

## Haemophilus parasuis (Hp) infections – epidemiology and role of vaccines in control

### “Take home” messages

- *H. parasuis* is a fastidious gram-negative bacterium existing in 15 known serotypes.
- The virulence of *Hp* isolates varies between different serotypes.
- Classically *Hp* infection in conventional herds was known as Glasser’s disease and was characterised by polyserositis, polyarthritis and meningitis.
- Today in modern SPF/‘high health’ herds *Hp* infection increasingly manifests as an acute disease with high morbidity and mortality, affecting pigs of all ages.
- *Hp* in SPF/‘high health’ herds is a frequent contaminant of pneumonic lungs and thus is a component of the Porcine Respiratory Disease Complex (PRDC).
- Control by vaccines is often problematic due to the complexity of the serovars and the lack of cross protection against the various individual serovars.

**Antibiotics with potent antibacterial activity against *H. parasuis* and good distribution in target tissues following oral and parenteral administration (e.g. Tiamutin®) have an important role in the successful control of *Hp* infections.**

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*Hp* is a small, non-haemolytic, pleomorphic, gram-negative rod. It is fastidious and difficult to cultivate in the laboratory. There are 15 serotypes, determined on the basis of immunodiffusion using heat stable antigen extracts. Serotypes 4, 5 and 13 are the most prevalent in N. America and Australia, whilst serotypes 4 and 5 are the most prevalent in Germany. A significant percentage of isolates are untypable by the tests currently available.

The virulence of *Hp* isolates appears to vary between different serovars and between strains from the same serovar group.

*Hp* only infects pigs. It is commonly isolated from the nasal secretions of healthy pigs and from the lungs of pigs affected with pneumonia but not generally from normal lungs. In conventional herds it is one of the earliest and most prevalent bacterial isolates from nasal swabs of pigs at 1 week of age.

Historically *Hp* infection (Glasser's disease) has been considered as a sporadic disease of stressed young pigs and was characterised by polyserositis, polyarthritis and meningitis.

However the epidemiological picture in modern SPF or 'high health' herds, which engender an immunologically naïve population, is fundamentally different.

Introduction of *Hp* infection into such units results in systemic disease of high morbidity and mortality affecting pigs at any stage of production. Currently *Hp* infection is one of the most serious problems associated with the mixing of pigs from different herds ('co-mingling') or the introduction of new breeding stock into the herd.

*Hp* infection can produce pneumonia and/or meningitis (Vahle, et al. 1997), which requires differential diagnosis from *M. hyopneumoniae* or *Streptococcus suis* infections, respectively.

The isolation at diagnostic laboratories of *Hp* from pneumonic lungs has increased substantially in recent years and is believed to be associated with the increased prevalence of immunosuppressive respiratory viral pathogens (PRRS, Swine influenza virus and PCV-2) and *M. hyopneumoniae*.

However clinical impressions that PRRS infection is exacerbated by *Hp* infection have not been substantiated in experimental model infections.

In naïve herds (SPF or 'high health') onset is rapid and the clinical signs are fever, apathy, inappetence and anorexia, dyspnoea, sneezing, pain, swollen joints, lameness, tremor, incoordination, cyanosis, recumbency and death may follow. Abortion in gilts and chronic lameness in boars may be sequelae to acute infections.

In conventional herds chronic infections in nursery pigs may result in poor performance. Cough, dyspnoea, weight loss, lameness and rough hair are the primary clinical signs.

## Control

There are numerous reports of successful disease control by vaccination of sows and piglets with commercial or herd specific vaccines. Sow vaccination protects piglets against an early challenge with *Hp* and is more effective than piglet vaccination alone.


A new approach is the inoculation of piglets with live *Hp* organisms shortly after birth, while still sucking the dam. This significantly reduces the clinical signs, morbidity and mortality associated with *Hp* infection (Olivera, S. et al 2001).

However there are also reports where bacterins are ineffective, probably due to lack of cross protection for the serovar or strain involved in the disease process.

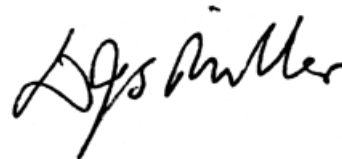
Herd specific bacterins may lack efficacy on account of the clinical presence of more than one strain or serovar or the subsequent introduction of a new strain into the herd. On the basis of our current limited understanding of the protective antigens and virulence factors of *Hp*, it appears at present to be unlikely that any bacterin will provide cross immunity against all *Hp* strains in the pig population, which are of aetiological significance.

The successful control of *Hp* infections is dependent on four important steps, namely:

1. Diagnosis of infection.
2. Identification of the prevalent strains present in the herd.
3. Use of herd specific vaccines incorporating appropriate serovars and/or antibiotics, e.g. Tiamutin®, with appropriate antibacterial and pharmacological properties.
4. Management of the introduction of new strains in the herd – requires the elimination of the mixing of pigs from different sources at all stages of production.



**Dr Ulrich Klein**  
International Technical Services  
Manager, Pig Products



**Dr David Miller**  
Demafarma Consultancy Ltd

**Further information on the Tiamutin® (tiamulin) range of products is available from the Pig Products Manager at Novartis Animal Health operations in over 50 countries worldwide.**

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