

Fact sheet from the European Centre for Disease Prevention and Control (ECDC)

This text can also be found on the ECDC website (www.ecdc.eu.int)

Influenza – Human and Avian

Background fact sheets and situation update from the European Centre for Disease Prevention and Control (ECDC) The reporting on the current outbreaks of influenza in birds has caused much confusion. It is important not to mix the three different forms.

- common (seasonal) influenza
- pandemic influenza
- avian (bird) influenza
- The Role of Migrating Birds in the Spread of Avian Influenza
- Possible transmission from birds to humans
- Avian Influenza in Russia and Kazakhstan
- The Role of the European Centre for Disease Control and Prevention (ECDC)
- Conclusions, Implications and ECDC Risk Assessments for Human Disease

Background

Common (seasonal) influenza – a human influenza virus

1. This is a disease that annually affects Europe and the rest of the northern hemisphere during the winter season with larger or smaller epidemics. The southern hemisphere has a similar epidemic in its winter (June to October).
2. The disease can be anything from mild to very severe. Each year there are many avoidable deaths from influenza.
3. Though death is considerably more common in older people and those with other illnesses (such as heart disease and chronic lung disease) severe disease and some deaths occur each year in healthy young and middle aged adults and children.
4. Because the viruses causing each year's epidemics are usually similar to the last year's it is possible to produce a vaccine for the coming influenza season with a good chance that it will be protective.
5. However this means that a vaccine against this year's influenza often has to be modified depending on the viruses that were recently circulating.
6. The virus causing a particular year's epidemic can also occasionally be quite different from last year's in which case the vaccine will not work well. Also the epidemic will probably be more severe because there will be less immunity in the community from previous years.

Pandemic influenza in humans

7. At irregular intervals, usually of a few decades, a new influenza virus emerges which is novel to all or most people which means that there can be little specific immunity among humans except for older people who may have met unless they met the same virus .
8. This new virus can then spread rapidly from human to humans all over the world. Because of the lack of human immunity the virus is often more aggressive and causes more serious disease and deaths.
9. At least some of the three pandemics during the last (20th) century are thought to have come from an animal or bird influenza virus that itself mutated or swapped genes with a human (so called recombination) and acquired the ability to both infect humans and, more importantly, spread between them.
10. It is thought that as a animal or bird influenza adapts to humans and becomes transmissible it also loses some of its pathogenicity for humans. This is of evolutionary value as the new strain is more likely to survive if it does not kill its new human host.

11. Eventually as immunity increases among humans, and the pandemic virus changes the pandemic strain becomes part of and tends to dominate the mix of seasonal influenza viruses.

Avian influenza – Not a Human Disease

12. Normally, different species such as birds, horses and pigs have their 'own' influenza strains, which are different from the strains causing disease in humans.
13. That means that the virus is well adapted to the particular host species, reproduces easily and only kills the occasional individual
14. Avian influenza strains are those well adapted to birds, porcine are well adapted to pigs. These are the equivalent to human seasonal influenza but for other species
15. Birds can become infected by a large number of different strains. Many are referred to as Low Pathogenic Avian Influenza – that is they very rarely cause disease in birds.
16. Low Pathogenic Avian Influenza (LPAI) is very well adapted to a number of wild species and is found in certain ducks and geese without their showing any symptoms.
17. Occasionally a more dangerous strain of avian influenza emerges – a Highly Pathogenic Avian Influenza (HPAI) which can quickly kill breeds of birds without immunity to it, such as chickens and turkeys. Domestic and commercially bred chickens are especially at risk because they often live in crowded conditions.
18. Since 1997, one such strain, called A/H5N1 has emerged to cause a major and severe outbreak of disease (a so-called epizootic) among birds in South East and East Asia. In 2003 it was appreciated that this was widespread in commercial and domestic flocks.
19. This A/H5N1 epizootic among birds has been recognised in China and earlier this year there was a particular outbreak in species of wildbirds on a lake in North Western China.

The Role of Migrating Birds in the Spread of Avian Influenza

20. Migratory birds like duck and geese can carry and presumably spread Low Pathogenic Avian Influenza. The routes of bird migration and mixing are complex and changing over time but certainly it is conceivable that LPAI could spread to Europe through migration.
21. It is less clear that migratory birds would spread Highly Pathogenic Avian Influenza because it tends to make sick or kill birds which therefore cannot migrate.
22. HPAI can also be spread by the movement of commercially kept birds, movement of waste products of birds, and smuggling.
23. Hence it is not inevitable that the HPAI in Russia will spread to Europe by the many birds that migrate across Europe and other methods of spread may be more important. For example either smuggling of infected birds or raw bird products or legitimate commercial movements of birds where it is not realised that they are infected.

Possible transmission from birds to humans

24. Despite many tens of millions of cases of H5N1 influenza estimated among birds, to date only 112 humans have been reported as being infected in four of the affected countries (Cambodia, Indonesia, Thailand and Viet Nam), and 57 of these are known to have died showing the virus is currently highly pathogenic to humans.
25. The vast majority of cases have had close contact with affected birds or their waste products.
26. The Netherlands experienced an outbreak of another Highly Pathogenic Avian Influenza (A/H7N7) in poultry farms in 2003 which was controlled by the culling of millions of birds. The Dutch outbreak is thought to have caused mild disease in at least 89 people. However it also killed one previously well Dutch veterinary officer.
27. Human-to-human transmission of A/H5N1 has occurred in Thailand and Viet Nam, but only very rarely and there have been no chains of transmission.

Avian Influenza in Russia and Kazakhstan

28. More recently it has been reported that A/H5N1 has been recognized in some birds found dead or dying in Eastern Russia (East of the Urals) and Kazakhstan. Initial results from Russia strongly suggests there is some A/H5N1 present in that area. However caution is needed around even this conclusion until the virus is typed and confirmed by one of the global network of international reference laboratories under the United Nations World Health Organization (WHO) and Food & Agriculture Organization (FAO) and Organization Mondiale de la Sante de Animale (OIE) .
29. In addition there are now reports of other groups of birds dying in other parts of Russia and one preliminary report from Finland (August 2005) of a dead bird with an . However such bird deaths are quite common and may be due to a variety of causes. The Finnish case is thought to be Low Pathogenic and does not necessarily mean that HPAI is widespread or spreading.
30. To date no human cases of A/H5N1 have been reported from Russia. WHO procedure is that if this occurred the infection would need to be confirmed outside the country in one of the international reference laboratories recommended by WHO before it was stated that human A/H5N1 had occurred.
31. Previous experience from South East Asia is that there will probably be people who experience respiratory infections in Russia who are suspected of having A/H5N1 but end up being found to be ill for another reason.
32. Because of the doubts that wild birds spread HPAI very well (see above) it is not inevitable that Europe will experience an epizootic of A/H5N1 bird influenza from Russia.
33. There is a need for strong collaboration between those specialising in Human and Animal health in the field of important zoonoses like HPAI
34. Current surveillance status [9.2.2005]

- a. **Seasonal influenza across Europe**

Very low levels as would be expected at this time of year in the Northern Hemisphere: see <http://www.who.int/csr/disease/influenza/update/en/index.html>

- b. **Avian influenza (A/H5N1) among birds**

The reports from the official Russian sources is that the numbers of deaths in birds is diminishing. There have been no new outbreaks in birds and no geographical spread. The sources also reported that surveillance among people around the reported bird outbreaks show no suspected cases. It should be noted that though there is some sequencing data from within Russia that would be compatible with highly pathogenic avian influenza (HPAI) no specimens have gone to reference laboratories outside Russia.

I.e. In terms of the presence of HPAI in birds the risk to the European Public from Avian Influenza in Russia seems to be currently receding

The current situation of the epizootic in Central Asia does not imply any immediate threat for European citizens or poultry workers but there remains a recommendation from the Commission meeting of August 25th to ensure all preparedness plans include provision for protecting those people who may be exposed to the virus.

- c. **Avian influenza (A/H5N1) among humans**

As of August 5th WHO has had reported 112 cases with 57 deaths from four countries http://www.who.int/csr/disease/avian_influenza/country/cases_table_2005_08_05/en/index.html

- d. **Alert Phase**

The Pandemic Phase remains Pandemic Alert Phase 3 (humans infected with only very occasional person to person spread) as defined by WHO see

http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5.pdf page 4

The Role of the European Centre for Disease Control and Prevention (ECDC)

35. ECDC's role is confined to advising and supporting on human health issues to ensure that surveillance and protective measures are standardised as far as possible across Europe.
36. To do this it works closely with Member States, WHO Europe and the European Commission Directorate General SANCO (both the units concerned with Human Disease and Animal Health and Welfare).

Conclusions, Implications and ECDC Risk Assessments for Human Disease

37. The risk for a pandemic influenza, which is being continuously monitored, has not changed with the appearance of A/H5N1 in Russia.
38. A possible extension of Highly Pathogenic Avian Influenza represents a different risk, low for human populations, but important for the poultry industry.
39. Extension of HPAI to other countries would have some serious implications for the health services in Europe in that countries like France and the UK looking for people returning from countries with HPAI with respiratory infections might need to consider many more people.
40. Risks for humans engaged in controlling a possible epidemic of HPAI in Europe among birds would be low. They would be further reduced through the application of effective protective equipment and possibly also the use of antivirals. The potential threat of the HPAI recombining with seasonal influenza would be reduced by ensuring all those exposed to HPAI are immunised against seasonal influenza. They might also be required to take antivirals as well as use protective equipment.
41. Should an outbreak of HPAI in Europe occur it would also be necessary to mount surveillance among exposed humans to detect and treat any cases of avian influenza jumping the species barrier.
42. Drawing on guidance developed by the Netherlands and Canada the ECDC and the Commission are making sure that Member States have all the guidance they may need to minimize the impact on human health

Developed by ECDC

30 August 2005

Comments on these fact sheets are welcomed – please send to influenza@ecdc.eu.int