

Strangles Research

Grants have been awarded by The Home of Rest for Horses in excess of £2 million to investigate better strategies to control "strangles", the study of bacterial infections in the horse, the production of equine antibodies within the horse to fight the *S. equi* bacterium and investigations to find strangles vaccine candidates. This research is being carried out by four major research centres; The Animal Health Trust, The Sanger Centre, The University of Newcastle upon Tyne and The University of Cambridge.

Most veterinary surgeons and horse owners agree that a safe and effective "strangles" vaccine is urgently needed to facilitate effective control of this disease. An EU product license has recently been issued to Intervet for the Equilis StrepE vaccine against the spread of strangles. This product provides a degree of short term protection and is useful where an outbreak of strangles is evident. It reduces the risk of further spread of the disease but does not eliminate the disease itself. The reason that no available vaccine has been licensed in Europe previously is that immunity following infection is known to be incomplete and short-lived. It is of importance to note that despite vaccination "strangles" remains an extremely common disease in horses in such countries as the USA and Australia where vaccines are widely used.

Development of a safe and effective "strangles" vaccine that provides long-term protection against the disease remains the principal goal of The Home of Rest for Horses. Vaccine research has involved the unravelling of the entire genetic DNA code for the organism responsible for causing "strangles" in horses. It has been identified by scientists that a large number of proteins located on the bacterium's surface and toxins secreted by it that, together, enable *S. equi* to infect and cause disease in horses. Key pieces of genetic material (genes) have been systematically removed from *S. equi* using new technology that allows the bacterial DNA to be modified in order to try and reduce their disease causing abilities. A vaccine using a combination of proteins will hopefully be developed in the future which will enable the horse's natural immune system to recognise and fight the infection that causes 'strangles.'

Although the prospect of a truly safe and effective vaccine is probably still several years from commercial reality, veterinary scientists have never been better placed to produce a vaccine for horses which will eliminate this disease. It is hoped that new vaccines may finally begin to make a significant impact on this disease, which continues to cause much suffering and death to horses all over the world.



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Strangles



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The Disease

Strangles is one of the most commonly diagnosed infectious diseases afflicting all species of equines worldwide. Caused by the bacterium *Streptococcus equi* (*S. equi*), this disease is highly contagious and can affect any age or breed of horse and remains one of the most feared diseases as it can be potentially fatal.

Clinical Signs

The severity of clinical signs can vary depending on the age and condition of the horse. Young horses are reported to often be the worst affected.

The clinical signs are usually not seen until 3-14 days after the horse has been in contact with the infection. The initial clinical signs include the horse not appearing to be its normal healthy self and a loss of appetite. These signs are usually closely followed by nasal discharge and in some cases the development of a cough.



Picture illustrates nasal discharge

Swelling of the lymph nodes may appear under the jaw or on the neck approximately a week after the initial clinical signs. These are abscesses which often burst discharging highly infectious thick, yellow pus. In some cases these glands may swell profusely, can restrict the airway of the equine and it is from this that the term "strangles" arises.



Picture illustrates severe swelling of the lymph nodes

Most affected horses recover uneventfully over a period of about a week with few cases resulting in fatal complications. More severe cases will take 3 – 4 weeks to make full clinical recoveries. Although infection with *S. equi* is usually restricted to the head and neck, in a small proportion of cases it may spread to other parts of the body where it causes abscesses and related clinical problems. This condition is called "bastard strangles" which has a poor prognosis and is potentially fatal. Another less common complication, which causes bleeding into the gum and other organs such as the lungs may also be fatal and is referred to as "purpura haemorrhagica".



Picture illustrates a horse diagnosed with Bastard Strangles

Spread of Infection

Strangles can be spread easily from horse to horse, often leading to large outbreaks with many horses becoming infected. The infection can be spread by nose to nose contact between horses, and via equipment shared with infected horses i.e. water troughs, feed buckets, brushes and tack. The bacterium will survive for long periods in water troughs after an infected horse has taken a drink from it.

Alarmingly, the disease can also be transferred through handlers, farriers and veterinary surgeons attending the animal. Horses known as 'carriers' can spread the disease for up to 8 months or longer, even though they have recovered and appear clinically healthy and normal.

It has been observed that many outbreaks of 'strangles' occur after the introduction of outwardly healthy animals. It is now known that these are "carrier" animals and are responsible for starting many new 'strangles' outbreaks. The Home of Rest for Horses has invested funds through an extensive grant programme in association with The Animal Health Trust to highlight the importance of carriers and has led to improved methods for the detection and treatment of carriers following disease outbreaks.

Treatment

Prevention of 'strangles' is very important as the value of treating horses with antibiotics is extremely controversial. Antibiotics are not used routinely because this may encourage carrier status. Problems are frequently seen with recurrence of swelling and abscesses of the glands of the head and neck after antibiotic treatment stops. Additionally their usage often instils a false sense of security that animals are no longer infectious and so strict hygiene measures are not followed.

Screening and Prevention

The prevention of 'strangles' is very difficult to achieve, particularly without specific measures to reduce the risk of the inadvertent introduction of *S. equi* infection through outwardly healthy carriers. Prevention is particularly difficult where there is frequent moving and mixing of horses and where strangles outbreaks have not been investigated and controlled appropriately.

Hygiene plays an important role in the prevention and control of this disease. Disinfecting all food and water containers, clothing, stabling and equipment used by an infected horse is imperative.

Quarantining new animals on their arrival to a yard is the most effective way to prevent a strangles outbreak. Quarantine means no direct contact of a new horse with other animals or equipment used by other horses. A quarantine period should be insisted upon, ideally this should be no less than 2 weeks. Horses that are disease-free after this quarantine period pose almost no risk of disease transmission unless they are a "silent carrier".

