Questions and Answers About Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) Virus

What is avian influenza (bird flu)?
Avian influenza is an infection caused by avian (bird) influenza (flu) viruses. These flu viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Infection with avian influenza viruses in domestic poultry causes two main forms of disease that are distinguished by low and high extremes of virulence. The “low pathogenic” form may go undetected and usually causes only mild symptoms (such as ruffled feathers and a drop in egg production). However, the “highly pathogenic” form spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can reach 90-100%, often within 48 hours.

How does avian influenza spread among birds?
Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated excretions or with surfaces that are contaminated with excretions or secretions. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus.

Do avian influenza viruses infect humans?
Bird flu viruses do not usually infect humans, but more than 170 confirmed cases of human infection with bird flu viruses have occurred since 1997. The World Health Organization (WHO) maintains situation updates and cumulative reports of human cases of avian influenza A (H5N1). Please visit these and previous WHO situation updates and cumulative reports for additional information.

How do people become infected with avian influenza viruses?
Most cases of avian influenza infection in humans have resulted from direct or close contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces contaminated with secretions and excretions from infected birds. The spread of avian influenza viruses from an ill person to another person has been reported very rarely, and transmission has not been observed to continue beyond one person. During an outbreak of avian influenza among poultry, there is a possible risk to people who have direct or close contact with infected birds or with surfaces that have been contaminated with secretions and excretions from infected birds.

What are the symptoms of avian influenza in humans?
Symptoms of avian influenza in humans have ranged from typical human influenza-like symptoms (fever, cough, sore throat, and muscle aches) to eye infections, pneumonia, severe respiratory diseases (such as acute respiratory distress syndrome), and other severe and life-threatening complications. The symptoms of avian influenza may depend on which specific virus subtype and strain caused the infection.

How is avian influenza detected in humans?
A laboratory test is needed to confirm avian influenza in humans.

What are the implications of avian influenza to human health?
Two main risks for human health from avian influenza are 1) the risk of direct infection when the virus passes from the infected bird to humans, sometimes resulting in severe disease; and 2) the risk that the virus (if given enough opportunities) will change into a form that is highly infectious for humans and spreads easily from person to person.

How is avian influenza in humans treated?
Studies done in laboratories suggest that the prescription medicines approved for human influenza viruses should work in treating avian influenza infection in humans. However, influenza viruses can become resistant to these drugs, so these medications may not always work. Additional studies are needed to determine the effectiveness of these medicines.

Does the current seasonal influenza vaccine protect me from avian influenza?
No. Influenza vaccine for the 2005-06 season does not provide protection against avian influenza.
Should I wear a surgical mask to prevent exposure to avian influenza?
Currently, wearing a mask is not recommended for routine use (e.g., in public) for preventing influenza exposure. In the United States, disposable surgical and procedure masks have been widely used in health-care settings to prevent exposure to respiratory infections, but the masks have not been used commonly in community settings, such as schools, businesses, and public gatherings.

Is there a risk for becoming infected with avian influenza by eating poultry?
There is no evidence that properly cooked poultry or eggs can be a source of infection for avian influenza viruses. For more information about avian influenza and food safety issues, visit the World Health Organization website.

The U.S. government carefully controls domestic and imported food products, and in 2004 issued a ban on importation of poultry from countries affected by avian influenza viruses, including the H5N1 strain. This ban still is in place. For more information, see Embargo of Birds, [http://www.cdc.gov/flu/avian/outbreaks/embargo.htm](http://www.cdc.gov/flu/avian/outbreaks/embargo.htm).

We have a small flock of chickens. Is it safe to keep them?
Yes. In the United States there is no need at present to remove a flock of chickens because of concerns regarding avian influenza. The U.S. Department of Agriculture monitors potential infection of poultry and poultry products by avian influenza viruses and other infectious disease agents.

What precautions can be taken to reduce the risk for infection from wild birds in the United States?
As a general rule, the public should observe wildlife, including wild birds, from a distance. This protects you from possible exposure to pathogens and minimizes disturbance to the animal. Avoid touching wildlife. If there is contact with wildlife do not rub eyes, eat, drink, or smoke before washing hands with soap and water. Do not pick up diseased or dead wildlife. Contact your state, tribal, or federal natural resource agency if a sick or dead animal is found.

What precautions can hunters take to reduce the risk for infection when hunting birds in the United States?
Hunters should follow routine precautions when handling game, including wild birds. The National Wildlife Health Center recommends that hunters:

- Do not handle or eat sick game.
- Wear rubber or disposable latex gloves while handling and cleaning game, wash hands with soap and water (or with alcohol-based hand products if the hands are not visibly soiled), and thoroughly clean knives, equipment and surfaces that come in contact with game.
- Do not eat, drink, or smoke while handling animals.
- Cook all game thoroughly.

Avian Influenza A (H5N1)

What is the avian influenza A (H5N1) virus that has been reported in Africa, Asia, Europe, and the Near East?
Influenza A (H5N1) virus (also called “H5N1 virus”) is an influenza A virus subtype that occurs mainly in birds, is highly contagious among birds, and can be deadly to them.

Outbreaks of avian influenza H5N1 occurred among poultry in eight countries in Asia (Cambodia, China, Indonesia, Japan, Laos, South Korea, Thailand, and Vietnam) during late 2003 and early 2004. At that time, more than 100 million birds in the affected countries either died from the disease or were killed in order to try to control the outbreaks. By March 2004, the outbreak was reported to be under control.

Since late June 2004, however, new outbreaks of influenza H5N1 among poultry and wild birds have been reported in countries in Africa, Asia, Europe, and the Near East.

Human cases of influenza A (H5N1) infection have been reported in Cambodia, China, Indonesia, Iraq, Thailand, Turkey, and Vietnam. For the most current information about avian influenza and cumulative case numbers, see the World Health Organization website at [http://www.who.int/csr/disease/avian_influenza/en/](http://www.who.int/csr/disease/avian_influenza/en/).

What are the risks to humans from the current H5N1 outbreak?
H5N1 virus does not usually infect people, but more than 170 human cases have been reported. Most of these cases have occurred from direct or close contact with infected poultry or contaminated surfaces; however, a few cases of human-to-human spread of H5N1 virus have occurred.

So far, spread of H5N1 virus from person to person has been rare and has not continued beyond one person. Nonetheless, because all influenza viruses have the ability to change, scientists are concerned that H5N1 virus one day could be able to infect humans and spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population.
If H5N1 virus were to gain the capacity to spread easily from person to person, an influenza pandemic (worldwide outbreak of disease) could begin. No one can predict when a pandemic might occur. However, experts from around the world are watching the H5N1 situation in Asia and Europe very closely and are preparing for the possibility that the virus may begin to spread more easily from person to person.

**How does H5N1 virus differ from seasonal influenza viruses that infect humans?**

Of the few avian influenza viruses that have crossed the species barrier to infect humans, H5N1 virus has caused the largest number of reported cases of severe disease and death in humans. In the current situation in Asia, more than half of the people infected with the virus have died. Most cases have occurred in previously healthy children and young adults. However, it is possible that the only cases currently being reported are those in the most severely ill people and that the full range of illness caused by the H5N1 virus has not yet been defined.

Unlike seasonal influenza, in which infection usually causes only mild respiratory symptoms in most people, H5N1 infection may follow an unusually aggressive clinical course, with rapid deterioration and high fatality. Primary viral pneumonia and multi-organ failure have been common among people who have become ill with H5N1 influenza.

**How is infection with H5N1 virus in humans treated?**

Most H5N1 viruses that have caused human illness and death appear to be resistant to amantadine and rimantadine, two antiviral medications commonly used for treatment of patients with influenza. Two other antiviral medications, oseltamivir and zanamavir, would probably work to treat influenza caused by H5N1 virus, but additional studies are needed to demonstrate their current and ongoing effectiveness.

**Is there a vaccine to protect humans from H5N1 virus?**

There is currently no commercially available vaccine to protect humans against the H5N1 virus that is being detected in Asia and Europe. However, vaccine development efforts are taking place. Research studies to test a vaccine that will protect humans against H5N1 virus began in April 2005, and a series of clinical trials is under way. For more information about the H5N1 vaccine development process, visit the National Institutes of Health website at [http://www3.niaid.nih.gov](http://www3.niaid.nih.gov).

**What does CDC recommend regarding H5N1 virus?**

In February 2004, CDC provided U.S. public health departments with recommendations for enhanced surveillance (“detection”) of H5N1 influenza in the country. Follow-up messages, distributed via the Health Alert Network, were sent to the health departments on August 12, 2004, and February 4, 2005; both alerts reminded public health departments about recommendations for detecting (domestic surveillance), diagnosing, and preventing the spread of H5N1 virus. The alerts also recommended measures for laboratory testing for H5N1 virus. To read the alerts, visit Health Updates on Avian Influenza.

**Does CDC recommend travel restrictions to areas with known H5N1 outbreaks?**

CDC does not recommend any travel restrictions to affected countries at this time. However, CDC currently advises that travelers to countries with known outbreaks of H5N1 influenza avoid poultry farms, contact with animals in live food markets, and any surfaces that appear to be contaminated with feces from poultry or other animals. For more information, visit Travelers Health.

**Is there a risk in handling feather products that come from countries experiencing outbreaks of avian influenza A (H5N1)?**

The U.S. government has determined that there is a risk to handling feather products from countries experiencing outbreaks of H5N1 influenza.

There is currently a ban on the importation of birds and bird products from H5N1-affected countries in Africa, Asia, and Europe. The regulation states that no person may import or attempt to import any birds (Class Aves), whether dead or alive, or any products derived from birds (including hatching eggs), from the following countries: Albania, Azerbaijan, Burma (Myanmar), Cambodia, Cameroon, China, Egypt, France (USDA-defined restriction zone only), India, Indonesia, Japan, Laos, Kazakhstan, Malaysia, Niger, Nigeria, Romania, Russia, South Korea, Thailand, Turkey, Ukraine, and Vietnam (current as of March 15, 2006). This prohibition does not apply to any person who imports or attempts to import products derived from birds if, as determined by federal officials, such products have been properly processed to render them noninfectious so that they pose no risk of transmitting or carrying H5N1 and which comply with the U.S. Department of Agriculture (USDA) requirements. Therefore, feathers from these countries are banned unless they have been processed to render them noninfectious. Additional information about the import ban is available on the USDA website.

**Is there a risk to importing pet birds that come from countries experiencing outbreaks of avian influenza A (H5N1)?**

The U.S. government has determined that there is a risk to importing pet birds from countries experiencing outbreaks of H5N1 influenza. CDC and USDA have both taken action to ban the importation of birds from areas where H5N1 has been documented. There is currently a ban on the importation of birds and bird products from H5N1-affected countries in Africa, Asia, and Europe. The regulation states that no person may import or attempt to import any birds (Class Aves), whether dead or alive, or any products derived from birds (including hatching eggs), from the following countries: Albania, Azerbaijan, Burma (Myanmar), Cambodia, Thailand, Turkey, Ukraine, and Vietnam (current as of March 15, 2006). This prohibition does not apply to any person who imports or attempts to import products derived from birds if, as determined by federal officials, such products have been properly processed to render them noninfectious so that they pose no risk of transmitting or carrying H5N1 and which comply with the U.S. Department of Agriculture (USDA) requirements. Therefore, feathers from these countries are banned unless they have been processed to render them noninfectious. Additional information about the import ban is available on the USDA website.
Can a person become infected with avian influenza A (H5N1) virus by cleaning a bird feeder?
There is no evidence of H5N1 having caused disease in birds or people in the United States. At the present time, the risk of becoming infected with H5N1 virus from bird feeders is low. Generally, perching birds (Passeriformes) are the predominate type of birds at feeders. While there are documented cases of H5N1 causing death in some Passeriformes (e.g., house sparrow, Eurasian tree-sparrow, house finch), in both free-ranging and experimental settings, most of the wild birds that are traditionally associated with avian influenza viruses are waterfowl and shore birds.

Influenza Pandemic Preparedness

What changes are needed for H5N1 or another avian influenza virus to cause a pandemic?
Three conditions must be met for a pandemic to start: 1) a new influenza virus subtype must emerge; 2) it must infect humans and causes serious illness; and 3) it must spread easily and sustainedly (continue without interruption) among humans. The H5N1 virus in Asia and Europe meets the first two conditions: it is a new virus for humans (H5N1 viruses have never circulated widely among people), and it has infected more than 100 humans, killing over half of them.

However, the third condition, the establishment of efficient and sustained human-to-human transmission of the virus, has not occurred. For this to take place, the H5N1 virus would need to improve its transmissibility among humans. This could occur either by “reassortment” or adaptive mutation.

Reassortment occurs when genetic material is exchanged between human and avian viruses during co-infection (infection with both viruses at the same time) of a human or pig. The result could be a fully transmissible pandemic virus (that is, a virus that can spread easily and directly to humans). A more gradual process is adaptive mutation, where the capability of a virus to bind to human cells increases during infections of humans.

What is CDC doing to prepare for a possible H5N1 influenza pandemic?
CDC is taking part in a number of pandemic prevention and preparedness activities, including the following:

- Providing leadership to the National Pandemic Influenza Preparedness and Response Task Force, created in May 2005 by the Secretary of the U.S. Department of Health and Human Services.
- Working with the Association of Public Health Laboratories on training workshops for state laboratories on the use of special laboratory (molecular) techniques to identify H5 viruses.
- Working with the Council of State and Territorial Epidemiologists and others to help states with their pandemic planning efforts.
- Working with other agencies, such as the Department of Defense and the Veterans Administration, on antiviral stockpile issues.
- Working with the World Health Organization (WHO) to investigate influenza H5N1 among people (e.g., in Vietnam) and to provide help in laboratory diagnostics and training to local authorities.
- Performing laboratory testing of H5N1 viruses.
- Starting a $5.5 million initiative to improve influenza surveillance in Asia.
- Holding or taking part in training sessions to improve local capacities to conduct surveillance for possible human cases of H5N1 and to detect influenza A H5 viruses by using laboratory techniques.
- Developing and distributing reagent kits to detect the currently circulating influenza A H5N1 viruses.

CDC also is working closely with WHO and the National Institutes of Health on safety testing of vaccine candidates and development of additional vaccine virus seed candidates for influenza A (H5N1) and other subtypes of influenza A viruses.

Avian Influenza Infection in Animals

What animals can be infected with avian influenza A (H5N1) viruses?
In addition to humans and birds, we know that pigs, tigers, leopards, ferrets, and household cats can be infected with avian influenza A (H5N1) viruses. In addition, in early March 2006, Germany reported H5N1 infection in a stone marten (a weasel-like mammal). It's possible that other mammals may be susceptible to avian influenza A (H5N1) infection as well.

Can cats be infected with avian influenza viruses?
While household cats are not usually susceptible to influenza type-A infection, studies have shown that they can be infected with avian influenza A (H5N1) viruses and can spread the virus to other cats.
How do cats become infected with avian influenza A (H5N1) viruses?
All of the cases of influenza A (H5N1) infection in household cats reported to date have been associated with H5N1 outbreaks among domestic poultry or wild birds and are thought to have occurred by the cat eating raw infected meat.

How commonly have cats been infected with avian influenza A (H5N1) viruses?
During the avian influenza A (H5N1) outbreak that occurred from 2003 to 2004 in Asia, there were only several unofficial reports of fatal infections in domestic cats. Studies carried out in the Netherlands and published in 2004 showed that housecats could be infected with avian influenza A (H5N1) and could spread the virus to other housecats. In these experiments, the cats became sick after direct inoculation of virus isolated from a fatal human case, and following the feeding of infected raw chicken. In February 2006, Germany reported that a domestic cat had died from influenza A (H5N1) infection. That cat lived in the northern island of Ruegen, where more than 100 wild birds are believed to have died of the disease. The cat probably got sick by eating an infected bird.

What about infection in large cats, like tigers?
Large cats kept in captivity have been diagnosed with avian influenza as well. In December 2003, two tigers and two leopards that were fed fresh chicken carcasses from a local slaughterhouse died at a zoo in Thailand. An investigation identified avian influenza A (H5N1) in tissue samples. In February and March 2004, the virus was detected in a clouded leopard and white tiger, respectively, both of which died in a zoo near Bangkok. In October 2004, 147 of 441 captive tigers in a zoo in Thailand died or were euthanatized as a result of infection after being fed fresh chicken carcasses. The cats are thought to have gotten sick from eating infected raw meat. Results of a subsequent investigation suggested that at least some tiger-to-tiger transmission occurred in that facility.

Can cats spread H5N1 to people?
There is no evidence to date that cats can spread H5N1 to humans. No cases of avian influenza in humans have been linked to exposure to sick cats, and no outbreaks among populations of cats have been reported. All of the influenza A (H5N1) infections in cats reported to date appear to have been associated with outbreaks in domestic or wild birds and acquired through ingestion of raw infected meat.

What is the current risk that a cat will become infected with influenza A (H5N1) virus in the United States?
Influenza A (H5N1) virus has not been identified in the United States, so at this time there is no known risk of a U.S. cat becoming infected with this virus.

If avian influenza A (H5N1) is identified in the United States, how can I protect my cat?
As long as there is no H5N1 influenza in the United States, at this time there is no risk of a U.S. cat becoming infected with this disease. In Europe, however, where H5N1 has been reported in wild birds, poultry, several cats, and a stone marten (a member of the weasel family), the European Center for Disease Prevention and Control has issued preliminary recommendations for cat owners living in H5N1-affected areas. These include keeping household cats indoors to prevent exposure to potentially infected birds.

Where can I find out more information about avian influenza infection in cats?

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Some additional websites for more information:

For all your health care needs, Student Health Services is located in the A.P. Beutel Health Center and can be reached at (979) 845-1511.