

BVD testing - explaining the results

PCHS (Premium Cattle Health Scheme) measure two things: antibody and antigen.

Antibody is a key component in the body's response to disease. When the body encounters infection it produces antibody specifically against the disease agent causing the infection. The antibody stimulated by infection with BVD is only of value to the animal in fighting BVD infection; it does not work against any other disease agent. An animal that has antibody to BVD has either been infected by BVD virus or has been vaccinated against BVD. For diseases like BVD it usually takes around two to four weeks after the start of infection for the body to produce sufficient antibody to register as a positive in the laboratory tests. Animals may remain positive for antibody for several years and in some individuals the antibody may persist for the duration of its life.

Antigen is a term for a part of the disease agent that has stimulated the antibody. Most disease agents have a multitude of antigens, but the laboratory detection systems may look for the presence of only one antigen for an agent. However if the antigen is detected then it means that the specific disease agent has been identified. For BVD and our testing systems antigen equals virus. An animal that has BVD antigen in its blood has BVD virus in its blood. This may be for a short time in any animal infected after birth (transient infection) or permanent for animals infected before birth during the first third of pregnancy (persistent infection or PI).

With the exception of marker vaccines (and there is not one for BVD) it is not possible to use laboratory tests to differentiate between vaccination and natural infection. However the antibodies generated as a result of vaccination will often be at a lower level than those produced after a natural infection and they tend to decline relatively quickly compared to natural infections. Vaccinated animals can be antibody negative but still protected against the infection.

The combinations of test results that an animal may have are listed below.

BVD lab result	Explanation
Antibody negative Antigen negative	<ul style="list-style-type: none"> • No evidence of previous or current BVD infection. • The animal may be in the early stage of infection and is yet to produce detectable antibody. This is why bought-in animals should be quarantined and tested on entry and again after 28 days - in case they have been exposed to infection just before sale, in transit or at the mart.
Antibody positive (Antigen negative)*	<ul style="list-style-type: none"> • The antibody could have come from three sources. <ol style="list-style-type: none"> 1/ In young animals it may have come from colostrum. This usually has disappeared by 6 month of age and always by 9 months. 2/ It may have been infected in the past. 3/ It may have been vaccinated. • If an animal is pregnant there is a risk that it could be carrying a PI calf. • *Often antigen testing will not be carried out if the sample is antibody positive because virus carriers (PIs) are antibody negative (or occasionally have a very low level of antibody), but young calves should be tested for antigen anyway once they are at least 4 weeks of age.
Antibody negative Antigen positive	<ul style="list-style-type: none"> • This animal is infected with virus. • It may be transiently infected or persistently infected (PI) with BVD virus. • To confirm as a PI sample again a minimum of 21 days after the first sample.
Antibody positive Antigen positive	<ul style="list-style-type: none"> • This is very rare • It should be retested 21 days after the initial blood sample

In the BVD Check Tests for the PCHS if all of the young animals that contributed to the screen were antibody negative then there is no evidence of active BVD infection in the herd. BVD is a very infectious condition so if there is active infection in the herd it would usually result in the majority of the young stock being antibody positive. If only one or two animals out of a ten animal screen are antibody positive then the results would be more suggestive of a breach in biosecurity e.g. over the fence contact with an infected animal and further investigation would be warranted.

In the event of query contact:-
SAC Premium Cattle Health Scheme (PCHS) on 01467 625385