I. The VetTest - chemistry analyzer that analyzes up to 12 biochemical tests using serum or plasma.

A. BUN* - Blood Urea Nitrogen

1. Primarily a product of protein metabolism

2. The kidney is the most important route of Urea excretion

3. Increased BUN - kidney disease, dehydration, high protein diet

4. Decreased BUN - low-protein diet, liver disease, anabolic steroids

B. CREA* - Creatinine

1. Breakdown product of creatinine phosphate (an energy storage compound) in muscle not significantly affected by diet

2. Increased - kidney disease, dehydration

C. PHOS -Phosphorous

1. Functions as a buffer (along with phosphoric acid) in bodily fluids

2. Diet, hormones, and kidney function affect serum phosphorous levels

3. Increased - kidney failure, parathyroid and thyroid diseases, Vitamin D toxicity

4. Decreased - parathyroid diseases, certain cancers

D. CA - Calcium

1. Serves multiple functions in the body, changes can result from a wide variety of diseases

2. Increased - cancer (primarily lymphosarcoma), kidney disease, etc.

3. Decreased - kidney disease, thyroid diseases, pancreatitis, etc.

E. TP* - Total Protein

1. Blood contains many different types of proteins which serve a variety of functions from blood clotting to the immune response

2. Increased - dehydration, inflammation, cancer, infection

3. Decreased - malnutrition, pancreatic disease, liver disease, gastrointestinal diseases, blood loss, immune deficiency

F. ALB - Albumin

1. Most abundant blood plasma protein, produced in the liver and forms a large proportion of all plasma protein important in regulating blood volume by maintaining the osmotic pressure of the blood compartment, serve as carriers for molecules of low water solubility, including lipid soluble hormones, bile salts, bilirubin, free fatty acids, calcium, iron, and some drugs.

2. Increased - dehydration

3. Decreased - liver disease, kidney disease, burns, gastrointestinal diseases, malnutrition, cancer

G. GLOB - Globulin

1. All proteins present in blood plasma other than albumin are referred to collectively as globulins

2. Four categories: Alpha 1 globulins, Alpha 2 globulins, Beta globulins, Gamma globulins (one group of gamma globulins are immunoglobulins, that function as antibodies)

3. Increased: Inflammation, Liver disease, parasitic disease, immune system stimulation, cancer

4. Decreased: immunodeficiency, gastrointestinal diseases

H. ALT* - Alanine aminotransferase

1. An enzyme that catalyzes a specific chemical reaction in the body

2. Considered to be nearly specific for liver in diagnostic use in dogs and cats

3. Increased - liver disease, corticosteroid

4. Decreased - not considered significant

H. ALKP* - Alkaline phosphatase

1. An enzyme that catalyzes a specific chemical reaction in the body

2. Considered to be primarily an indictor of liver health

3. Increased: liver disease, gall bladder disease, certain drugs (especially corticosteroids), certain cancers

4. Decreased: not considered significant

I. TBIL - Total Bilirubin

1. Bilirubin is the yellow breakdown product of hemoglobin, a principle component of red blood cells. Bilirubin is excreted in bile, and its levels are elevated in certain diseases.

2. Increased: liver disease, diseases which cause destruction of red blood cells (hemolysis)

3. Decreased: not considered significant

J. CHOL - Cholesterol

1. Cholesterol is a lipid found in the cell membranes of all animal tissues, and it is transported in the blood plasma of all animals. Cholesterol is also a sterol (a combination steroid and alcohol). It plays a central role in many biochemical processes, such as the composition of cell membranes and the synthesis of steroid hormones. It is primarily produced in the liver and excreted in bile.

2. Increased: Gall bladder disease, hypothyroidism, Cushing's disease, kidney disease

3. Decreased: Liver disease, diabetes, anorexia

K. AMYL - Amylase

1. A digestive enzyme whose sources are the pancreas, liver, and small intestines

2. Increased: pancreatic diseases (pancreatitis, pancreatic cancer, renal disease, intestinal obstruction

3. Decrease: not considered significant

L. GLU* - Glucose

1. A monosaccharide (or simple sugar) used by living cells as a source of energy

2. Increased: stress, diabetes

3. Decreased: starvation, sepsis, gastrointestinal diseases, certain cancers

II. VetLyte - Electrolytes

In physiology, the primary ions of electrolytes are sodium (Na+), potassium (K+), calcium (Ca2+), magnesium (Mg2+), chloride (Cl-), phosphate (PO43-), and hydrogen carbonate (HCO3-). All higher life forms require a subtle and complex electrolyte balance between the intracellular and extracellular milieu. In particular, the maintenance of precise osmotic gradients of electrolytes is important. Such gradients affect and regulate the hydration of the body, blood pH, and are critical for nerve and muscle function. Various mechanisms have evolved in living species that keep the concentrations of different electrolytes under tight control.

A. Na - Sodium

1. One of the key electrolytes necessary for normal body function

2. Increased: Usually indicates dehydration, some drugs may cause Na retention

3. Decreased: diarrhea, vomiting, kidney disease, diabetes, Addison's disease

B. K - Potassium

1. One of the key electrolytes necessary for normal body function

2. Increased: Many causes - renal disease, urethral obstruction, dehydration, Addison's disease

3. Decreased: Vomiting, diarrhea, polyuria

C. Cl - Chloride

1. One of the key electrolytes necessary for normal body function

2. Increased: Dehydration, certain drugs

3. Decreased: vomiting, Addison's disease

II. VetAutoread - Hematology Analyzer

A. HCT - Hematocrit

1. A measurement of the percent of red blood cells per unit volume of blood

2. Increased: Dehydration, Polycythemia

3. Decreased: Any disease which can cause blood loss or decrease in red blood cell production

B. HGB - Hemoglobin

1. Hemoglobin (also spelled haemoglobin and abbreviated Hb or Hgb) is the iron-containing oxygen-transport metalloprotein in the red blood cells and makes up about 97% of the red cell's dry content, and around 35% of the total content (including water).

2. Although Hb concentration provides the most direct indication of oxygen transport capacity of the blood, it provides no clinical advantage over the PCV/HCT other than allowing determination of MCH and MCHC (see below).

C. MCHC - Mean corpuscular hemoglobin concentration

1. One of several Red Blood Cell Indices which are helpful in the classification of certain anemias.

(MCHC is the most accurate indices because it does not require the Red Blood Cell count.)

2. Increased: autoimmune anemias

3. Decreased: iron deficiency, increased numbers of immature red blood cells (reticulocytes) released from the bone marrow into circulation.

D. WBC - White Blood Cell or Leukocyte Count

1. Leukocytes include neutrophils, monocytes, eosinophils, basophils, and lymphocytes. All participate in body defense but function differently.

2. As a general rule, increases indicate infection or inflammation. However, certain diseases can cause significant decreases (for example, Feline Distemper).

E. GRANS - Granulocytes

1. Granulocytes are a category of white blood cells characterized by the presence of granules in their cytoplasm. They are also called polymorphonuclear leukocytes (PMN or PML) because of the varying shapes of the nucleus, which is usually lobed into three segments. There are three types of granulocytes, distinguished by their appearance under Wright's stain: Neutrophils, Eosinophils, Basophils.

2. Neutrophils are the most abundant type of white blood cells and form an integral part of the immune system. They are normally found in the blood stream. However, during the acute phase of inflammation, particularly as a result of bacterial infection, neutrophils leave the vasculature and migrate toward the site of inflammation. They are the predominant cells in pus, accounting for its whitish/yellowish appearance. Neutrophils react within an hour of tissue injury and are the hallmark of acute inflammation.

3. Eosinophils are white blood cells of the immune system that are responsible for combating infection and parasites in vertebrates. They also control mechanisms associated with allergy and asthma.

4. Basophils are the least common of the granulocytes. They contain large cytoplasmic granules which store chemical mediators (such as histamine), that are secreted by the cells when stimulated in certain ways (histamine causes some of the symptoms of an allergic reaction). Like all circulating granulocytes, basophils can be recruited out of the blood into a tissue when needed.

5. Increases in granulocytes generally indicate infection or inflammation.

F. %GRANS - A percentage of the total WBC identified as granulocytes.

G. L/M - Lymphocytes/Monocytes

1. All other white blood cells which are not granulocytes ("agranulocytes") are mainly lymphocytes and monocytes.

2. Lymphocytes and Monocytes play an important and integral role in the body's defenses.

3. Increases in Lymphocytes and Monocytes generally indicate infection or inflammation.

H. %L/M - A percentage of the total WBC identified and lymphocytes/monocytes.

I. PLT - Platelets

Platelets, or thrombocytes, are the cells circulating in the blood that are involved in the cellular mechanisms of primary hemostasis leading to the formation of blood clots. Dysfunction or low

levels of platelets predisposes to bleeding, while high levels, although usually asymptomatic, may increase the risk of thrombosis.

*These tests are included in the six panel analysis.