



## Laboratory Testing: a look at your bird's internal health

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The goal of laboratory diagnostics is to detect illness or confirm good health in your bird; preventative medicine involves a good laboratory work-up!

Birds are unique among animals in that they are often very good at hiding their illnesses from their owners until they are very sick. It is a survival mechanism that they have carried over from the wild. Sick birds also usually present with non-specific signs of illness, such as loss of appetite, loose stools and fluffed feathers. In order for correct diagnosis and treatment of a sick bird, laboratory tests are often used in addition to physical exam findings.

Avian medicine is quite advanced. Most of the technology used in human medicine today is available to our bird companions. And just like trends in human health, prevention of disease is the goal of the avian veterinarian. Routine laboratory testing also provides a baseline for the future. Should a bird develop an illness later in life, comparing to previous test results is extremely useful.

The knowledgeable bird owner should learn about the basic laboratory tests that are available. This article will provide a brief overview of the common tests used in avian medicine. Ask for copies of your bird's bloodwork. You should keep the results in a folder in case you need to see another vet while traveling, etc. By looking at your own bird's results, you will also gain a better understanding of things your veterinarian discusses with you. By reviewing the details of the tests, you will also gain an appreciation for the costs for the tests.

### Blood Tests

#### Complete Blood Count (CBC)

A panel of tests that screens for anemia, clotting problems and the body's response to infections. Components of the "CBC" include:

- Packed Cell Volume (PCV) or Hematocrit (HCT)  
Total percentage of red blood cells
- Polychromasia Index  
Percentage of new (young) red blood cells
- White Blood Cell Count (WBC)  
Total number of white blood cells

- Heterophil  
Usually the most numerous WBC – changes often indicate infection or stress
- Lymphocyte  
Usually the second most numerous WBC – changes often indicate immune stimulation or suppression
- Monocyte  
Rare in normal birds – increase often indicate an active inflammatory process
- Eosinophils  
Rare in normal birds – may play role in allergies/inflammation
- Thrombocytes  
Blood clotting cells (avian platelets)

#### Chemistry Panel

A panel of tests that screens for mineral and electrolyte abnormalities and diseased internal organs.

- AST & LDH  
Liver and muscle enzymes – increases suggest liver and muscle damage
- Creatinine Kinase (CK)  
Muscle enzyme – increases suggest muscle damage
- Uric Acid  
Kidney enzyme – increases suggest kidney damage or dehydration
- Amylase  
Enzyme found in the pancreas and intestine
- Calcium & Phosphorus  
Minerals involved in blood clotting, muscle contraction, enzyme function, nerve transmission, eggshell formation and building/maintaining bone
- Glucose  
Blood sugar
- Cholesterol

### **Protein Electrophoresis ("EPH")**

A panel of tests to assess the status of the immune system and blood proteins.

- Total Protein  
Total blood protein (albumin + globulins)
- Albumin  
Carrier protein for proteins, minerals, hormones, vitamins and fatty acids
- Globulins (Alpha 1, Alpha 2, Beta)  
Proteins that may be increased with bacterial and fungal infections and inflammation of the liver and kidneys
- Globulins (Gamma)  
Immune proteins
- Albumins: globulin ratio  
An indicator of overall protein balance

### **Bile Acids**

A liver function test.

### **Infectious Organism Screening**

- Chlamydia
- Polyomavirus
- Psittacine Beak & Feather Virus
- Pacheco's Herpesvirus

### **Toxicology (Zinc & Lead)**

Blood levels of toxic metals commonly ingested by birds

### **Gender Analysis**

A blood test to determine the bird's sex by DNA analysis. Blood drawn from a vein is more accurate than from a toenail in most situations.

### **Fecal Tests**

**Fecal Smear ("wet mount")**, This test is performed on any bird with diarrhea. A microscopic examination for intestinal parasites is done using a fresh sample of your bird's feces. You will often not see the parasites with the naked eye. Sometimes a wet mount may be done on a crop sample in birds that are vomiting.

**Gram Stain**, A special stain used to assess populations of bacteria and yeasts. This screening test is most commonly done on feces, but may be used on other areas, such as the mouth or crop. The gram stain may be used to determine the presence of normal and abnormal organisms.

**Culture & Sensitivity**, A very sensitive test to determine the presence of normal/abnormal bacteria and fungi and appropriate susceptible antibiotics. Depending on the source of infection, a culture may be taken from the feces, crop, mouth, etc.

### **Other Diagnostics**

**Radiographs (x-rays)**, A non-invasive, two-dimensional view of a bird's internal anatomy. Radiographs can detect abnormal organ size, bone & joint conformation, and the presence of abnormal masses. Often, birds must be briefly anesthetized for optimal interpretation. Sometimes, a barium study is done if the bird has gastrointestinal disease. This requires the bird to swallow a special liquid to enhance contrast of the gastrointestinal tract.

**CT or MRI Scan**, A serial "slice" x-rays of a body part (often the head) to identify masses not easily seen with routine x-rays. This is the only way to determine abnormalities in the brain.

**Endoscopy**, Examination of a bird's internal anatomy with a small fiberoptic telescope; often used to obtain cultures and biopsies for definitive diagnosis of diseases. The bird is anesthetized during the procedure.

**Biopsy & Histopathology**, Surgical removal (biopsy) of a small piece of an abnormal mass or organ to determine the nature of the disease by microscopic examination (histopathology).

**Cytology**, Microscopic examination of body fluids or tissue to determine presence of cells or organisms involved in infection, inflammation and cancer. Often a fine needle aspirate or a scraping with a cotton swab is used to obtain the sample and special stains are used to highlight the cells or organisms.

**Necropsy (Veterinary Autopsy)**, Examination of a bird's body after death to determine the cause of death. The pathologist views the organs "grossly" and also looks at the structure of the organs under the microscope. It is recommended that a necropsy be performed on any bird that dies. This help the owner gain closure and advances the understanding of avian disease.