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Introduction

The first reports of influenza in swine occurred in Europe and the USA at the time of the human flu pandemic in 1918. The early H1N1 swine influenza viruses were the progenitors of the H1N1 lineage of swine influenza viruses. The early swine viruses and the 1918 human isolates were closely related and both had an avian origin.

Influenza viruses are a major cause of respiratory disease in pigs and subclinical infections are often seen. The epidemiology of influenza viruses in swine can best be described a complex interplay of influenza viruses of human, porcine and avian origins.

Pigs play an important role as intermediate hosts in the reassortment and/or adaptation processes that produce new influenza viruses for man. This reassortment process also produces new swine viruses and these periodically change the epidemiology of swine influenza in different parts of the world. For example, in 2009 the then new H1N1 virus arose from a reassortment of European and North American lineages of the virus.

The virus

Influenza viruses are members of the Orthomyxoviridae and reassortment occurs when two viral types infect the same host and exchange genetic RNA.

All swine influenza viruses belong to influenza A subtype viruses and these are sub-defined by the nature of their haemagglutinin (H) and neuraminidase (N) spike like glycoproteins on their surfaces. Currently, there are 16 known haemagglutinins and nine known neuraminidases and these define virus subtypes, for example, H1N1 and H3N2.

Public health

Animals, including pigs, are a potential source of human influenza viruses and the first proven transfer from pigs to farm workers occurred in 1976. Since then pig to human infections with influenza viruses have been reported around the world and serological studies show such infections to occur regularly.

For a pandemic of swine origin to occur in man the influenza virus must be sufficiently unique to be able to evade existing host immunity in man and it must be able to spread from person to person.

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