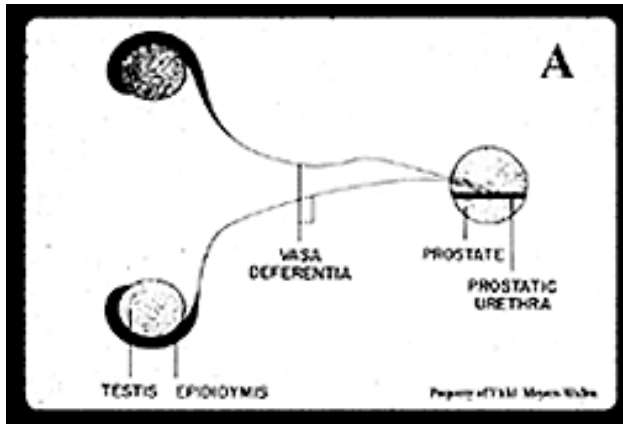
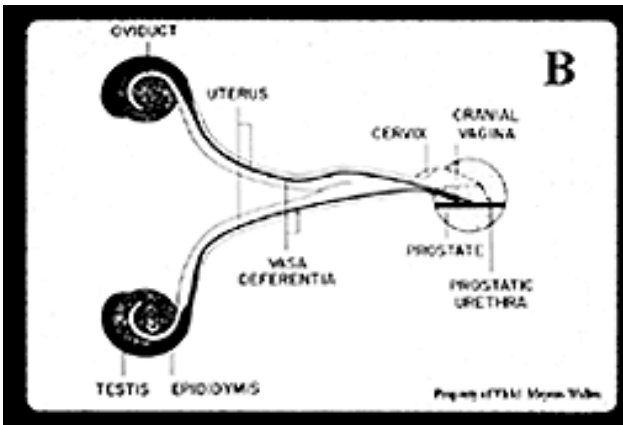


**PMDS UNAFFECTED MALE**



**PMDS AFFECTED MALE**



*Information Leaflet Compiled and Supplied by*

*The Basset Hound Health Group*

To keep up to date with all matters affecting Basset Hounds in your area, why not join your local Breed Club?  
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[www.bassetrus.co.uk](http://www.bassetrus.co.uk)

## Persistent Müllerian Duct Syndrome

### PMDS

It is important to remember that PMDS is not confined or solely found in Basset Hounds, it is found in many, many types of dogs (if not all breeds) including mongrels and many, many species including HUMAN BEINGS.

# This Information Leaflet has been produced to help you to understand PMDS

## PMDS, (LACK OF) SYMPTOMS AND UNDERDIAGNOSIS.

W.J.Sluiser, (PMDS Coordinator Nederlands Basset Hound Club)

### Introduction..

PMDS is an inheritable anomaly, in which males have, besides their normal male internal and external reproductive organs, a uterus. This uterus is not, as in females, connected to a vagina, but to the male's prostate gland. Through the prostate the cavity of the uterus may be connected to the urinary tract. If so, urine may reach the uterus, causing the uterus to expand and to get inflamed. Such an infection is dangerous and life threatening.

PMDS is present in the Basset Hound population. Even with a high prevalence. Why then is it so unknown and rarely diagnosed in the Basset Hound?

### The junction between urinary tract and uterus.

Only in a minority of PMDS-affected cases there appears to be a junction between the urinary system and the uterus. A rough estimate is that about 1 out of 8 cases have such a connection, in the other 7 out of 8 cases the uterus is completely separated from the urinary tract. Their uterus will never become infected, they will show no symptoms and they are only identified by chance (e.g. during some abdominal operation) or by systematic examination (such as ultrasonography of potential stud dogs in a breeding protocol).

Thus, accounting only symptomatic cases, the prevalence of PMDS is widely underestimated. And the fact that PMDS is inherited in an autosomal recessive way enhances that underestimation. Because only the homozygotic PMDS-affected dogs have a uterus, the heterozygotic PMDS-carriers have not and appear to be "normal".

Let's make a calculation. Around 2010 the gene fraction of PMDS in the Dutch breeding population was 0.20. Which means that roughly about 40% of the breeding stock was PMDS-carrier. (Yes, still that high!) Then, by chance alone, about  $0.4 * 0.4 = 0.16$  (=16%) of the litters have a sire and a dam that are both carrier. Only in such litters PMDS-affected sons may be present. And the probability of being affected will be only  $0.5 * 0.5 = 0.25$  (=25%) for each son.

This means that only about  $0.16 * 0.25 = 0.04$  (=4%) of all born male puppies are PMDS-affected. And because only 1 out of 8 will develop symptoms, only 1 out of 200 of all born male puppies can be recognised by their symptoms. But, unfortunately, the symptoms stay unrecognised in many cases and the proper diagnosis of PMDS is never made. It looks as if it is no huge problem at all.

### The symptoms of PMDS.

In case there is a connection between urinary tract and uterus,

urine may cause bacterial infection of the uterus. Mostly this occurs within the first 18 months of life. Then, each time the dog is urinating, not only the urine of the bladder is pushed out, but also a part of the infected fluid of the uterus. The urine becomes turbid and smelly and, with aggravating illness, contains increasing amounts of blood. The dog starts "dripping around" all day. When observed by the owner and consulting the vet, this is most likely to be diagnosed as "bladder infection" and treated by antibiotics. The illness seems to disappear, but because the antibiotics do not reach the fluid in the uterus in sufficient amounts and the junction between urinary system and uterus remains, the infection will return over and over again. And it gets worse and worse. Eventually ending in a fatal septic shock, unless properly treated. (see below.)

Even if there is a connection between urinary tract and uterus, the junction may be small. In that case little fluid of the infected uterus is pushed out when urinating. The abnormality of the urine may stay unrecognised. But the inflammation will proceed, causing serious discomfort to the dog. The pup is not playing, does not run and does not eat well. (We had such cases, which became happy and healthy pups after diagnosis and operation.) Sometimes the vet notices a painful abdomen and thinks of problems with the digestive tract. (But it is the painful uterus!) Treatment for digestive problems does of course not work in this situation. In the end, when left undiagnosed or wrongly treated, for whatever reason, the infection will become that serious that the uterus will break through, causing peritonitis and even sepsis (= blood poisoning). Once in that stage of development, it is very difficult to save the dog.

These observable events resemble pyometra (= uterus inflammation) in bitches there is difference too between so called "open pyometra" with abnormal discharge from the vagina and "closed pyometra" without such effluent. (please google e.g. [www.petside.com/condition/dog/pyometra-canine](http://www.petside.com/condition/dog/pyometra-canine))

### Recognition of symptoms.

Despite extensive information by the experienced breeder most new dog owners are not professionals in dog health and may fail to observe symptoms in time. But, more serious, most of today's vets were not taught about PMDS during their academic study. And when that knowledge is lacking, they are unable to come to the diagnosis of PMDS. Some of them firmly state, when told by their clients (as advised by their breeder) about PMDS, that such condition is not existing at all! That they have been joked by their breeder.

Tragically enough undiagnosed or wrongly treated dogs have the risk of death. Or being euthanized, by their vet or after they have been brought to a dog shelter or rescue, when further treatment has become too expensive. And stay undiagnosed of course. As if PMDS does not exist at all.

### More trouble.

Uterus inflammation is not the only threat of PMDS. PMDS-affected dogs do have an increased risk of development of testicular cancer later in life (mostly between 4 and 9 years of age). It is unknown by which mechanism, however. In the nineties 10 PMDS-affected Basset Hounds were left untreated, because they had no symptoms and the owners did not want to have them operated upon. (mostly financial reasons). In 5 of them testicular cancer developed. (another reason to get your PMDS-affected dog treated!)

Testicular cancer in asymptomatic cases of PMDS does not lead to a diagnosis of PMDS as long as treatment only means removal of the (enlarged) testicle. That there is also an inside uterus, stays unnoticed.

### Conclusion.

Despite a large spread of PMDS in the Basset Hound, the recessively inheritable anomaly is rarely diagnosed. The low proportion of affected dogs with uterus inflammation and the lack of knowledge of the trait by owners but also the vets must be regarded as the principal reasons for this considerable under diagnosis. But that can not be a reason for not trying to diminish the wide spread of the PMDS-gene.

### Caution. (Basset Hound Health Group)

Most vets in the UK are not aware of PMDS forewarned is forearmed. We urge you to remember the following: Should your dog show signs of a urinary track infection please be aware it may be a one off. However if it recurs for a second time there could be a problem. If your dog goes on to show symptoms of a third infection consult with your Vet.

Please feel free to show your vet this leaflet—it may save a Basset Hound's life!

**The Basset Hound Health Group are very pleased to be working in conjunction with :**

**W.J. Sluiser PMDS Coordinator Nederland Basset Hound Club**

**Gene Fraction Analysis is available for details contact:**

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