

HOW TO READ LABORATORY TESTS

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A wide variety of tests are used to certify good health or indicate the presence of infection or disease. The major tests and some of the common vocabulary in lab reports are explained below. A Complete Blood Count indicates the number and type of cells in the dog's blood. This standard test can identify anemia and leukemia, as well as the presence of many infections. A Serum Chemistry Profile includes a variety of tests that examine the functioning of organs, such as the liver and thyroid. If these tests indicate any abnormality.

CBC Values

Red Blood Cells (RBC) - Responsible for carrying oxygen and carbon dioxide throughout the body. Iron deficiency will lower RBC count. In more reduced count, it may indicate hemorrhage, parasites, bone marrow disease, B-12 deficiency, folic acid deficiency or copper deficiency. RBC lives for 120 days so an anemia of any kind other than hemorrhage indicates a long standing problem.

Hematocrit (HCT) or Packed Cell Volume (PCV) - Provides information on the amount of red blood cells (RBC) present in the blood. Decreased levels means anemia from hemorrhage, parasites, nutritional deficiencies or chronic disease process, such as liver disease, cancer, etc. . Increased levels are often seen in dehydration.

Hemoglobin (Hb) - The essential oxygen carrier of the blood. Decreased levels indicate the presence of hemorrhage, anemia, iron deficiency. Increased levels indicate higher than normal concentrate of RBC, B-12 deficiency (because there are fewer cells).

Platelets (PLT) - Play an important role in blood clotting. Decrease in number occurs in bone marrow depression, autoimmune hemolytic anemia, systemic lupus, severe hemorrhage or intravascular coagulation. Increased number may occur with fracture or blood vessel injury, or cancer.

MCV - Measurement of the average size of the RBC. Elevated volumes can be due to B-12 folic acid deficiency and reduced volumes are from an iron deficiency.

White blood cells (WBC) - The body's primary means of fighting infection. Decreased levels may indicate an overwhelming infections (viruses), or drug / chemical poisoning. Increased levels indicate bacterial infection, emotional upsets and blood disorders.

Lymphocytes (L/M) - These smooth, round white blood cells increase in number with chronic infection, recovery from acute infection or underactive glands and decrease with stress, or treatment with steroids and chemotherapy drug.

Calcium (CA) - Blood calcium levels are influenced by diet, hormone levels and blood protein levels. Decreased levels indicate acute damage to the pancreas or underactive parathyroid. Muscle twitches may occur in decreased level. Increased levels can be an indicator of certain types of tumors, parathyroid or kidney disease. Dr. Goldstein mentioned in his book, Nature of Animal Healing that low

calcium level may indicate deficiency of pancreatic enzymes, and high calcium level may indicate poor metabolism of fats and protein.

Phosphorus (PHOS) - Affected by diet, parathormone and kidney. Decreased levels shows overactive parathyroid gland and malignancies, malnutrition and malabsorption. Increases with underactive parathyroid gland and kidney failure.

Electrolytes (Sodium, Potassium, Chloride) - The balance of these chemicals is vital to health. Abnormal levels can be life threatening. Electrolyte tests are important in evaluating vomiting, diarrhea and cardiac symptoms.

Cholesterol (CHOL) - Decreased levels are found in an overactive thyroid gland, interstitial malabsorption. Elevated levels of cholesterol are seen in a variety of disorders including hypothyroidism and diseases of the liver, kidneys, cardiovascular, diabetes, stress.

Alanine aminotransferase (ALT) - An enzyme that becomes elevated with liver disease.

Alkaline Phosphatase (ALKP) - An enzyme produced by the biliary tract (liver). High levels indicate bone disease, liver disease or bile flow blockage.

Total Billirubin (TBIL) - A component of bile, bilirubin is secreted by the liver into the intestinal tract. High levels can lead to jaundice and indicate destruction in the liver and bile duct.

Total Protein (TP) - Increases indicate dehydration or blood cancer, bone marrow cancer; decreases indicate malnutrition, poor digestion, liver or kidney disease, bleeding or burns.

Globulins (GLOB) - Decreased levels indicate problems with antibodies, immunodeficiency viruses or risk of infectious disease. Increased levels may indicate stress, dehydration or blood cancer, allergies, liver disease, heart disease, arthritis, diabetes.

Albumin (ALB) - Produced by the liver, reduced levels of this protein can point to chronic liver or kidney disease, or parasitic infections such as hookworm. High levels indicate dehydration and loss of protein.

Blood Urea Nitrogen (BUN) - BUN is produced by the liver and excreted by the kidneys. Decreased levels are seen

with low protein diets, liver insufficiency, and the use of anabolic steroid drug. Increased levels indicate any condition that reduces the kidney's ability to filter body fluids in the body or interferes with protein breakdown.

Creatinine (CREA) - Creatinine is a by-product of muscle metabolism and is excreted by the kidneys. Elevated levels can indicate kidney disease or urinary obstruction, muscle disease, arthritis, hyperthyroidism, and diabetes. An increased BUN and normal creatinine suggest an early or mild problem. An increased creatinine and increased BUN with elevated phosphorus indicate a long standing kidney disease.

Blood Glucose (GLU) - High levels can help diagnose diabetes and can indicate stress, excess of the hormone progesterone, an overactive adrenal gland. Low levels can indicate liver disease, tumors or abnormal growth on pancreas, an underactive adrenal gland.

Notes

When you have the blood work done, make sure your pet has fasted for at least 12 hours before the test. *You should always establish what is normal for your pet. Their bodies are all different. The abnormal reading may be normal for your pet.*

Amylase (AMYL) - The pancreas produces and secretes amylase to aid in digestion. Elevated blood levels can indicate pancreatic and/or kidney disease.

Urinalysis

Color - Normal color is yellow to amber. Red is caused by Blood, Dark yellow to brown with yellow form are caused by bilirubin, reddish brown is caused by hemoglobin / myoglobin.

Transparency - Normal is clear. Cloudy urine is caused by crystals, cells, blood, mucous, bacteria or cast.

Gravity - 1.007 ~ 1.029 occurs with diabetes mellitus, insipidus, overactive adrenals, excessive thirst and pyometra. Over 1.040 occurs with high fever, dehydration, diabetes mellitus, vomiting, diarrhea and severe hemorrhage.

PH Levels - It should be 6.2~6.5, little on the acidic side

Normal Value	Canine	Feline	Unit
Glucose	65-120	70-120	mg/dl
BUN	6-24	17-30	mg/dl
Creatinine	0.4-1.4	0.6-1.6	mg/dl
Tot. Protein	5.2-7.2	5.3-7.2	g/dl
Albumin	2.5-4.3	2.6-3.9	g/dl
Calcium	9.5-12.0	9.4-11.2	mg/dl
Phosphorus	3.3-6.8	4.0-7.0	mg/dl
Alkaline Phosphatase	20-200	20-220	U/L
GGT	1.2	0-10.0	U/L
AST	10-40	8-35	U/L
LDH	30-190	35-280	U/L
Cholesterol	110-314	90-150	mg/dl
Total Bilirubin	.04-.40	.08-.30	mg/dl
ALT	10-70	10-130	U/L
Amylase	200-1290	not valid	U/L
CPK	20-200	20-160	U/L
CO2	17-24	17-24	mEq/L
Triglycerides	20-200	20-100	mg/dl
Direct Bilirubin	0-0.30	0-0.30	mg/dl
Uric Acid	0-2.0	0-1.0	mg/dl
Sodium	140-151	143-153	mEq/L
Potassium	3.4-5.4	3.5-5.2	mEq/L
Chloride	105-120	108-128	mEq/L
Lipase	120-258	120-258	U/L
Globulins	0.9-4.0	1.5-4.0	g/dl
A/G	0.53-3.5	0.56-2.6	
Anion Gap	5-30	5-30	
HgB	120-180	80-150	g/L
Hct	0.37-0.55	0.24-0.45	L/L
RBC	5.5-8.5	5.0-10.0	x10 ⁶ /ul
MCV	60-77	39-55	fl
MCH	19.5-24.5	13-17	pg
MCHC	32-36	30-36	g/dl
Reticulocytes	0-1.5%	0-1%	0%
WBC	6.0-17.1	5.5-19.5	x1000/ul
Segs	3.6-11.5	2.5-12.5	x1000/ul
Bands	0.0-0.3	0.0-0.3	x1000/ul
Eosinophils	0.01-1.25	0.0-1.5	x1000/ul
Lymphocytes	1.0-4.8	1.5-7.0	x1000/ul
Monocytes	0.15-1.35	0.0-0.85	x1000/ul
Platelets	2-9	3-7	x100000/u