Understanding the risks of the spread of the avian flu virus

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Although no cases of avian flu have been reported in the UK the virus has spread outside south-east Asia, where it was first reported. Approximately 177 cases of human infection with the highly infectious and pathogenic H5N1 strain had been reported to the World Health Organization by mid-March 2006, 98 of which were fatal. Until early 2006 all human infections had occurred in south-east Asia. However, in January there were 12 confirmed cases in Turkey, of which four were fatal, and two in Iraq, which were also fatal (WHO, 2006).

Nurses are likely to be asked by patients about the risks of avian flu spreading to the UK, what steps should be taken to prevent or manage infection, and whether travel to affected countries is advisable. This resource answers key questions nurses may be asked and gives sources of up-to-date and more detailed information.

What is avian flu?
Avian flu is caused by influenza viruses that occur naturally in birds – they are categorised as low-pathogenicity avian influenza (LPAI) or high-pathogenicity avian influenza (HPAI). Many wild birds are thought to carry LPAIs without experiencing sickness. There is evidence that migratory birds can transmit LPAIs to domestic poultry. Initially they cause only mild symptoms and may not be detected but they appear able to mutate quickly to become highly pathogenic. These HPAIs have a high mortality rate.

There are several subtypes of avian flu virus – the one causing fears of a global human pandemic is H5N1, an HPAI virus that appears to be able to jump the species barrier to humans, in which it has a high mortality rate. The current outbreaks of H5N1, which began in south-east Asia in 2003, are the largest and most severe avian flu epidemics on record. The virus is extremely difficult to control. Despite the death or destruction of 150 million birds, it is now endemic in many parts of south-east Asia and it is expected that it will take several years to bring the virus under control.

How is it transmitted to humans?
Most humans infected with H5N1 have been in close contact with infected birds or with surfaces or objects contaminated with the birds’ faeces, which contains large amounts of virus (Department for Environment, Food and Rural Affairs, 2006). There have been a few cases of human-to-human transmission, but this has not extended beyond one person. It is not clear why some people have been infected while others who have had similar contact with infected birds have not.

What are the symptoms?
The H5N1 virus appears to have a longer incubation period than human influenza, which usually causes symptoms within two to three days of infection. Its...
incubation is thought to be two to eight days but may be up to 17 days. Initial symptoms include a high fever and typical flu symptoms. Diarrhoea, vomiting, abdominal pain, chest pain and bleeding from the nose and gums have also been reported. Not all patients have experienced respiratory problems. Unlike most flu viruses, H5N1 has largely affected previously healthy children and young adults, although it is not known why.

**What treatment is available?**

There is some evidence that oseltamivir (tamiflu) may slow virus replication and improve the chances of survival if administered within 48 hours of symptoms appearing. Clinical management focuses on treating symptoms – for example using antibiotics to treat secondary chest infections – and isolation to prevent transmission to others. A vaccine cannot be developed until a new virus emerges – the current human flu vaccines will not give protection.

**Why might H5N1 cause a pandemic?**

Although infection currently only occurs if people have close contact with infected birds, flu viruses can mutate rapidly and there are concerns that H5N1 will become easily transmissible between humans in one of two ways:

- If a person is infected simultaneously with human flu and H5N1 the viruses could exchange genes to form a new subtype that is highly transmissible – this may spread quickly and we would have little natural immunity to it;
- The virus may undergo further mutation each time it infects another human to increase its ability to bind to human cells – initially this would probably result in small clusters of human cases in which there was evidence of human-to-human transmission, and would probably give the world time to take defensive action.

Three conditions are necessary for a flu pandemic:

- The emergence of a new flu virus subtype;
- This infects humans, causing serious illness;
- It spreads easily and sustainably among humans.

**References**


*This article has been double-blind peer-reviewed.*

For related articles on this subject and links to relevant websites see www.nursingtimes.net

**Box 1. Precautions to be taken in affected countries (DH, 2006)**

- Avoid live animal markets and poultry farms
- Avoid close contact with either live or dead poultry
- Do not eat raw or poorly cooked poultry or poultry products, including blood
- Wash your hands frequently with soap and water

The H5N1 virus already meets the first two conditions. If it becomes easily transmissible a pandemic is possible, and this risk will persist until the virus is brought under control in poultry.

**Why are flu pandemics so serious?**

Flu pandemics can quickly spread worldwide. Once they spread internationally they are considered unstoppable because the flu virus spreads rapidly through coughing or sneezing. Infected people can also shed the virus before they have any symptoms, which increases the risk of international spread via asymptomatic air travellers.

The severity of disease and the number of deaths caused by a pandemic virus vary and until the virus emerges these are impossible to predict. Previous pandemics have affected 25-35% of the population. Even if the new virus caused only mild disease the WHO estimates it would kill 2-7.4 million people worldwide. The 1918-1919 pandemic, which was exceptionally severe, killed at least 40 million people.

The first measure to prevent a pandemic is to reduce the risk of human contact with H5N1 by identifying outbreaks in poultry, culling the affected bird population and disposing of carcasses safely. The WHO is stockpiling antiviral medications to use prophylactically near the start of a pandemic. This may reduce the risk of a fully transmissible virus or delay its spread giving more time to develop and produce enough doses of an effective vaccine. However, this strategy has never been tested and its success depends on factors including excellent surveillance to identify the emergence of a transmissible virus and the ability to enforce movement restrictions in and out of affected areas.

**Travel to affected countries**

Infection with H5N1 is unlikely unless you are in contact with or within one metre of an infected bird. It is advisable to avoid affected regions. The Department of Health provides advice on precautions when travelling to affected countries (Box 1).

**Is it safe to eat poultry?**

The UK and the EU have banned imports of poultry from affected countries so there should be no risk of contracting H5N1 from poultry in the UK. There is no evidence that infection can be caused by eating properly cooked poultry or eggs, so this should be safe in affected countries provided meat has no red or pink areas visible, and eggs are fully cooked with solid yolks. Strict hygiene is essential in preparation – for example separate chopping boards for cooked and raw meat will prevent cross-contamination from raw poultry juices coming into contact with cooked meats. People involved in food preparation should wash their hands thoroughly and clean and disinfect surfaces in contact with poultry.