ORGAN FUNCTION TESTS

LIVER FUNCTION TESTS

- Liver function tests are blood tests used to help find the cause of symptoms and monitor liver disease or damage. The tests measure the levels of certain enzymes and proteins in blood.

- Some of these tests measure how well the liver is performing its regular functions of producing protein and clearing bilirubin, a blood waste product. Other liver function tests measure enzymes that liver cells release in response to damage or disease.

- Irregular liver function test results don't always mean liver disease.

Liver function tests can be used to:

- Screen for liver infections, such as hepatitis.
- Monitor a disease, such as viral or alcoholic hepatitis, and determine how well a treatment is working.
- Look for signs of serious disease, particularly scarring of the liver, called cirrhosis.
- Monitor possible side effects of medicines.
- Liver function tests check the levels of certain enzymes and proteins in blood. Levels that are higher or lower than usual can mean liver problems.

Some common liver function tests include:

Alanine transaminase (ALT): ALT is an enzyme found in the liver that helps convert proteins into energy for the liver cells. When the liver is damaged, ALT is released into the bloodstream and levels increase. This test is sometimes referred to as SGPT.

Aspartate transaminase (AST): AST is an enzyme that helps the body break down amino acids. Like ALT, AST is usually present in blood at low levels. An increase in AST levels may mean liver damage, liver disease or muscle damage. This test is sometimes referred to as SGOT.

Alkaline phosphatase (ALP): ALP is an enzyme found in the liver and bone and is important for breaking down proteins. Higher-than-usual levels of ALP may mean liver damage or disease, such as a blocked bile duct, or certain bone diseases, as this enzyme is also present in bones.

Albumin and total protein: Albumin is one of several proteins made in the liver. Your body needs these proteins to fight infections and to perform other functions. Lower-than-usual levels of albumin and total protein may mean liver damage or disease. These low levels also can be seen in other gastrointestinal and kidney-related conditions.

Bilirubin: Bilirubin is a substance produced during the breakdown of red blood cells. Bilirubin passes through the liver and is excreted in stool. Higher levels of bilirubin might mean liver damage or disease. At times, conditions such as a blockage of the liver ducts or certain types of anemia also can lead to elevated bilirubin.

Gamma-glutamyltransferase (GGT): GGT is an enzyme in the blood. Higher-than-usual levels may mean liver or bile duct damage. This test is nonspecific and may be elevated in conditions other than liver disease.

L-lactate dehydrogenase (LD): LD is an enzyme found in the liver. Higher levels may mean liver damage. However, other conditions also may cause higher levels of LD.

Prothrombin time (PT): PT is the time it takes your blood to clot.
Increased PT may mean liver damage. However, it also can be higher if you're taking certain blood-thinning drugs, such as warfarin.

SGOT AND SGPT Tests:

The SGPT test is performed by obtaining a blood sample from a vein in the arm. This sample is then analyzed by a qualified technician at a laboratory. A test report is then generated, which will provide the results in units per liter of blood.
The test results are useful in detecting liver diseases and in diagnosing hepatitis. It is also used in monitoring the effects of medicines that may damage the liver. It is a painless procedure and does not require special preparation.
Normal levels of AST (SGOT) and ALT (SGPT):

- Normal SGOT levels - 5 to 40 units per liter of serum
- Normal SGPT levels - 7 to 56 units per liter of serum

If the blood test reports are drastically different than the normal range, it can signify potent complications in the body, especially with liver diseases and disorders.

KIDNEY FUNCTION TESTS

Kidney function tests measure how efficiently kidneys are working. Most of these tests check how well kidneys clear waste from the system. A kidney test may involve a blood test, 24-hour urine sample or both.

Symptoms that may indicate a problem with kidneys include:

- high blood pressure
- blood in the urine
- frequent urges to urinate
- difficulty beginning urination
- painful urination
- swelling of the hands and feet due to a buildup of fluids in the body

A single symptom may not mean something serious. However, when occurring simultaneously, these symptoms suggest that the kidneys aren't working properly. Kidney function tests can help determine the reason.

Types of kidney function tests

Urinalysis

A urinalysis screens for the presence of protein and blood in the urine. There are many possible reasons for protein in your urine, not all of which are related to

disease. Infection increases urine protein, but so does a heavy physical workout. Repeat this test after a few weeks to see if the results are similar. Collect a 24-hour urine collection sample. This can help to see how fast a waste product called creatinine is clearing from body. Creatinine is a breakdown product of muscle tissue.

Serum creatinine test

This blood test examines whether creatinine is building up in blood. The kidneys usually completely filter creatinine from the blood. A high level of creatinine suggests a kidney problem.

According to the National Kidney Foundation (NKF), a creatinine level higher than 1.2 milligrams/deciliter (mg/dL) for women and 1.4 mg/dL for men is a sign of a kidney problem.

Blood urea nitrogen (BUN)

The blood urea nitrogen (BUN) test also checks for waste products in your blood. BUN tests measure the amount of nitrogen in the blood. Urea nitrogen is a breakdown product of protein.

However, not all elevated BUN tests are due to kidney damage. Common medications, including large doses of aspirin and some types of antibiotics, can also increase your BUN. A normal BUN level is between 7 and 20 mg/dL. A higher value could suggest several different health problems.

Estimated GFR

This test estimates how well kidneys are filtering waste. The test determines the rate by looking at factors, such as:

- test results, specifically creatinine levels
- age
- gender
- race
- height
- weight

Any result lower than 60 milliliters/minute/1.73m^2 may be a warning sign of kidney disease.