# A closer look at pig respiratory disease in the nursery

The importance of good health in the nursery cannot be overestimated. A good start in life increases the chances of a healthy and profitable journey later in the finishing period.

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While Mycoplasma hyopneumoniae (Mhp) is one of the most important primary pathogens resulting in clinical and sometimes subclinical disease in finishing pigs, it is generally not considered a cause of disease in the nursery.

As the bacteria is transmitted between pigs very slowly and also replicates slowly after infecting pigs, the significant Mhp bacterial load required to cause clinical disease rarely exists until later in life.

Given the unique characteristics of Mhp, the main primary agents of respiratory disease in the nursery are instead two viruses: swine influenza virus (SIV) and porcine reproductive and respiratory syndrome virus (PRRSV). This article looks at both key porcine pathogens and raises some important considerations for the producer and their veterinary surgeon.

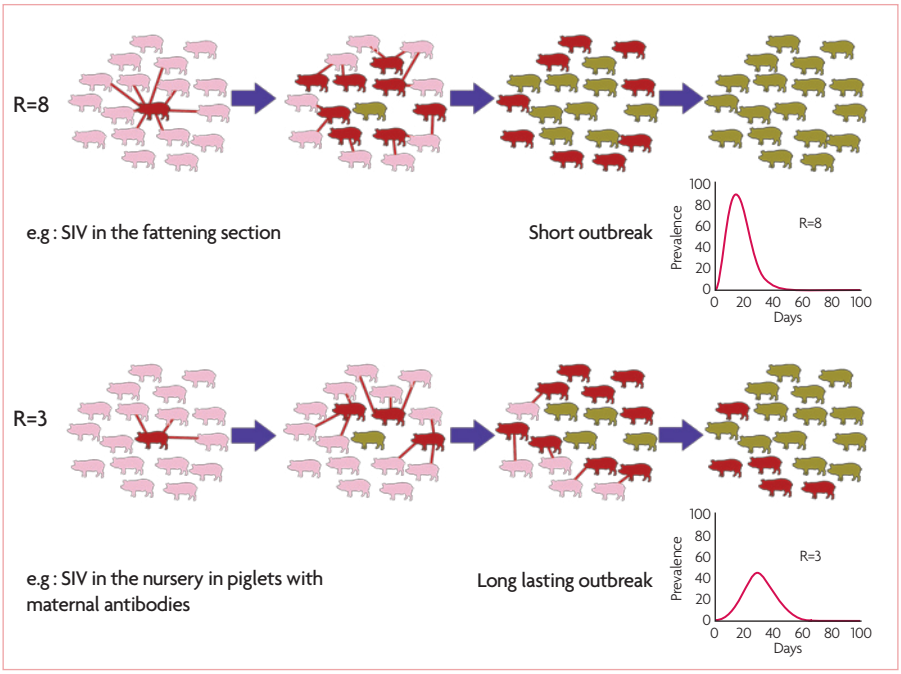


**Fig. 1. The impact on swine influenza virus (SIV) outbreak length in pigs with and without SIV maternal antibodies.**

## Swine influenza virus

SIV can be a persistent problem in units, becoming an enzootic infection. In these herds, respiratory problems are observed frequently in piglets of five to eight weeks of age, resulting in what is known as 'recurrent flu'.

This persistence is primarily the result of the low transmission rate when in the presence of maternal antibodies in large populations, creating long-lasting outbreaks. This is illustrated in Fig. 1 in the drawing by Dr Nicolas Rose (2015).

The respiratory disease caused by SIV has a major negative impact on performance, including mortality and time to slaughter.

Table 1 from Dr Gerard Marti (2018) highlights the impact of the endemic form of SIV on multiple batches of pigs belonging to one company. SIV is most likely to be found in nasal and pharyngeal secretions when pigs are febrile. Oral fluids are increasingly used for screening populations for SIV and other swine pathogens. Although isolation and sequencing rates are lower for oral fluids than for other specimens, RT-PCR tests work reasonably well.

The SIV diagnostic protocol of choice is to conduct PCR tests on oral fluid collected from cotton ropes hanging from nursery pen partitions. Sampling every two weeks is a good way to determine the presence of the endemic form of SIV. The best method for controlling SIV is vaccination of the sow herd with appropriate, licensed vaccines. If different age groups are kept separated, the presence of SIV should decrease over time as herd immunity builds.

## Porcine reproductive and respiratory syndrome virus

Once PRRSV enters a herd, it nearly always becomes endemic. In these herds, porcine reproductive and respiratory syndrome (PRRS) is most often observed as regular or occasional outbreaks of the typical acute PRRS seen in susceptible nursery or grower-finisher pigs.

PRRSV infection predisposes to septicaemia, including that caused by Streptococcus suis, along with pneumonia caused by opportunistic bacteria. In turn, Gram-negative bacterial co-infections may enhance PRRS through the action of bacterial lipopolysaccharide (LPS).

Intratracheal administration of LPS in PRRSV-inoculated pigs resulted in more severe respiratory disease associated with 10-100× elevations in inflammatory cytokines IL-1, IL-6, and TNF-alpha compared with pigs given only PRRSV or LPS.

PRRSV can also worsen Porcine Circovirus Type 2 (PCV2) infections by enhancing its replication. This leads to more PRRSV pneumonia, as well as lesions of PCV2-associated post-weaning multisystemic wasting syndrome (PMWS).

Clinical signs of PRRS normally appear a

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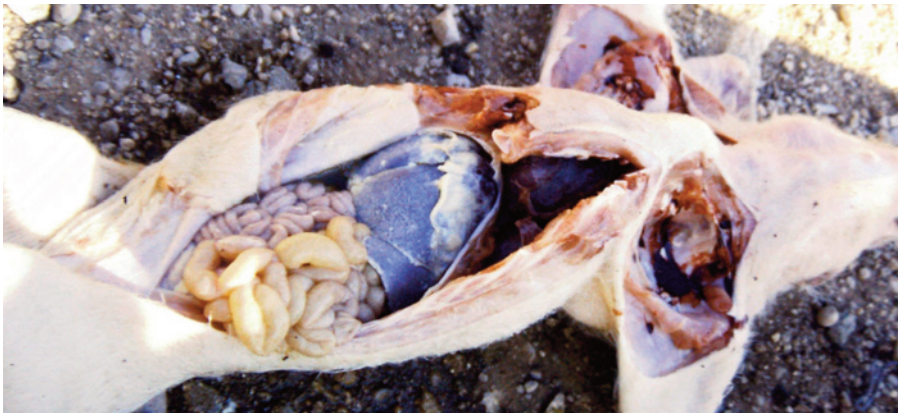
week after weaning. The severity of these clinical signs is variable and commonly include fever, inappetence and respiratory distress.

In units with PRRS, it is common to find a higher than usual incidence of bacterial endemic diseases, most commonly streptococcal meningitis, Glässer's disease, exudative dermatitis and bacterial bronchopneumonia.

For example, PRRSV combined with S. suis and Glaesserella parasuis would result in clinical signs of both pneumonia and polyserositis.

Another example is seen when SIV and PRRSV infections are combined, leading to far more serious clinical consequences.



**Fibrinopurulent exudate in the peritoneal cavity found during the post mortem of a pig suffering from Glässer's disease.**

## Control methods

Control of PRRSV in its endemic form is extremely challenging. It requires stabilisation of the sow inventory through a well-implemented process of adaptation of new incoming replacements, good biosecurity and strict all in-all out flow practices..

Nursery pigs become infected with PPRSV from their mothers via vertical transmission. Viral presence can be monitored by collecting tongues of stillborn piglets at farrowing and tails and testicles at processing.

These samples can then be analysed for the presence of PRRSV using PCR.

In the nursery, the unit's PRRSV epidemiology and timing for the peak of infection can be determined from analyses of samples collected from oral ropes. In conclusion, efforts made to diagnose, understand, and control both SIV and PRRSV in the nursery will result in major benefits by the time these pigs reach the finishing period. ■

References are available from the author on request

**A young pig showing clinical signs of streptococcal meningitis.**

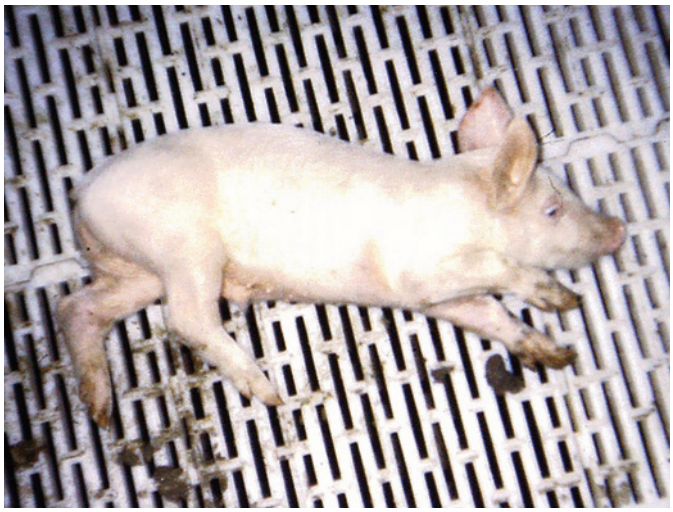


**Table 1. Productive and economic analysis of SIV infection in fattening units. Preliminary data from 137 batches belonging to the same company (Marti, G., 2018).**

| | Deaths* | Average time for all animals to be sent to the slaughterhouse (days)* | Average time needed to reach slaughter weight (days)* |
|---|---|---|---|
| Batches with SIV outbreaks confirmed in the laboratory (n=20) | 4.10%[a] | 159.2[a] | 137.2[a] |
| Batches with respiratory outbreaks negative to SIV (n=13) | 4.08%[a] | 158.5[a,b] | 134.6[b] |
| Healthy batches (n=104) | 3.39%[b] | 156.6[b] | 134.2[b] |

* Values with the same superscript are not significantly different.
Values with different superscripts are significantly different (P-value <0.05)