

VLA Q&A: Influenza Pandemic (H1N1) 2009

Veterinary Laboratories Agency

1. Why is it being called swine flu?

When this virus was fingerprinted it was shown to have some of the genetic material of pig, bird and human influenza viruses. More of the genetic material was of pig origin than of either bird or human origin. Due to that balance of genes, people started to refer to it as 'swine flu'. The World Health Organization (WHO), the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) are now referring to the virus as the 'pandemic (H1N1) 2009 virus'.

2. If it was called 'swine flu' then surely it must be in pigs?

Currently there is evidence of the pandemic (H1N1) 2009 virus having infected pig herds in several different countries across the world subsequent to its emergence in humans. This now includes several European countries including the UK (Northern Ireland and England), Eire, Norway, Iceland and Finland with the situation dynamic and changing almost daily.

3. Will the virus be maintained in pig populations and are there any increased risks for human health?

It is highly likely that pandemic (H1N1) 2009 virus will be maintained independently in pig populations worldwide. However there is no current or historical evidence to suggest this presents increased risk to public health. Swine flu does not pose a food safety risk to consumers. Swine flu has not been shown to be transmissible to people through eating properly handled and cooked pork and pork products. See the Food Standards Agency website for further information. http://www.food.gov.uk/safereating/animaldiseases/swine/

4. How do you know the pandemic (H1N1) 2009 virus is in pigs?

Defra continuously monitors the pig population of Great Britain for the circulation of influenza viruses. A number of European countries, and other countries around the world undertake similar monitoring.

5. Can the pandemic (H1N1) 2009 virus infect any other farmed animals?

At present there is limited information on the potential host range of the pandemic (H1N1) 2009 influenza virus, other than humans. Apart from the reported incidents of pandemic (H1N1) 2009 virus having infected pig herds in several different countries (see question 2), there have been other reports to date of infection of turkeys in Chile, Canada and USA.

To gain an understanding of the outcome of pandemic (H1N1) 2009 virus infection in pigs

and poultry, studies were performed recently at the VLA. In one study involving turkeys (aged three weeks), no clinical signs were observed and birds did not become infected as measured using virus shedding and antibody responses. Information about the study in pigs can be found at: http://www.defra.gov.uk/vla/science/sci_si.htm. A letter to the editor has also been published in the Journal of Virology:

Russell C et al (2009) Experimental infection of turkeys with pandemic (H1N1) 2009 influenza virus (A/H1N1/09v) Journal of Virology 83 (24) 13046-7. The pdf version is available at http://jvi.asm.org/cgi/reprint/83/24/13046.

6. What is VLA's role in relation to swine influenza?

The VLA is an international reference laboratory for animal influenza for the OIE, and has 35 years of experience on animal influenza viruses. VLA has proactive programmes of activity both internationally and nationally, especially with respect to diagnosis, research and surveillance for influenza in pig populations.

7. What is VLA's role in the recent cases of H1N1 in pigs in Northern Ireland and England?

VLA has confirmed four cases of infection with pandemic (H1N1) 2009 virus in pigs in Northern Ireland. VLA is working closely with the Department of Agriculture and Rural Development, Northern Ireland (DARDNI) on the detailed analysis of the virus. See the DARDNI website for further details (http://www.northernireland.gov.uk/news/news-dard/newsdard-170909-test-results-indicate.htm).
The case in England was detected by VLA through routine scanning surveillance (see 14).

8. If this is a human infection, what role does the VLA have?

The VLA has a very close working relationship with the Health Protection Agency (HPA) on germs that can infect animals and people. This meant that the VLA was immediately and seamlessly able to provide information and reagents to the HPA to help support the public health response.

9. Can pigs get 'flu?

Yes. Swine influenza (or "swine 'flu") is an important, contagious disease of pigs that occurs worldwide, and is caused by infection with influenza A viruses.

10. What influenza virus subtypes can infect pigs?

Influenza viruses of H1N1, H1N2 and H3N2 subtypes are present in many pig populations around the world. There is significant variability within each of these subtypes, which can often be dependent on geographical region. Periodically, other subtypes have been detected in pigs, but generally these fail to persist or become established.

11. What are the clinical signs in pigs infected with influenza virus?

Infection can cause a range of clinical signs in pigs, from sudden onset, severe respiratory illness that infects a large number of exposed pigs, often with little death, to less severe

illness that may be characterised as a chronic respiratory disease syndrome, usually affecting groups of pigs. Breeding pigs can also suffer reproductive problems, and pigs can also be infected and not show signs of illness. Recovery in uncomplicated infections is usually quick (within 10-14 days).

12. How is the disease spread between pigs?

Infection with swine influenza viruses is usually transmitted between pigs over short distances by aerosols generated by infected pigs coughing or sneezing, by direct or indirect contact or by the movement and introduction of infected pigs not showing clinical signs. Other factors, such as the presence of other infections can also make disease appear more severe or seem to last longer.

13. What are the appropriate diagnostic tests for detection of swine influenza?

Conventional testing as recommended in the OIE 'Manual of Diagnostic Tests and Vaccines for Terrestrial Animals' is through the isolation of virus using eggs (http://www.oie.int/eng/normes/mmanual/A_summry.htm). Increasingly, molecular tools are used for the diagnosis and surveillance of influenza in pig populations.

There is an ongoing international effort to validate the use of real-time RT-PCR assays capable of detecting, as well as differentiating, the pandemic (H1N1) 2009 virus from other forms of the same subtype, endemic in pig populations. Caution is urged to check robust evaluation has been done before using a test. We recommend generic pan influenza A screening tests are applied, with follow on investigations on positive samples to produce information on virus subtype and characteristics.

The VLA have developed an influenza A matrix gene RRT-PCR assay capable of detecting endemic European swine influenza viruses and the pandemic (H1N1) 2009 virus (http://www.defra.gov.uk/vla/diseases/sci_si_prot.htm). The purpose of this test is not to differentiate between influenza A viruses in pigs (as it is based on detection of the Matrix gene, common to all influenza A viruses), but instead to provide a screening tool.

Looking for antibodies to the virus (serology) can also sometimes be useful and may be appropriate once tests and host responses for the pandemic (H1N1) 2009 virus have been fully evaluated.

14. If material from animals has to be sent, how is this done?

Packages must be shipped in strict accordance with international shipping regulations. Full details for shipping packages can be obtained from aiwrl@vla.defra.gsi.gov.uk upon request.

For further information or requests, please contact the swine influenza team at VLA Weybridge using our International Reference Laboratory mailbox:
aiwrl@vla.defra.gsi.gov.uk.

Further information about swine influenza surveillance in Great Britain can also be found at:
http://www.defra.gov.uk/vla/diseases/dis_si.htm

For a review of risk of germs jumping between animals and humans see:

- Fielder M, Borriello SP (2009). Zoonosis. Past, present and future. Microbiologist: 24-8.

For discussion on some epidemiological features of swine influenza and pandemic (H1N1) 2009 see:

- Irvine R, Brown I (2009). Novel H1N1 influenza in people: global spread from an animal source? Veterinary Record 164 (19) 577-578

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