

## Understanding Your Pet's Laboratory Work

Laboratory sampling, including blood and urine, will help your doctor determine causes of illness accurately, safely, and quickly. It also allows them to monitor the progress of medical treatments and the effects of certain medications. Understanding the importance of laboratory testing allows you to be an informed partner in your pet's care. Published research shows that more than 10% of pets brought in for annual checkups have an underlying disease or abnormality. Although apparently normal on physical exam these pet's illnesses would go undetected without laboratory work.

### Complete Blood Count (CBC)

**HCT** (hematocrit) measures the percentage of red blood cells to detect anemia and dehydration.

**Hb and MCHC** (hemoglobin and mean corpuscular hemoglobin concentration) hemoglobin is the oxygen carrying pigment of red blood cells (corpuscles).

**WBC** (white blood cell) measures the body's immune cells. Increases or decreases can indicate certain diseases or infection.

**Differential** is a measurement of the various types of white blood cells.

**Neutrophils** commonly become elevated with inflammation or infection.

**Lymphocytes** can be affected by infection and various types of cancers.

**Monocytes** job are to clean up debris after an infection or trauma.

**Eosinophils** commonly elevated with allergic or parasitic infection.

**Basophils** can become increased with certain types of cancer.

**PLT** (platelet count) measures cells that form blood clots.

**RETICS** (reticulocytes) are immature red blood cells. High numbers can indicate regenerative anemia.

### Blood Serum Chemistries

**ALB** (albumin) is a serum protein that helps evaluate hydration, hemorrhage, liver, intestinal, and kidney disease.

**ALKP** (alkaline phosphatase) elevations may indicate liver damage, Cushing's disease, use of certain types of medications, and bone growth in young pets. This test is especially significant in cats.

**ALT** (alanine aminotransferase) is a sensitive indicator of active liver damage but does not indicate cause.

**AMYL** (amylase) elevations show possible pancreatitis or kidney disease.

**AST** (aspartate aminotransferase) increases may indicate liver, heart, or skeletal muscle damage.

**BUN** (blood urea nitrogen) indicates kidney function. An increase blood level is called azotemia and can be caused by kidney, liver, intestinal, and heart disease, urethral obstruction, shock, and dehydration.

**CA** (calcium) deviations can indicate a variety of disease. Tumors, hyperparathyroidism, kidney disease, and low albumin are just a few of the conditions that alter serum calcium.

**CHOL** (cholesterol) is used to supplement diagnosis of hypothyroidism, liver disease, Cushing's disease, and diabetes mellitus.

**CL** (chloride) is an electrolyte often lost with vomiting and Addison's disease. Elevations often indicate dehydration.

**CREA** (creatinine) reveals kidney function. This test helps distinguish between kidney and non-kidney causes of elevated BUN.

**GGT** (gamma glutamyl transferase) is an enzyme that indicates liver disease or corticosteroid excess.

**GLOB** (globulin) is a protein that often increases with chronic inflammation and certain disease states. It is often elevated in conjunction with severe dental disease.

**GLU** (glucose) is a blood sugar. Elevated levels may indicate diabetes mellitus. Low levels can cause collapse, seizures, or coma.

**K** (potassium) is an electrolyte lost with vomiting, diarrhea, or excessive urination. Increased levels may indicate kidney failure, Addison's disease, dehydration, and urethral obstruction. High levels can lead to cardiac arrest.

**LIP** (lipase) is an enzyme that may help indicate pancreatitis.

**NA** (sodium) is an electrolyte lost with vomiting, diarrhea, and kidney or Addison's disease. This test helps indicate hydration status.

**PHOS** (phosphorus) elevations are often associated with kidney disease, hyperthyroidism, and bleeding disorders.

**TBIL** (total bilirubin) elevations may indicate liver or hemolytic disease. This test helps identify bile duct problems and certain types of anemia.

**TP** (total protein) indicates hydration status and provides information about the liver, kidneys, and infectious diseases.

## Fecal Analysis

A fecal analysis is a very sensitive test which looks for **intestinal parasites** and **giardia**. This is a VERY important test for dogs to have done regularly. Giargia is a common cause of diarrhea, which is easily spread to other dogs and also to HUMANS. Round worm disease is also a parasitic infection that can also be spread to humans; it is the leading cause of blindness in young children. Testing your pet's stool is not only beneficial to their health but also helps keep your family and your community safe.

## Urinalysis

These tests evaluate various aspects of the urine to determine kidney function, bladder pathology, infection, bladder stones, crystals, and other disease.

**SG** (specific gravity) evaluates the concentration of the urine sample. This can help determine kidney function, dehydration, and screen for diseases such as Cushing's disease and diabetes mellitus.

**pH** measures if the urine is acidic or basic and can be indicative of stone and crystal type.

**Protein** in the urine can indicate an active sample (one containing red blood cells, white blood cells, and bacteria) and can be a important sign of kidney disease.

**Glucose** is found in the urine with diabetes mellitus and stress.

**Ketones** are seen in the urine when diabetes mellitus has progressed to a syndrome referred to as diabetic ketoacidosis. This is a very severe disease process and needs to be addressed aggressively.

**Bilirubin** can be found normally in the urine samples of dogs. It is a strong indicator of liver disease when it is seen in cats.

**WBC/HPF** (white blood cells per high power field) is a measure of how many white blood cells are seen with microscopic evaluation of the sample. The presence of white blood cells often indicates a urinary tract infection or severe inflammation due to stones or a bladder mass. When white blood cells are noted a urine culture and sensitivity test is recommended.

**Occult Blood** is a secondary method of measuring for red blood cells. This testing method is able to evaluate red blood cells that are not intact and visible under the microscope.

**RBC/HPF** (red blood cells per high power field) measures the number of intact red blood cells seen in the urine. This can indicated disease in the bladder but it can also be present due to sample collection.

**Casts** are often seen with underlying kidney disease.

**Crystals** are abnormal precipitates seen in the urine. They can often be transient causing the pet no health concern. Persistent crystals are thought to be precursors to bladder stones and usually a diet change is recommended to help dissolve the crystals.

**Bacteria** can be seen with a urinary tract infection. When bacteria are noted a urine culture and sensitivity test is recommended.

**Traditional and Squamous and Renal Epithelial Cells** can be noted when bladder wall disease is present.

**Urine Culture and Sensitivity** is a very sensitive indicator of a urinary tract infection. Individual bacterial types are isolated and are tested to learn their particular response to various antibiotics.

## Thyroid Testing

Multiple testing modalities are used to evaluate the status of a pet's thyroid gland. In dogs, the most common abnormality is a low thyroid. The absence of thyroid hormone can affect a pet's weight and activity level, and may be related to skin diseases. Cats more commonly have an increased thyroid level. These cats often have increased appetites but are losing weight. Some cats also experience vomiting and diarrhea. Fortunately, treatment for both high and low thyroid levels is a relatively simple process that garners profound positive results.

**T4** (thyroxine) is a thyroid hormone. Decreased levels often signal hypothyroidism in dogs, while high levels may indicate hyperthyroidism in cats. This test can also be altered by any secondary disease process and needs to be interpreted according to the pet's age.

**EDT4** (thyroxine by equilibrium dialysis) is a secondary method of testing for thyroid disease that has the ability to factor out changes due to age and concurrent disease.

## Viral Testing

**FelV** (feline leukemia virus) and **FIV** (feline immunodeficiency virus) are the most commonly run viral tests in cats. While neither virus is treatable, cats who are infected may live long and healthy lives. In order to keep cats happy and healthy, it is very important to be aware of their viral status. This is why frequent testing is recommended for cats who spend time outdoors, who are in contact with other cats, or who are ill for any reason.

