



Animal Haven Veterinary Center

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MAKING SENSE OF YOUR PET'S BLOOD TESTS

The complete blood count is a blood test used to determine numbers of the different types of blood cells in your pet's blood and can indicate the presence of infection or disease. Blood consists of red blood cells (erythrocytes), white blood cells (leukocytes), platelets, and fluid called plasma or serum.

- Red blood cells are important because they carry oxygen to all body tissues. The term *anemia* is used to describe a decrease in red blood cells and can occur for many reasons including, bleeding, cell destruction, nutritional deficiency, intestinal parasites, various diseases, or infection. A high red blood cell count can indicate dehydration.
- White blood cells are important for preventing and fighting infection. There are five different types of white blood cells. A complete blood count includes a count of total white blood cell number, as well as what is called a *differential* (a determination of the percentage of the five different types of white blood cells).
- Platelets are important for blood clotting .

The blood chemistry panel allows us to determine how the organs are functioning.

- The kidneys have several important functions: elimination of toxic substances, regulation of body fluids, and production of some hormones. If the kidneys are failing, the by-products of normal metabolism accumulate and can become toxic, and hormones normally made by the kidney are often not produced. Measurements of the creatinine and blood urea nitrogen (BUN) are used to evaluate kidney function. Both BUN and creatinine are monitored in patients with kidney problems. Kidney disease can also lead to anemia, so red blood cell counts will also be monitored.
- The liver is the largest internal organ in pets. Its major functions include production of enzymes for digestion, energy storage, detoxification center, production of blood clotting factors, just to name a few. Liver cells make many different proteins, many of which are enzymes. When the liver is sick or damaged, many of these enzymes become elevated in the blood. *ALT* and *AST* are enzymes that are used as indicators of liver damage. Elevations in these enzymes indicate that there is something wrong with the liver. *Alkaline phosphatase (ALP)* is an enzyme that indicates liver damage, blockage within the ducts of the liver, bone disease (such as arthritis), or a condition called Cushing's disease (a disease in which the animal is over-producing the natural steroids found in the body). *Bilirubin* is the last major test found in a chemistry profile. Liver disease or conditions that cause destruction of red blood cells cause an elevation in the bilirubin. A large increase in bilirubin can result in a condition called jaundice (the skin, eyes and gums may appear yellow).
- The pancreas is a gland that releases hormones such as insulin, as well as some digestive enzymes. Therefore, the pancreas is important for the digestion and utilization of fats, carbohydrates and proteins. If the pancreas is not secreting enough insulin, a condition called *Diabetes* (high levels of sugar/glucose in the blood) results. Two enzymes called *amylase* and *lipase* are indicators of pancreas function. Increases in these enzymes can indicate a condition called pancreatitis. This is an inflammation of the pancreas causing abdominal pain, vomiting. Weakness, and decreased appetite.

- Various electrolytes and minerals such as calcium, phosphorous, potassium, and sodium are measured. Variations in these electrolytes and minerals can indicate specific disease.
- The thyroid is a small gland found in the neck. Its function is to secrete hormones, which help to regulate metabolism. An under-active thyroid gland (a condition called hypothyroidism) is usually the condition found in dogs. An over-active thyroid gland (a condition called hyperthyroidism) is usually the problem with cats. Both conditions are fairly easily treated.

Hopefully this brief explanation of the values we are looking at when we do these blood test on your pet will make it a little easier for us to communicate the results to you. Following is a quick reference of the blood chemistry tests:

- **Albumin:** Low levels are seen in liver disease.
- **Alkaline Phosphatase:** Elevated levels are seen in various liver and bone diseases.
- **ALT:** Measurement is used to evaluate liver damage.
- **AST:** Measurement is used to evaluate liver damage.
- **Amylase:** Measurement is used to evaluate the pancreas
- **Bilirubin:** Elevated levels are found during liver failure and can cause a yellowish appearance of jaundice.
- **BUN:** Elevated during dehydration, kidney failures, and urinary obstruction.
- **Calcium:** Levels can be altered in disease of the parathyroid gland, kidney, and bone as well as nutritional deficiencies.
- **CPK:** An enzyme found in muscle. Elevated after damage to the heart and skeletal muscles.
- **Creatinine:** Elevated during kidney damage/failure.
- **Glucose:** Elevated in diabetic patients and during stress.
- **Lipase:** Measured to evaluate pancreas function.
- **T4:** Hormone produced by the thyroid gland. Levels will be altered in various forms of thyroid disease.