



## AN OWNER'S GUIDE TO THE STREP EQUI (STRANGLES) ELISA BLOOD TEST

Strangles is an infectious disease caused by the bacterium *Streptococcus equi* (S.equi). This factsheet concentrates on the ELISA blood test. For more information on the disease, clinical symptoms, diagnosis, sampling methods, different laboratory tests and isolation please see our factsheet 'An Owner's Guide to Strangles' ([www.equitait.com/page11.htm](http://www.equitait.com/page11.htm)).

The blood ELISA test is now frequently used in two common scenarios:

1. Towards the latter stages of an outbreak to determine which animals have been exposed to the bacteria and require further testing.
2. Pre-movement testing to assess the risk to the new livery yard of moving a horse to a new yard.

### Key points

- **The blood test only shows if the horse has been exposed to the *S. equi* bacteria within recent history (approx 6 months). If a positive result is obtained it is not possible on a one off sample to determine whether the horse is a carrier or just recently infected.**
- **The test looks at the immune system's response to the disease in the form of antibodies present in the blood rather than the bacteria themselves. These antibodies take 2 weeks to form and so if the horse has been exposed to the bacteria within the last 2 weeks the test could show a low antibody response despite having the active disease.**
- **If the horse has a raised antibody level (sometimes called 'titre') it may require further testing to determine its current status.**

### Background

During an outbreak of Strangles there are likely to be several horses who have had no clinical signs of strangles but who have been in contact with affected animals. These horses could be carriers despite showing no signs of disease.

As well as the classical strangles we now more commonly recognise atypical strangles in healthy adult horses. These horses frequently display a milder nature of the clinical symptoms (and in many cases no clinical signs whatsoever) which can easily be confused or attributed to a wide number of other conditions ie mild short term fever; short term inappetence, clear nasal discharge. Unfortunately these horses are still a risk to other horses and should be treated as infectious. Equally we currently believe that they are as likely to become clinical carriers of the disease as those displaying classical strangles.

Once infected, the majority of animals recover from the disease and eliminate the *S. equi* bacterium from their bodies over a 4–6 week period. However, a small but important proportion of affected horses (up to 10%) will become carriers of the disease and may not show any clinical signs but can act as a reservoir of infection to other horses. Most commonly the bacteria remain in the horse's guttural pouches (air filled sacs that sit behind the cheek) and can do so for months to years. They can intermittently shed *S. equi*, which can then infect naive horses. These symptomless carriers are probably the most important factor in persistence of infection on premises between outbreaks and if moved onto a new premises responsible for new outbreaks.

The blood ELISA test is a relatively new test which has been developed and is a useful tool in identifying horses that may warrant further investigation to determine if they are a 'carrier' of the *S. equi* bacteria.



Newly exposed horses take two weeks to develop sufficient antibodies to give a positive result and may remain positive for up to six months after recovery (and in some cases longer). As with all ELISA tests, false negative and false positive results may occur and so timing of the test and careful interpretation of any results are important. A very small proportion of horses having been exposed to *S.equi* will still not develop a typical immune response to show a positive result and this frustrating fact must be borne in mind.

***Use of the ELISA test during an outbreak to determine which animals have been exposed to the bacteria and require further testing.***

Whether this is worth doing will often depend on the number of 'in contact' animals and the likelihood that they have been exposed coupled with the yard's isolation and separation facilities. In theory the aim is to identify which animals have been exposed and which therefore require further testing to determine whether they have cleared the disease without becoming a carrier. By testing using the blood test it is hoped to reduce the number of horses requiring the more expensive guttural pouch lavage. Good biosecurity and isolation during the testing period is vital to ensure the results can be reliably interpreted.

***Use of the ELISA test during pre-movement testing to assess the risk to the new livery yard of moving a horse to a new yard.***

With increasing frequency we are being asked to perform the blood test on horses prior to moving to new premises.

It is important that owners are aware that it may not be as simple as performing a one-off test. In most situations you will need to await results before arranging to move your horse, so it's best not to make firm plans regarding transportation until you have the all clear. Usually, straightforward negatives are simple. However depending upon the circumstances and the antibody titres further sampling may be recommended in the event of a positive titre. Very often this will be a second blood sample 2 weeks later to compare to the first although occasionally we will advise the testing of the fluid from a guttural pouch lavage.

Strict biosecurity is important during the blood sampling procedure. In an ideal world the horses being sampled would have been isolated 2 weeks prior to having been blood sampled (although this may depend on the facilities available and the incidence of strangles in the area).

The validity of these pre-movement samples is only really useful assuming there is not an ongoing outbreak on the premises. Because of the lag time (min 2 weeks) in forming the antibodies.

Therefore in some instances in a yard where there has been recent outbreak a guttural pouch lavage may be a more appropriate test as this is able to detect the presence of the bacteria itself rather than the antibodies.

It must be borne in mind that all horses arriving on a new yard should undergo a period of quarantine in isolation from the other horses to allow any potentially infectious disease that may be still be in its incubation period to display prior to being introduced to the other horses in the yard. This is frequently 2 weeks long but in terms of quarantining for strangles in would be more appropriate for this to be 3 weeks. It is important that during this period the horses are assessed by an experienced horse handler to check for the presence of any potentially infectious disease – eg looking for signs of nasal discharge, coughing, lethargy, ataxia, diarrhoea, ringworm.



While it may seem inconvenient to new livery yards at the time the advantage of having a livery yard owner/manager who is taking biosecurity seriously is that in the future horses on that yard should be at lower risk of coming into contact with this and other infectious diseases.

The strangles vaccine has been re-introduced into the UK market and it is therefore important to remember that if any horse has been recently vaccinated we would expect them to have a positive antibody test on the ELISA blood test and so this must be borne in mind when interpreting the results or choosing the test.

Unfortunately tests are rarely as definitive as we would like but we are usually looking to take the most pragmatic and practical approach to deliver as effective a solution as possible.

Given the widespread panic that the very mention of testing for strangles creates in the age of social media, owners are advised to be judicious as to who they inform of their intention to test and of their results. Current yard owners will need to be approached delicately in the event of anything more than a negative result. An owner being properly informed is key to preventing mis-understandings and so it may be prudent to print off this handout to give to the current livery yard owner/manager before proceeding with blood testing so they know what is involved and the significance of the findings.

#### **Further Reading**

<http://www.equitait.com/page43.htm>

**The interpretations below are designed to be used alongside results obtained from the Edinburgh based Biobest laboratory and are used in this document as an illustration of the type of results you might expect and their significance.** The Animal Health Trust laboratory in Newmarket also provides an ELISA test.

#### **Negative**

Few tests are 100% specific or sensitive but this test result gives us reasonable confidence that the horse is clear from the infection and not a carrier for *S. equi*. The major caveat to this would be if the horse has been exposed to the disease in the last 3 weeks.

#### **Doubtful**

Few tests are 100% specific or sensitive. Horses in this band present a challenge for livery yard owners accepting horses. We feel that horses with levels less than 100 are rarely carriers and have rarely been exposed to the bacteria recently. The major caveat to this would be if the horse has been exposed to the disease in the last 3 weeks.

If this test is part of a pre-movement screening test to go into a livery yard we suggest you discuss the results with the livery owner (who in turn may want to take advice from his/her own veterinary surgeon). It is their risk that they are assessing and so it is for them to advise you what they want you to do.

If the horse is currently on a yard/area where there has been no suspicion of a strangles infection then in terms of pre-movement testing some livery yard owners would be happy to accept this risk without requesting that the horse be tested prior to moving yards. If there is a suspicion of strangles on the yard within the recent history or currently then the following may be prudent:

- Close monitoring for any clinical symptoms of *S. equi* infection in this horse and on any in contact



animals on your premises.

- Repeat this blood sample in 2 weeks (minimum) – if there is a stable or falling titre then there is reasonable confidence that this is a historic exposure to the infection. A rising titre would suggest a recent exposure and potentially an active infection or carrier status both of which would require further investigation and isolation.
- Perform a guttural pouch lavage - where a fluid sample taken directly from the guttural pouches is analysed for evidence of the *S. equi* bacteria.

### **Weak Positive**

If this test is part of a pre-movement screening test to go into a livery yard we suggest you discuss the results with the livery owner (who in turn may want to take advice from his/her own veterinary surgeon). It is their risk that they are assessing and so it is for them to advise you what they want you to do.

Few tests are 100% specific or sensitive but in order to give reasonable confidence that the horse is clear from the infection (or indeed actively infected) the following would be prudent:

- Close monitoring for any clinical symptoms of *S. equi* infection in this horse and on any in contact animals on your premises.
- Repeat this blood sample in 2 weeks (minimum) – if there is a stable or falling titre then there is reasonable confidence that this is a historic exposure to the infection. A rising titre would suggest a recent exposure and potentially an active infection or carrier status both of which would require further investigation and isolation.
- Or perform a guttural pouch lavage - where a fluid sample taken directly from the guttural pouches is analysed for evidence of the *S. equi* bacteria.

### **Moderate and Strong Positives**

Results in this band are highly suggestive of recent exposure (within the last approx 6 months) to the bacteria and the potential for the horse to be a carrier. Please contact your veterinary surgeon to discuss sensible and practical ways forward that will be specific to your situation. We would advise do not move the horse until you have clarified the horse's and yard's status.

### **Second samples**

#### **Stable or declining titre < 200**

With this stable or declining titre we can be reasonably confident that this horse is neither a carrier of the *S. equi* bacteria nor been recently infected (assuming it has been in good isolation since the first test). This individual may have been exposed to the bacteria in the past but it would appear to have successfully mounted an immune response and cleared the infection.