

Swine Influenza Virus

Pigs are the principal hosts of classic swine influenza virus (SIV). While human infections have been reported, porcine strains of influenza A do not appear to easily spread in the human population. However, deaths have occurred in immunocompromised people.

Virology

The swine influenza virus is a type A orthomyxovirus with a segmented RNA genome. The type A SIV are further subdivided based on their haemagglutinin and neuraminidase proteins. Subtypes of SIV that are most frequently identified in pigs include classical and avian H1N1, human H1N1 and H1N2, reassortant (r) H3N2, and rH1N2.

Pigs have receptors in their respiratory tract that will bind swine, human, and avian influenza viruses. Consequently, pigs have been called ‘mixing vessels’ for the development of new influenza viruses when swine, avian, and/or human influenza viruses undergo genetic reassortment in pigs.

Swine influenza virus is an enveloped virus. The virus does not appear to survive beyond 2 weeks outside the host and can be inactivated by many disinfectants.

Clinical Signs

SIV infections cause respiratory disease characterised by coughing, sneezing, nasal discharge, elevated rectal temperatures (104°F - 106°F), lethargy, breathing difficulty and anorexia. In a typical outbreak, there is a sudden onset of respiratory illness in most pigs. Recovery begins about the sixth day, and the herd is largely recovered in one to two weeks. Uncomplicated SIV usually causes low mortality, but weight loss and loss of body condition, as well as cost of medication can be significant.

Epidemiology of Transmission

In North America, outbreaks are most common in fall or winter, often at the onset of particularly cold weather.. Usually, an outbreak is preceded by one or two individual cases and then spreads rapidly within a herd, mainly by aerosolization and pig-to-pig contact. The virus survives in carrier pigs for up to 3 months and can be recovered from clinically healthy animals between outbreaks.

In 2009, a pandemic strain of H1N1 influenza A virus spread globally; it infected people, swine, and poultry, as well as a small number of dogs, cats, and other animals. Since 2009, there has been intense interest in all influenza viruses due to the potential for widespread human illness. The disease in pigs occurs commonly in the midwestern USA (and occasionally in other states), Mexico, Canada, South America, Europe, Kenya, China, Japan, Taiwan, and other parts of eastern Asia.

Prevention, Treatment and Control

Prevention has mostly depended on maintaining a closed herd to avoid introducing infected pigs. Several types of inactivated vaccines are available commercially and widely used to control the spread of SIV. Cross-protection between subtypes should not be expected.

There are no specific therapeutic treatments for SIV. Often, antimicrobials are used to prevent or control secondary bacterial infections. Anti-inflammatory medication may offer relief to severely affected pigs.

On infected premises, using the all in/all out pig flow model with cleaning and disinfection between batches of pigs helps prevent virus circulation within the herd. However, in continuous flow facilities, it may be necessary to depopulate the herd to stop virus circulation.

References

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