

Von Willebrand's Disease Testing

What is von Willebrand's disease?

Von Willebrand's disease is one of the most common hereditary bleeding disorders in dogs, and has been identified in more than 50 different breeds. Breeds with an increased incidence of von Willebrand's disease include the Doberman Pinscher, Manchester Terrier, Pembroke Welsh Corgi, French Poodle, Shetland Sheepdog (or Sheltie), and Scottish Terrier.

Clinical signs that may be noted with von Willebrand's disease include bleeding from the gums, recurrent bloody urine or feces following a simple procedure like clipping toenails may be noted. physical trauma may also result in excessive blood loss.



Excessive bleeding after surgery and minor procedures like clipping also result in excessive

What causes von Willebrand's disease?

Von Willebrand's disease is caused by a deficiency of von Willebrand's factor, a blood protein that is required for optimal clotting of blood. Von Willebrand's factor enhances the adherence or 'stickiness' of platelets to sites of blood vessel injury, as well as stabilizing one of the other blood clotting factors (factor VIII) in circulation so that this factor is not lost prematurely.

When the amount of von Willebrand's factor is reduced, the dog is unable to deal effectively with blood vessel injuries, because an effective platelet 'plug' cannot be maintained at the site of the injury.

How can von Willebrand's disease be diagnosed?

Initial Tests

A few preliminary tests can be performed in the veterinary clinic.

These include an evaluation of a **CBC (complete blood count)** to ensure that other causes of excessive bleeding, such as reduced platelet numbers, are not contributing to the clinical signs. Platelet numbers will be within the normal reference range in dogs with von Willebrand's disease. The CBC requires a single blood sample.

A **coagulation panel** (including the *prothrombin time* and *activated partial thromboplastin time*) should be evaluated to rule out reductions in other clotting factors as a cause of

excessive hemorrhaging. Such coagulation panel testing requires a single blood sample that is sent to a veterinary referral laboratory. The results of coagulation panel testing will be normal in dogs with von Willebrand's disease.



Special blood collection tubes are required for coagulation testing.

A **buccal mucosal bleeding time (BMBT)** may be performed in the clinic. This test evaluates the ability of platelets to form a platelet plug at the site of a small cut in the upper lip. A spring-loaded cassette is used to produce a small, precise cut and the length of time required for bleeding to stop is evaluated. This time may be lengthened by both decreased platelet numbers and by decreased platelet function. Therefore the BMBT is usually reserved for dogs that have normal platelet numbers but questionable platelet function. The value of the BMBT for dogs suspected of having von Willebrand's disease is unknown because relatively large decreases in von Willebrand's factor are needed before the BMBT is significantly increased.

Specific Tests

Dogs with a history of unexplained episodes of bleeding, and with normal platelet numbers and a normal coagulation (clotting) profiles are candidates for specific von Willebrand's factor testing.

Immunoassays (*enzyme-linked immunosorbent assay and rocket immunoelectrophoresis*) can be used to determine the amount of von Willebrand's factor in a blood sample. This type of assay is done at a veterinary referral laboratory and uses proteins called *antibodies* to capture or bind the von Willebrand's factor for measurement.

This type of assay is most commonly used to diagnose von Willebrand's disease.

Functional assays for von Willebrand's disease are not readily available except in a research setting.

Genetic testing for the von Willebrand's gene in certain breeds of dogs is available at highly specialized referral laboratories and is typically reserved to screen dogs being used for breeding stock.

This client information sheet is based on material written by Kristiina Ruotsalo, DVM, DVSc, Dip ACVP & Margo S. Tant BSc, DVM, DVSc.

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