LIVER DISEASE PREDICTION

# **Feature Analysis**

**1.Ascites**

Ascites is a buildup of fluid in your abdomen. It often occurs as a result of cirrhosis, a liver disease.

**2.Hepatomegaly**

Hepatomegaly is an enlarge liver, which means its swollen beyond its usual size.

A swollen liver usually is a symptom of another health condition, such as hepatitis. Hepatitis and chronic alcohol are frequent cause of *cirrhosis*.

**3.Spiders**

Spider angioma is an abnormal collection of blood vessels near the surface of the skin. These are very common. They often occur in pregnant women and in people with *liver disease*.

**4.Edema**

Edema is swelling caused by excess fluid trapped in your body's tissues. Edema can be the result of medication, pregnancy or an underlying disease — often congestive heart failure, kidney disease or *cirrhosis* of the liver.

**5.Bilirubin (mg/dl)**

Bilirubin is a yellowish pigment that is made during the normal breakdown of red blood cells. Bilirubin passes through the liver and is eventually excreted out of the body.

*Higher than normal levels of bilirubin may indicate different types of liver or bile duct problems*.

**6.Cholesterol**

Cholesterol is a waxy substance found in your blood. Your body needs cholesterol to build healthy cells, but high levels of cholesterol can increase your risk of heart disease.

**7.Albumin (gm/dl)** (normal range: 3.4-5.4 gm/dl)

Albumin is a protein made by your liver. Albumin helps keep fluid in your bloodstream so it doesn't leak into other tissues. It is also carrying various substances throughout your body, including hormones, vitamins, and enzymes.

*Low albumin levels can indicate a problem with your liver or kidneys*.

**8.Copper (urine copper) (ug/day)** (normal range: 10 to 30 ug/day)

An abnormal result means you have a higher-than-normal level of copper. This may be due to: \*Biliary cirrhosis, \*Chronic active hepatitis, \*Wilson disease.

**9.Alk\_Phos (Alkaline Phosphatase) (U/Litre)**

Alkaline phosphatase (ALP) is a protein found in all body tissues. Tissues with higher amounts of ALP include the liver, bile ducts, and bone.

*High alkaline phosphatase levels in the liver can indicate*:

* *Cirrhosis*
* *Hepatitis*
* A blockage in the [bile duct](https://medlineplus.gov/bileductdiseases.html)
* [Mononucleosis](https://medlineplus.gov/infectiousmononucleosis.html), which can sometimes cause swelling in the liver

The normal range for alkaline phosphatase (ALP) varies from laboratory to laboratory. One common reference range is from 44 to 147 international units per litre (IU/L), but some organizations recommend a range of 30 to 120 IU/L.

**10.SGOT (U/ml)**

**SGOT:** [Serum](https://www.rxlist.com/script/main/art.asp?articlekey=5470) glutamic oxaloacetic transaminase, an [enzyme](https://www.rxlist.com/script/main/art.asp?articlekey=3266) that is normally present [in](https://www.rxlist.com/script/main/art.asp?articlekey=3950) [liver](https://www.rxlist.com/liver_anatomy_and_function/article.htm) and [heart](https://www.rxlist.com/heart_how_the_heart_works/article.htm) cells. [SGOT](https://www.rxlist.com/script/main/art.asp?articlekey=6320) is released into [blood](https://www.rxlist.com/script/main/art.asp?articlekey=2483) when the liver or heart is damaged. The blood SGOT levels are thus elevated with liver damage (for example, from [viral hepatitis](https://www.rxlist.com/viral_hepatitis/article.htm)) or with an insult to the heart (for example, from a [heart attack](https://www.rxlist.com/heart_attack/article.htm)).

The normal range of an SGOT test is generally between 8 and 45 units per litre of serum. In general, men may naturally have higher amounts of AST in the blood. A score above 50 for men and 45 for women is high and may indicate damage.

**11. Triglycerides (mg/dl)**

Triglycerides are a type of fat (lipid) found in your blood.

When you eat, your body converts any calories it doesn't need to use right away into triglycerides. The triglycerides are stored in your fat cells. Later, hormones release triglycerides for energy between meals.

If you regularly eat more calories than you burn, particularly from high-carbohydrate foods, you may have high triglycerides (hypertriglyceridemia).

A simple blood test can reveal whether your triglycerides fall into a healthy range:

* Normal — Less than 150 milligrams per deciliter (mg/dL), or less than 1.7 millimoles per liter (mmol/L)
* Borderline high — 150 to 199 mg/dL (1.8 to 2.2 mmol/L)
* High — 200 to 499 mg/dL (2.3 to 5.6 mmol/L)
* Very high — 500 mg/dL or above (5.7 mmol/L or above)

**11. Platelets (Platelets per millilitre of blood)**

Platelets are tiny blood cells that help your body form clots to stop bleeding. If one of your blood vessels gets damaged, it sends out signals to the platelets. The platelets then rush to the site of damage and form a plug (clot) to fix the damage.

* A normal platelet count is 150,000 to 450,000 platelets per microliter of blood.
* Your risk for bleeding develops if a platelet count falls below 10,000 to 20,000. When the platelet count is less than 50,000, bleeding is likely to be more serious if you're cut or bruised.
* Some people make too many platelets. They can have platelet counts from 500,000 to more than 1 million.

**12. Prothrombin (seconds)**

Prothrombin is a protein made by the liver. It is one of several substances known as clotting (coagulation) factors. When you get a cut or other injury that causes bleeding, your clotting factors work together to form a blood clot. Clotting factor levels that are too low can cause you to [bleed too much](https://medlineplus.gov/bleedingdisorders.html) after an injury.

*Levels that are too high can cause dangerous clots to form in your arteries or veins.* ***The normal range for clotting is: 11 to 13.5 seconds.***

**13. Status** (status of the patient)**: C, CL, D**

* C: Censored
* CL: Censored due to liver tx
* D: Death

*Censoring* is an endemic feature of time-to-event analysis that precludes observation of the event.

Right-censoring occurs when an event may have occurred after the last time a person was under observation, but the specific timing of the event is unknown.