



## **My Horse's Blood: What Are You Looking At?**

By Nicole Taurisano, DVM

Whether your horse is having a routine wellness examination, or is hospitalized for an emergency, analyzing blood is one of our most basic and useful diagnostic tools. It is important to most owners to be on the same page as their veterinarian when making decisions based on bloodwork, and understanding what information is included in reports from lab can provide some comfort moving from step to step. A small sample of blood can be tested for an incredibly large number of markers, helping you and your veterinarian determine what is best for your horse. In this piece, we are going to look at what information your horse's blood can and cannot provide.

The first part of analyzing blood, done with an unseparated, unclotted sample, is known as hematology, or a "Complete Blood Count (CBC)." This test looks at three components: your horse's red and white blood cells, and cell fragments called platelets. Red blood cells are essentially oxygen-delivery packages, with an iron component responsible for making it appear red. Commonly, abnormalities in the red cells will point to dehydration, influencing decisions to initiate, change, or discontinue fluid therapy. Certain diseases also result in red blood cell loss, destruction, and to chronic disease, and so it is the red cell values that raise those diseases as suspects. White cells, comprising another part of the CBC, act as your horse's personal circulating immune system army. Their numbers and morphology will tell a story about inflammation and infection, giving clues about how long any the process has been going on, and sometimes even the type of disease the white cells are fighting (bacterial, viral, parasitic, or allergic). Platelets are the third component of whole blood analysis. Rather than being a complete cell, platelets are fragments of massive cells called thrombocytes produced in the bone marrow. These are important because they are responsible for initiating the blood-clotting cascade. If their numbers are too low, spontaneous bleeding is possible.

The second part of routine bloodwork is the serum chemistry, which involves allowing blood to clot, followed by spinning out of all of the components discussed above, leaving only the liquid media. This liquid is called serum, and it contains protein, sugar, fat, electrolytes, and markers for liver, kidney, and muscle damage. Information gained from values in the serum can heavily influence the administration of different medications, as well as the fluid therapy selected for your horse during an illness. Protein specifically is often looked at together with red blood cells, with increases in albumin (a subtype of protein) playing a supporting role in the picture of dehydration. Decreases in total protein often accompany diarrhea, certain types of colic, and kidney and liver disease. Abnormalities in liver and kidney values usually can impact medication selection and often prompt additional diagnostics to uncover the cause of underlying disease. Derangements in glucose (sugar) levels often can help point to underlying metabolic dysfunction. With elevated muscle enzymes and a compatible history, your veterinarian may want to test for muscle diseases such as PSSM (polysaccharide storage myopathy) or HYPP (hyperkalemic periodic paralysis), and similar pathologies.

Despite the broad utility of routine hematology and serum chemistry, these tests have several limitations, and so new tests are continuously becoming available. Lactate, routinely run during several emergency situations, increases when oxygen delivery is poor. An increase in blood lactate, or even lactate in different body fluids, such as abdominal or joint fluid, may help rule in or out differential

diagnoses, confirm the presence of dehydration, or provide evidence of infection. Two more common in-house tests are fibrinogen and SAA (serum amyloid A), which are both inflammatory proteins produced in the liver. Situations where your vet may want to know about these can include monitoring response to treatment, or before giving certain medications. Increases in these inflammatory markers, in concert with changes in the white blood cell counts can lead us to be highly suspicious of an infection or severe inflammatory process in our patients.

Even in a healthy horse, routine blood is worth performing in a myriad of circumstances. It is a snapshot of values that are representative of the state of health of your horse, and can also provide an invaluable comparison for bloodwork done later on, when health may be in question. Next time your horse has blood drawn, hopefully you will be more aware of what the vet is looking for, and have a better idea of the mosaic of events going on in the horse's body.

Contact [Brandon Equine Medical Center](#) at 813-643-7177 or email [info@brandonequine.com](mailto:info@brandonequine.com) with any questions regarding this topic.

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