

ANEMIA IN THE DOG

What does it mean to be anemic?

Anemia is a reduced number of red blood cells or hemoglobin or both. It is not a specific disease but the result of some disease process.

How is anemia diagnosed?

The most easily observed sign of anemia is a loss of the normal pink color of the gingiva (gums). Anemic dogs also have little stamina so they seem very listless or tired. Pale gingiva and lethargy make us want to perform some tests on blood to document anemia.

There are several tests that are performed on the red blood cells. The most common test for anemia is the **packed cell volume (PCV)**; it is also called the **hematocrit**. A blood sample is placed in a centrifuge to separate the red blood cells from the plasma (the liquid part of the blood). Thirty-five to fifty-five percent of the normal dog's blood will be red blood cells. If the PCV is below 35%, the dog is anemic. Others tests to determine anemia include the **red blood cell count** and the **hemoglobin count**. If these are below $5.5 \times 10^6/\text{mm}^3$ or 12 g/dl, respectively, the dog is anemic.

What other tests are important when a dog is anemic?

It is important to know if the bone marrow is producing an increased number of new red blood cells. Often, this can be determined by a study of the stained **blood smear**. The presence of increased numbers of immature (young) red blood cells usually means the bone marrow is responding to the need for more red blood cells.

A careful study of the blood smear is also important to look for parasites that might be causing red blood cell destruction and abnormal cells that could indicate leukemia.

If bone marrow response is not obvious by studying the blood smear, a **reticulocyte count** is performed. A special stain is used to clearly identify reticulocytes (immature red blood cells).

A **bone marrow biopsy or aspirate** is a procedure that provides cells from the bone marrow. Studying these cells can give valuable information about the cause of some anemias and the condition of the bone marrow.

A **biochemical profile** and **urinalysis** are other important tests for anemic dogs. These tests evaluate organ functions and electrolyte levels. They will often provide important information about the total health of the dog.

A **fecal exam** is important to identify the presence of parasites in the intestinal tract that might be causing blood loss.

What diseases cause anemia?

Several tests are important for an anemic dog because there are many diseases that cause anemia. These are grouped into 1) diseases that cause blood loss, 2) diseases that cause hemolysis (red blood cell breakdown), and 3) diseases that decrease the production of red blood cells.

What diseases of dogs cause blood loss?

The main causes of blood loss in dogs include:

- Trauma or injury that severs blood vessels or internal organs
- Parasites such as fleas, ticks, and hookworms
- Tumors of the intestinal tract, kidneys, and urinary bladder
- D.** Diseases that prevent proper clotting of blood

What diseases of dogs cause hemolysis?

The main causes of hemolysis in dogs include:

- A.** Autoimmune disease
- B.** Blood parasites
- C.** Chemicals or toxins
- D.** Neoplasia (cancer)

What diseases of dogs prevent red blood cell production?

The main causes of bone marrow suppression in dogs include:

- A.** Any severe, chronic disease
- B.** Very poor nutrition or nutritional imbalances
- C.** Autoimmune disease
- D.** Hypothyroidism
- E.** Chemicals or toxins
- F.** Neoplasia (cancer)

There has been no mention of iron deficiency. Why not?

Iron deficiency anemia is a common disease in people, especially women. However, this is not common in dogs and occurs secondary to some form of chronic blood loss. But, it is occasionally seen in puppies with hookworms and poor diets.

How are anemic dogs treated?

If your dog's anemia is so severe that it is life-threatening, a blood transfusion is needed. This may be performed immediately after a blood sample is taken for testing. The main purpose of a blood transfusion is to stabilize the dog long enough that a determination of the cause of the anemia can be made.

Further treatment will be determined once the underlying disease has been diagnosed.