

## What is Factor VII Deficiency?

Factor VII Deficiency (FVIIID) occurs when a dog has no copies of the normal Factor VII gene and instead has two copies of a variant form of the gene. This condition is found in several breeds, including Deerhounds, and also mixed-breed dogs. The disease can affect dogs of either sex.

The Factor VII gene contains instructions for making a protein called Factor VII, which helps blood to clot. The Factor VII protein made by the variant form of the gene does not work as efficiently as that made by the normal form of the gene. As a result, Deerhounds with Factor VII deficiency can have trouble making effective blood clots and so are at higher risk of excessive bleeding during surgery or a major trauma (such as being hit by a car).

The Factor VII variant is inherited as an autosomal recessive gene, so a dog can be either clear (no copies of the variant), a carrier (one copy of the variant), or affected (two copies of the variant). Only an affected Deerhound has an increased risk of excessive bleeding. Dogs that are clear or carriers form blood clots normally.

Affected Deerhounds have no problems day-to-day and lead normal lives but have a higher risk of bleeding during surgery or trauma. Some FVII-affected Deerhounds have no problems during surgery, some have mild bleeding, and others bleed severely and can die. We don't know what the increased risk of bleeding is. If they are going to bleed, dogs with Factor VII deficiency usually start to bleed during surgery.

A blood test called a Prothrombin Time (PT) can provide some information on an affected dog's likelihood to bleed due to FVII deficiency and is good to run on affected dogs before surgery. It can also be run on dogs whose FVII status isn't known to get a better idea of their bleeding risk.

If bleeding starts during surgery, it can be treated with plasma from a dog without Factor VII deficiency. It is important to know that not all veterinary clinics have plasma on hand; should an affected dog need surgery it is essential they go somewhere that has plasma in case a problem occurs. Breeders should discuss with their vets the potential risks should a Factor-VII-affected bitch need a c-section, and owners of affected dogs should make sure that their dogs' records note in a prominent place that their dog is affected and a plan is in place should their dog need surgery or is severely injured.

There is a genetic test available for Factor VII Deficiency in Deerhounds, and all Deerhound owners should know the Factor VII status of their dogs. Responsible breeders tell puppy buyers in writing whether or not their puppy is affected based on either test results or knowledge of the parents' Factor VII status.

For breeders, the goal should be to never produce an affected individual. A Factor VII-clear Deerhound (no copies of the mutation) can be bred to mates of any Factor VII status. A Deerhound that is a Factor VII carrier (one copy of the mutation) or that has Factor VII deficiency (two copies of the mutation) should be bred only to a mate that is Factor VII-clear. Remember, a genetic test should not alter WHO gets bred, only WHO the dog gets BRED TO. It is only through using all of the bloodlines we have that we'll be able to maximize the effectiveness of the tests and improve the health of our breed, so no dog or line should be eliminated from breeding because of Factor VII genetic status, especially in light of our shrinking gene pool.

The important thing is every Deerhound owner should know the Factor VII status of their dogs so proper precautions can be taken for affected dogs should surgery be needed or trauma occurs.