

Poultryhealth BYTES

Number: 194

Avian influenza XII

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Public health implications

It is very probable that past influenza outbreaks in man originated from an animal source. This is certainly the case with the major outbreaks in the last century. For example, the 1918 pandemic's virus arose from the adaption of a totally new avian virus to mammals and the viruses that caused the 1957-58 and 1968-69 outbreaks originated from genetic reassortment between previously circulating human influenza viruses and LPAIs.

For a novel influenza virus to cause problems in man it must be able to cause disease in man and be able to spread from man to man. As a consequence of the wide diversity of influenza viruses (18 H subtypes and 11 N subtypes) that are resident in non-human hosts, one can not really predict which subtype will cause the next pandemic or when it will occur. However, it would be reasonable to assume another is likely because HPAI H5NX and LPAIs of H5N2, H6N1, H7N2, H7N3, H7N9, H10N7 and H10N8 circulate widely in poultry and have shown the ability to jump the host species barrier to infect man. Other influenza viruses are endemic in pig populations and can infect man.

H5N1 human infections

HPAI H5N1 viruses are panzootic in poultry and have caused more than 700 reported infections in man. This virus type probably poses the greatest risk to man because of its 60% fatality rate in infected humans. Fortunately, at the moment, they have not developed the ability to efficiently move from man to man. More recently, H7N9 LPAI virus has caused over 470 human cases. Most of these have been over the last couple of years, so cases of H7N9 infection in man are now accumulating at a faster rate than H5N1 cases. It is thought that this is because the H7N9 virus is better able to infect the human species.

H7N9 human infections

The first few cases of human H7N9 infection were seen in Eastern China in early 2013 and involved infection by LPAI H7N9. These early cases were all in adults and were characterised by severe pneumonia and death by respiratory failure. Subsequently, large outbreaks of human LPAI H7N9 infections occurred in China in the spring of 2013 and the autumn/winter of 2013-14 with the geographical area of human infections increasing. Human cases of H7N9 infection appear to peak over the cooler months of the year.

Risk factors for H7N9 infection causing death include old age and chronic lung disease. Interestingly, H7N9 viruses have been isolated from birds in poultry markets that were visited by people prior to them going down with H7N9 infection.

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