of the skin and eyes, called jaundice. In chronic HCV, bilirubin levels are usually normal until a large amount of liver damage has occurred. Bilirubin is often reported as total, indirect, and direct.

Albumin is a protein that is made by the liver and is found in the blood. Low albumin levels usually mean that the liver is not working well. This can cause peripheral edema (collection of fluid in the feet and ankles), which sometimes happens in very late stage liver disease. Albumin levels are usually normal in chronic liver disease until a large amount of liver damage occurs.

PT (prothrombin time) is a blood-clotting test. It is prolonged (or high) when there is a low amount of some blood clotting factors made by the liver in the blood. In chronic liver disease, the PT is usually not elevated until the person has cirrhosis and a very damaged liver.

CBC - Complete Blood Counts

White cell (leukocyte) count provides information on the body's ability to fight diseases. A high total white count means the body is actively fighting an infection. A low total white count means that the body is not able to fight infection very well. Low white blood count may be caused by advanced HCV disease or from HCV medications. In addition to total count, a CBC gives the amount of each type of white cell. The types are neutrophils, lymphocytes, monocytes, eosinophils, and basophils.

Neutrophil count is used to determine a person's ability to fight common infections. Low neutrophil count (neutropenia) means the body will not be able to fight off an infection as well as if the count was normal. Interferon (a medication used to treat HCV) can cause neutropenia. Chemotherapy generally causes neutropenia.

Red cell count measures the body's ability to carry oxygen to cells through the blood. It also tells the size of the red blood cells. Two other important values are hemoglobin and hematocrit (together referred to as H&H). These values measure the ability to provide the body with oxygen. Low H&H are known as anemia. Anemia is a serious condition that produces fatigue (tiredness). Advanced liver disease can cause anemia. Ribavirin (a medication used to help treat HCV) can also cause anemia.

Platelet count provides information on the blood's ability to clot. Low platelet count is called thrombocytopenia. Thrombocytopenia is dangerous because it keeps the body from being able to stop internal and external bleeding. Advanced liver disease and HCV medications can cause thrombocytopenia.

Chemistry Panel

Electrolytes are minerals that are essential to life and help the heart to function. Blood tests usually check the following electrolytes: sodium, potassium, chloride, calcium, iron, phosphorus, and sometimes magnesium. Chronic diseases may cause electrolytes to be out of balance. If untreated, electrol-ytes that are severely out of balance may be deadly.

Glucose is the measurement of blood sugar in the body. High blood sugar is called hyperglycemia. Hyperglycemia may be caused by diabetes. Low blood sugar is called hypoglycemia and is uncommon in people with hepatitis C.

Lipids are fats. The most commonly measured lipids are triglycerides and cholesterol. High triglycerides and cholesterol can mean that there are damaged arteries and potential heart disease. These are serious medical problems.

Kidney functions measured by lab tests include blood urea nitrogen (BUN), creatinine, and uric acid. The kidneys are important in removing wastes from the body and maintaining blood pressure. For this reason, kidneys that are not functioning well can lead to dialysis (filtering of blood) and if not treated, can become a deadly problem. Chronic diseases, including HCV, can cause kidney damage. Creatinine is the most common measurement of how well the kidneys are working.

What's the Bottom Line?

Get copies of your blood work tests and become familiar with the results. Always talk with a health care provider before coming to any conclusions or making healthcare decisions. This is another part of staying in charge of your health.

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The information in this fact sheet is designed to help you understand and manage HCV and is not intended as medical advice. All persons with HCV should consult a medical practitioner for diagnosis and treatment of HCV.