

How to interpret your dog's bloodwork

(and why yearly blood work isn't just an option, it's a necessity)

By [Dr. Karen Shaw Becker](#)

Veterinarians can learn a great deal about your pet's health by asking you questions and during a **physical examination**. However, although some pet owners balk at the costs associated with diagnostic tests like blood work, there are some very important aspects of your animal companion's health that can only be evaluated with such tests.

Just because a pet appears healthy, is eating well and seems normal, doesn't mean blood tests and other diagnostics aren't necessary. The truth is that almost all metabolic and organ issues that affect pets start with biochemical changes that can be picked up in blood tests weeks to years before symptoms appear.

If you wait until your pet is showing signs of disease, it may be too late to reverse the illness or return your dog or cat to good health. Allowing pets to get sick before identifying significant health issues is a reactive, not a proactive approach. Proactive pet parents and veterinarians focus on identifying lifestyle obstacles before disease occurs.

Even if your vet isn't proactive, you can be. Ask him or her to measure your pet's vital organ function with the appropriate diagnostic tests. You're entitled to a copy of the results, which you can review and keep track of from one year to the next, taking note of any changes that occur. If you have no choice but to visit a reactive vs. a proactive veterinarian, you'll need to act as your pet's advocate. Don't ever be afraid to speak up on behalf of your animal companion.

Remember: most abnormal test results were once normal. It's how quickly we catch the change from normal to abnormal that can mean the difference

between fixing a problem early, or potentially losing a pet to a disease we could have identified early on.

Blood Tests

Blood tests help your veterinarian proactively monitor your pet's internal organ health, and also help to determine causes of illnesses accurately, safely and quickly. They also allow your vet to monitor the progress of medical treatments. With that said, while blood tests indicate where your pet's body may be having a problem, they don't reveal how or why the problem is occurring.

It's also important to note that currently there are no blood tests that definitively detect cancer, and not every organ has a specific serum marker for cancer.

- **Complete blood count (CBC)** — The CBC is the most common blood test performed on pets and people. A CBC gives information on hydration status, anemia, infection, the blood's clotting ability, and the ability of your pet's immune system to respond.

The CBC is essential for pets with fevers, vomiting, [diarrhea](#), weakness, pale gums, or loss of appetite. Also, in the event that your pet needs surgery, a CBC can detect bleeding disorders and other unseen abnormalities. The results of a complete blood count include:

- HCT (hematocrit) measures the percentage of red blood cells to detect anemia and dehydration.
- Hb and MCHC (hemoglobin and mean corpuscular hemoglobin concentration) measure the oxygen-carrying pigments of red blood cells.
- WBC (white blood cell count) measures the body's immune cells, including lymphocytes, monocytes, neutrophils, eosinophils and basophils. Increases or decreases indicate disease or infection.

◦Platelets measure cells that form blood clots.

◦Retics (reticulocytes) are immature red blood cells. High levels indicate regenerative anemia; low levels indicate non-regenerative anemia.

•**Blood chemistry profile** — Blood chemistries are common blood serum tests that evaluate your pet's organ function, electrolyte status, hormone levels, and more. They are very important in evaluating the **health of older pets**, pets undergoing anesthesia, pets with vomiting and diarrhea, pets that have had toxin exposure, pets on long-term medications, and pets with endocrine or internal organ disease. Blood serum measures include:

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

ALP (alkaline phosphatase) elevations may indicate liver damage, **Cushing's disease**, active bone growth in young pets, or arthritis or bone degeneration in older pets.

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

A bile acids test is a paired serum sample taken before and after meals, which measures how well the liver is able to recycle bile acids.

Amylase is a digestive enzyme for carbohydrates, and lipase (LIP) is a digestive enzyme for fats. Elevations may indicate pancreatitis or other pancreatic dysfunction. The definitive test for pancreatitis is the PLI (pancreatic lipase immunoreactivity) test.

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

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

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

CHOL (cholesterol) is used to supplement a diagnosis of hypothyroidism, liver disease, Cushing's disease and diabetes mellitus. Fortunately, since pets aren't plagued with

arteriosclerosis like humans are, even a significant elevation in cholesterol doesn't result in blocked arteries, stroke, or heart attack.

CL (chloride) is an electrolyte often lost with vomiting and Addison's disease. Elevations often indicate disease. If your pet has both sodium and chloride abnormalities, you should ask your veterinarian to check for adrenal disease.

CREA (creatinine) is a sensitive marker of kidney function and perfusion. This test helps distinguish between kidney and non-kidney causes of elevated BUN. BUN and creatinine go hand in hand. There's also a third test called the symmetric dimethylarginine (**SDMA**) test that can also identify early kidney disease.

GLOB (globulin) is a blood protein that often increases with chronic inflammation and decreases with chronic infections and a weakened immune system.

GLU (glucose) is blood sugar. Elevated levels may indicate **diabetes mellitus** or persistent hyperglycemia as the result of a carbohydrate-based diet. Low levels (below 40) 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, urethral obstruction, or inappropriate doses of certain drugs. High levels can cause heart problems.

Na (sodium) is an electrolyte lost with vomiting, diarrhea, kidney and 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, gall bladder stasis and certain types of anemia.

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

T4 (thyroxine) is a thyroid hormone. Decreased levels often signal hypothyroidism in dogs, while high levels indicate **hyperthyroidism**, commonly diagnosed in cats. A complete thyroid panel is necessary to accurately assess thyroid health.

Fecal Exam and Urinalysis

If your dog spends a lot of time in the great outdoors, I recommend once or twice-yearly fecal exams to check for signs of intestinal disease and parasites. Indoor house cats who have no exposure to potentially infectious poop from other animals are off the hook for fecal exams.

A yearly **urinalysis** (or more frequently if your pet is older or prone to infections or other problems involving the urinary tract) is used to assess the overall health of your pet's urinary tract, including the kidneys and bladder, and to check for other health indicators, such as glucose regulation and liver function.

A complete urinalysis measures the function of the nephrons in the kidneys and gives information about your pet's metabolic and fluid status. The test is also used to evaluate substances in the urine that might indicate an underlying disease process.

Additional Tests to Consider

Vaccine titer test — I recommend **titer testing** in lieu of automatic re-vaccination for all diseases other than rabies, which of course is required by law.

Titer tests are simple blood tests you can ask your veterinarian to do that provide information about your pet's current immunity to the diseases he's been vaccinated against in the past. Any positive titer result — any number above zero — means your pet's immune system is capable of mounting an effective response and no vaccine is needed.

Tick-borne illness test — If you live in an area where ticks are abundant, I recommend asking your veterinarian for the **SNAP 4Dx Plus** (from Idexx Labs) or the Accuplex4 tests (Antech Diagnostics) that screen for heartworm, Lyme disease and two strains each of ehrlichia and anaplasma.

Completing one of these simple blood tests every 6 to 12 months is the best way to avoid unnecessary chemical preventive application, identify infections before chronic disease occurs, and catch cases of pets infected as a result of pesticide resistance (a growing problem).

Fasting insulin test — In humans, one of the best predictors of longevity is the fasting insulin level. Very few veterinarians measure this, but I think it's an underutilized test that can evaluate a patient's metabolic health and fat-burning adaptedness. In my opinion, it's one of the best things you can do to evaluate your pet's ability to manage metabolic diseases, including cancer.

Vitamin D test — Dogs and cats can't make vitamin D from sunlight so they must get it from their diet. Unfortunately, the synthetic vitamin D used in many commercial pet foods can be difficult for pets to absorb and unless impeccably balanced, many homemade diets are deficient in vitamin D. Vitamin D testing is an add-on to routine bloodwork, but you can ask your veterinarian to include it.

Dysbiosis test — We know that 70% of the immune system is located in the gut, and many pets suffer from gut-related disorders that create malabsorption, maldigestion and ultimately, a weakened and dysfunctional immune system. Identifying and addressing a **leaky or dysbiotic gut** is critically important in re-establishing good health, especially in debilitated, chronically ill, and aging pets.

C-reactive protein (CRP) — This is one of the most sensitive markers of systemic inflammation in dogs, and now vets can **complete this test right in the hospital**.

Monitoring your pet's internal environment is an act of empowerment, because it allows us to address minor changes before disease occurs, and in many cases, we can prevent degeneration, which is always our goal as proactive pet parents and veterinarians.
