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Pandemic H1N1 2009 virus in Norwegian pigs naïve to influenza A viruses

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In March-April 2009, a novel pandemic influenza A (H1N1) virus (pH1N1-09v) emerged in the human population. The first case of pH1N1v infection in pigs was reported from Canada in May 2009. In Norway, pH1N1v infection was recorded in a swine herd on the 10th of October of 2009. Here, we report results from the investigation performed during the outbreak and the follow up surveillance performed in the Norwegian pig population.

Nasal swabs were collected from herds i) where pigs had been exposed to persons with verified pH1N1-09v infection or with influenza-like illness (ILI); ii) where pigs showed clinical signs or iii) with a history of close contact with or close proximity to infected herds. In addition, blood samples were collected from nucleus and multiplier breeding herds. Detection of pH1N1-09v was initially performed using a real-time RT-PCR targeted to detect influenza A virus. Positive samples were tested by a pH1N1-09v specific real-time RT-PCR. Blood samples were tested for presence of antibodies against influenza A virus by ELISA (IDVET) and positive samples in the ELISA were tested by haemagglutinin inhibition test using A/California/07/09 as antigen.

From the onset of the outbreak and until 31st of December 2009, the pH1N1-09v was detected in nasal swabs from 54 of 114 herds investigated tested, while 55 of 140 herds tested positive for antibodies against pH1N1-09v. No herd has been tested positive for pH1N1-09v since early January 2010, however, results of the Norwegian surveillance and control programme for specific swine herds for 2010 so far indicates that 40 % of the swine herds (154 herds) are positive for antibodies against pH1N1-09. Serological evaluation of swine herds and detailed back tracking of the outbreak indicated that the virus was introduced in September 2009. The Norwegian swine population has, until the outbreak of pH1N1-09v, been considered free from influenza A virus infection as documented through serological surveillance program running since 1997. Virus isolated from one of the herds positive for pH1N1-09v was fully identical across the full genome to virus isolated from a confirmed human case at the farm. The majority of the positive herds had a history of contact with humans that were diagnosed with pandemic influenza or with ILI. This suggests that infected humans are the most likely source for introduction of pH1N1-09v to the Norwegian pig herds, especially in the early phase of the outbreak.

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