UPSTATE
Golisano Children's Hospital

HOW TO READ YOUR LAB RESULTS

Overview:

Laboratory tests are tools helpful in evaluating the health status of an individual. It is important to realize that laboratory results may be outside of the so-called "normal range" for many reasons. These variation may be due to such things as race, dietetic preference, age, sex, menstrual cycle, degree of physical activity, problems with collection and/or handling of the specimen, non-prescription drugs (aspirin, cold medications, vitamins, etc.) prescription drugs, alcohol intake and a number of non-illness factors. Any unusual or abnormal results should be discussed with your physician. It is not possible to diagnose or treat any disease or problem with this blood test alone. It can, however, help you to learn more about your body and detect potential problems in early stages with treatment or changes in personal habits can be most effective.

Our lab, like almost all labs, sets the normal result for a particular test so the 95% of our healthy patients fall within the normal range. That means that 5% of our healthy patients fall outside of the normal range, even when there is nothing wrong with them. Thus an abnormal test does not necessarily mean that there is something wrong with you. Statistically, if you have 20 or 30 individual tests run as part of a panel, chances are 1 or 2 will be slightly outside the normal range. Part of what you see your doctor for is to interpret whether or not these changes are significant.

This review is a brief summary and is not intended to be comprehensive or replace discussion of your results with your health care team.

Complete Blood Count (CBC)

The CBC typically has several parameters that are created from an automated cell counter. These are the most relevant:

- White Blood Count (WBC) is the number of white cells. High WBC can be a sign of infection. Low white counts can be a sign of bone marrow suppression.
- Hemoglobin (Hgb) and Hematocrit (Hct) The hemoglobin is the amount of oxygen carrying protein contained within the red blood cells. The hematocrit is the percentage of the blood volume occupied by red blood cells. Low Hgb or Hct suggest an anemia. Anemia can be due to nutritional deficiencies, blood loss, destruction of blood cells internally, or failure to produce blood in the bone marrow.
- Mean Corpuscular Volume (MCV) This helps diagnose a cause of anemia. Low values suggest iron deficiency, high values suggest either deficiencies of B12 or Folate, ineffective production in the bone marrow, or recent blood loss with replacement by newer (and larger) cells from the bone marrow.
- Platelet count (PLT) This is the number of cells that plug up holes in your blood vessels and prevent bleeding. High values can occur with bleeding. Low values can occur from premature destruction states such as Immune Thrombocytopenia (ITP), acute blood loss, drug effects (such as Heparin), infections with sepsis, entrapment of platelets in an enlarged spleen, or bone marrow failure. Low platelets also can occur from clumping of the platelets in a lavender colored tube. You may need to repeat the test to confirm results.

Enzymes and Proteins

AST, ALT, SGOT, and GGT and Alkaline Phosphatase are abbreviation for proteins called enzymes which help all the chemical activities within cells to take place. Injury to cells release enzymes into the blood. They are found in muscles, the liver and heart. Damage from a number of diseases is reflected in high values.

- Alkaline Phosphatase is an enzyme found primarily in bones and the liver. Expected values are higher for those who are growing (children and pregnant women) or when damage to bones or liver has occurred or with gallstones.
- GGT is also elevated in liver disease, particularly with obstruction of bile ducts. Unlike the alkaline phosphatase it is not elevated with bone growth or damage.
- AST/SGOT, ALT/SGPT are also liver and muscle enzymes. They may be elevated from liver problems, or muscle injury.

Electrolytes and Waste Products

These are your potassium, sodium, and creatinine and BUN levels.

- Potassium is controlled vary carefully by the kidneys. It is important for the proper functioning of the nerves and muscles, particularly the heart. Any value outside the expected range, high or low, requires medical evaluation.
- Sodium is also related by the kidneys and adrenal glands.
- Blood Urea Nitrogen (BUN) is a waste product produced in the liver and excreted by the kidneys. High values may mean that the kidneys are not working as well as they should. BUN is also affected by high protein diets and/or strenuous exercise which raise levels, and by pregnancy which lowers it.
- Creatinine is a waste product largely from muscle break down. High values, especially with high BUN levels, may indicate problems with the kidneys.

Thyroid

- Throxine (T4) This shows the total amount of the T4. High levels may be due to hyperthyroidism.
- Thyroid Stimulating Hormone (TSH) This protein hormone is secreted by the pituitary gland and regulates the thyroid gland. A high level suggests your thyroid is under active, and a low level suggest your thyroid is overactive.

Inflammatory Markers

- Erythrocyte Sedimentation Rate (SED Rate) This test is based on the fact that inflammatory and necrotic processes cause an alteration in blood proteins. An elevated SED Rate can occur with inflammatory processes, infections, severe anemia, collagen diseases and cell or tissue damage.
- C-Reactive Protein (CRP) Almost any disease that brings about inflammatory condition of any tissue will result in quantities of CRP being elevated in the blood.
- Iron and Total Iron Binding Capacity (TIBC) In condition where the body is deficient in iron the TIBC is increased.