

Dr. Tessa King, a veterinarian at Pilchuck Veterinary Hospital, answers this week's questions.

Question: If my dog is healthy, why does he need annual blood work?

Answer: Blood and urine tests are extremely useful tools for looking at the overall health of your pet. From them, a vet can learn if your pet is a diabetic, has kidney or liver disease, or an infection. Many of these problems may not be obvious on a simple physical exam, but if caught early can be successfully treated or controlled, giving your pet a longer and better quality of life.

It's also important to have lab tests performed when a pet is healthy, so the veterinarian has a baseline to compare results when/if your pet does become ill. It's important to note that lab tests must be coupled with a complete physical examination and patient history from the owner to be of the most use.

Sometimes we can come to a definitive diagnosis with routine blood work, but oftentimes we find changes in blood work that lead us to do more diagnostic testing to come to a definitive diagnosis. When we don't get an absolute answer from blood work, it helps guide us as to what the next diagnostic steps should be (radiographs, ultrasound or more specific blood testing).

Question: What kinds of things can a complete blood count (CBC) tell a vet about the health of my dog or cat? What should a vet be looking for?

Answer: Usually a CBC and either a full or partial chemistry panel is done, sometimes with pancreatic enzymes and a T4 (thyroid level).

A CBC evaluates the number of red blood cells, white blood cells and platelets, along with the concentration of red blood cells (hematocrit or PCV) and hemoglobin levels. Abnormal changes on a CBC could include anemia (low red blood-cell count), leukocytosis (high white blood-cell count) or thrombocytopenia (low platelets). Anemia has a wide range of causes, and finding a low red blood-cell count, depending on the severity, usually warrants searching for a cause.

There are five different types of white blood cells, and elevated or low counts in each can mean different things.

For example, neutrophils are the most common elevated white blood cells because they are one of the first responders to any type of inflammation, including infection. Eosinophils, another type of white blood cells, are typically elevated with parasitic or allergic diseases.

Platelets are very important in normal clotting. A significant decrease in platelets can lead to life-threatening, spontaneous bleeding. There are many causes of decreased platelets, including infectious diseases and immune-mediated diseases, such as ehrlichiosis, a tick-borne bacterial infection, and immune-mediated thrombocytopenia.

Much more information can be gained from a CBC. The ones I just mentioned are only a few examples of some of the more common changes that we find.

A chemistry panel usually includes testing of liver enzymes, kidney values, glucose, electrolytes and protein levels.

Elevations in liver enzymes can be caused by a number of different issues and may warrant either monitoring or further testing, depending on which enzymes are elevated and how much. Inflammatory disease of the liver, endocrine diseases such as Cushing's, toxin ingestion and cancer are just a few things that could cause elevations in liver values.

The two most common reasons for elevations in both kidney values (BUN and creatinine) are dehydration and damage to the kidneys. The most common cause of damage to the kidneys in older pets – cats in particular – is chronic renal failure. This is where a urine sample becomes very important.

The concentration of the urine, or urine specific gravity, helps us to differentiate between dehydration and kidney failure. A dehydrated animal will have very concentrated urine, while an animal in kidney failure will have dilute urine.

Probably the most common change we see in glucose is elevation from diabetes, though there are a few other diseases where we find a low blood glucose (which can be life-threatening).

Changes in electrolytes can occur with many diseases, including kidney disease, some endocrine diseases and most notably in gastrointestinal (GI) disease, in which the patient is vomiting. In sick patients, checking electrolytes helps us to know what kind of fluids to use and if we need to supplement electrolytes (e.g., potassium).

Protein values can be elevated or decreased and provide supplemental information about several body systems. The two that we look at are albumin and globulin. Elevated albumin can be found with dehydration; elevated globulins are found with inflammation or infection. Low albumin levels may indicate a liver issue (as albumin is produced by the liver) or that the albumin is being lost through the kidneys or GI tract, indicating a problem with one of these organ systems.

Question: Do you have any examples to share of symptomless dogs or cats whose blood work revealed health problems?

Answer: Yes, there are definitely times that we have done routine blood work (in non-sick patients) and have caught problems earlier than we otherwise would have. Specific examples include:

- 1.) A 5-year-old dog that came in for a spay. Preoperative blood work showed a significant elevation in lymphocytes (a type of white blood cell) and leukemia was diagnosed.

2.) A 6-month-old small-breed dog that came in for a spay. Preoperative blood work showed elevation in liver values. Further diagnostic tests were done, and the dog was diagnosed with a congenital disease call hepatic microvascular dysplasia.

Also, we frequently diagnose early renal failure and hyperthyroidism in older kitties on routine senior blood work.

Question: What blood work should be done routinely on what appears to be a healthy dog or cat? How often?

Answer: It is a great idea to get a “minimum database” (CBC, chemistry panel, urinalysis) done when your pet is healthy. This way, your veterinarian has normal values for your pet to compare with when your pet does get sick.

Any time your pet is sick, before any anesthetic procedures or if your pet is in his senior years, your veterinarian may recommend lab work. Any time your pet starts a new, long-term medication, particularly nonsteroidal anti-inflammatories (Rimadyl, Deramaxx), blood work should be checked before and after starting the medication, as most medications are processed through the liver and kidneys.

Question: What about geriatric dogs? How often should they be tested?

Answer: For senior animals, lab work should ideally be done at least yearly, possibly more frequently based on lab results. What is considered “senior” depends on the species (dog/cat) and breed (large dog/small dog). If your pet is older than 6, it would be a good idea to check with your veterinarian about doing senior lab work.

Question: What can a urine sample tell a vet?

Answer: Urinalysis in addition to the CBC and chemistry panel completes what we term a “minimum database.” Urine specific gravity paired with our chemistry panel tells us a lot about kidney function.

Things we check for on a urinalysis include protein (can indicate glomerular kidney dysfunction), glucose (present with diabetes), ketones (present with uncontrolled diabetes known as diabetic ketoacidosis), blood (can indicate infection or inflammation), white blood cells (infection, inflammation) and bacteria (infection).

Dilute urine can be an indication of other diseases as well, including liver disease and endocrine disease. In a dog, dilute urine can also be normal depending on time of day and water consumption. Dilute urine in a cat is almost always significant.

Dr. Tessa King