International Pig Topics

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Number: 143

Swine influenza

Pathogenicity

The pathogenicity of influenza A viruses in pigs can be variable. Often, when the virus is isolated in the field, the mortalities reported from the field are higher than when that virus is subsequently used to experimentally infect pigs.

The ability of influenza A virus to cause disease in pigs is influenced by host, virus and environmental factors. Two of the key host factors are age and immune status. As is often the case, neonatal pig are among the most susceptible to infection and they may not have received maternal antibodies to give them protection. Nursery pigs are susceptible to a number of respiratory pathogens including influenza A virus.

One host factor specific to influenza A virus is the binding of HA to sialic acid sugars. Host specificity is defined by the number and distribution of host cell receptors and the protein structure of the viral HA. Sialic acid cell receptors are similar in man and pigs but different from the avian ones.

In addition to host specificity, virulent viruses also have an ability to keep up a higher and/or more prolonged period of virus replication in the respiratory tract and an induction of excessive cytokine expression.

Clinical disease

The clinical signs are those of acute respiratory disease including fever, anorexia, coughing, laboured breathing, thumping, sneezing, nasal discharge and poor weight gain. Fever is a very consistent sign and peaks within 24-48 hours of infection. Clinical signs disappear 4-8 days after infection.

When pigs protected by a homologous vaccine are infected the amount of virus shed and the shedding period are reduced. Ideally, homologous vaccination will result in little or no virus shedding or clinical signs but this is not always the case.

Swine influenza is a disease of high morbidity and low mortality. This can range from the virus circulating on a farm with no clinical disease to an influenza outbreak with 80-100% showing clinical signs or 30-50% of pigs on endemically infected farms. Mortality in uncomplicated swine influenza is rare. Typically, influenza in pigs is due to secondary complicating infections such as Haemophilus parasuis or PRRS. One of the most virulent swine influenza A virus caused 10% mortality in finishers, but PRRS virus, Pasteurella multocida, Streptococcus suis and Streptococcus Spp were also implicated in the deaths.