



Animal &
Plant Health
Agency

SWINE INFLUENZA DIAGNOSIS: DEFRA-FUNDED SURVEILLANCE AT APHA

Swine influenza is a contagious respiratory disease of pigs that occurs worldwide and is caused by infection with influenza A viruses.

The Animal and Plant Health Agency (APHA) is an OIE international reference laboratory for animal influenza, including swine influenza, and has 45 years of experience on influenza viruses in animals, advising the international community. APHA has various national and international collaborative programmes on the diagnosis, research and surveillance of influenza in pig populations. One of these is the Defra-funded swine influenza surveillance project.

The Defra-funded surveillance at APHA monitors swine influenza viruses infecting pigs in Great Britain and provides valuable information about the changing trends in strains over the years relevant to appropriate diagnostics and vaccine selection. This surveillance is based on virological detection in nasal swabs or respiratory tissues using initial PCR followed by virus isolation and strain typing. The testing for swine influenza is provided free of charge to pig veterinarians and their pig-keeping clients and more details are available on this link:

<http://webarchive.nationalarchives.gov.uk/20140707141417/http://www.defra.gov.uk/ahvla-en/disease-control/non-notifiable/swine-influenza/>

To confirm a diagnosis of swine influenza, the surveillance funds swine influenza PCR to be performed at APHA on pigs with acute respiratory disease or respiratory pathology. Testing is undertaken when suitable pigs are submitted for post-mortem examination to APHA veterinary investigation centres or APHA's external PME providers, and also when practitioners submit nasal swabs or tissues from pigs with respiratory disease. Nasal swabs must be plain and not in any transport medium, they should be inserted into the nasal cavity, twisted and removed. A maximum of 12 nasal swabs from 12 individual pigs will be tested from an outbreak. If affected pigs are dead or euthanased, individual tissue pools (lung, trachea, tonsil) from up to three pigs should be submitted. Swabs or tissues must be submitted to APHA the same or next day requesting swine influenza PCR. It is vital that swabs or tissues are collected from pigs in the first few days of disease as there is a short window of opportunity in which to detect swine influenza virus; individual pigs excrete the virus for only about seven days.

Samples or pigs (if full chargeable diagnostic investigation is sought) should be submitted to APHA by veterinary practices in the usual manner for diagnostic testing. Further details are provided on this link: <http://ahvla.defra.gov.uk/vet-gateway/surveillance/diagnostic-support.htm>

The two predominant swine influenza strains currently identified in GB pigs are H1N2 and pandemic H1N1 2009, with avian-like H1N1 only occasionally detected. No H3 influenza virus strains have been detected through this surveillance in GB pigs since 1997 when H3N2 virus was present. Identifying swine influenza strains circulating in pigs is a vital component of APHA's swine influenza surveillance project which aims to monitor what strains are present, any changes within them, and detect novel strains. It is also important

for directly informing appropriate strain selection for use in subtype-specific serological assays relevant to the UK and to match to vaccine strains. It is findings from this surveillance project that led to early detection of the pandemic H1N1 2009 emergence in pigs, the decline in avian-like H1N1 and the change in circulating H1N2 virus which prompted modification of the HAIT serology panel to ensure it remained fit for purpose. Our diagnostics are kept under continuous review to ensure they can detect changing strains in the field.

The surveillance allows a diagnosis of swine influenza to be confirmed in outbreaks of respiratory disease and identification of the influenza strain involved. This is particularly valuable for pig units where vaccination is being considered and can also help in epidemiological investigations and ascertaining possible sources of virus infection.

Complex respiratory disease involving more than one pathogen, which may include swine influenza, frequently occurs in growing pigs. There is further advice about diagnosing causes of respiratory disease in pigs on the APHA website,:

<http://ahvla.defra.gov.uk/documents/surveillance/sub-handbook.pdf>

Swine influenza serology provides evidence of exposure and results from chargeable diagnostic testing using the HAIT serological panel offered by APHA can assist in determining the infecting virus strain. However, unless paired serology is performed, the presence of antibodies to swine influenza does not confirm a diagnosis of swine influenza.

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