

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

Avian Influenza

How is avian influenza detected in humans?

Avian influenza cannot be diagnosed by symptoms alone, so a laboratory test is required. Avian influenza is usually diagnosed by collecting a swab from the nose or throat during the first few days of illness. This swab is then sent to a laboratory, where they will either look for avian influenza virus using a molecular test, or they will try to grow the virus. Growing avian influenza viruses should only be done in laboratories with high levels of protection. If it is late in the illness, it may be difficult to find an avian influenza virus directly using these methods. If this is the case, it may still be possible to diagnose avian influenza by looking for evidence of the body's response to the virus. This is not always an option because it requires two blood specimens (one taken during the first few days of illness and another taken some weeks later), and it can take several weeks to verify the results.

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 seasonal influenza vaccine protect against avian influenza infection in people?

No. Seasonal influenza vaccine 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.

Can I get avian influenza from eating or preparing poultry or eggs?

You cannot get avian influenza from properly handled and cooked poultry and eggs.

There currently is no scientific evidence that people have been infected with bird flu by eating safely handled and properly cooked poultry or eggs.

Most cases of avian influenza infection in humans have resulted from direct or close contact with infected poultry or surfaces contaminated with secretions and excretions from infected birds. Even if poultry and eggs were to be contaminated with the virus, proper cooking would kill it. In fact, recent studies have shown that the cooking methods that are already recommended by the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) for poultry and eggs to prevent other infections will destroy influenza viruses as well.

So to stay safe, the advice is the same for protecting against any infection from poultry:

- Wash your hands with soap and warm water for at least 20 seconds before and after handling raw poultry and eggs.
- Clean cutting boards and other utensils with soap and hot water to keep raw poultry from contaminating other foods.
- Use a food thermometer to make sure you cook poultry to a temperature of at least 165 degrees Fahrenheit. Consumers may wish to cook poultry to a higher temperature for personal preference.

- Cook eggs until whites and yolks are firm.

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 USDA's [Animal and Animal Product Import](#).

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.

For additional information about avian influenza, visit pandemicflu.gov.

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.

Beginning in June 2004, however, new outbreaks of influenza H5N1 among poultry and wild birds were reported in Asia. Since that time, the virus has spread geographically. Reports of H5N1 infection in wild birds in Europe began in mid-2005. In early 2006, influenza A H5N1 infection in wild birds and poultry were reported in Africa and the Near East.

Human cases of influenza A (H5N1) infection have been reported in Azerbaijan, Bangladesh, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Lao People's Democratic Republic, Myanmar, Nigeria, Pakistan, Thailand, Turkey, and Vietnam. For the most current information about avian influenza and cumulative case numbers, see the [World Health Organization Avian Influenza website](#).

What are the risks to humans from the current H5N1 outbreak?

H5N1 virus does not usually infect people, but since November 2003, nearly 400 cases of human infection with highly pathogenic avian influenza A (H5N1) viruses have been reported by more than a dozen countries in Asia, Africa, the Pacific, Europe and the Near East. Highly pathogenic avian influenza A (H5N1) viruses have never been detected among wild birds, domestic poultry, or people in the United States. 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, limited and unsustainable. 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 very closely and are preparing for the possibility that the virus may begin to spread more easily from person to person.

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 zanamivir, 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 people from some strains of the H5N1 virus?

Yes. On April 17, 2007, the U.S. Food and Drug Administration (FDA) announced its approval of the first vaccine to prevent human infection with one strain of the avian influenza (bird flu) H5N1 virus. The vaccine, produced by sanofi pasteur, Inc., has been purchased by the federal government for the U.S. Strategic National Stockpile; it will be distributed by public-health officials if needed. This vaccine will not be made commercially available to the general public. Other H5N1 vaccines are being developed by other companies against different H5N1 strains. For more information about the sanofi pasteur, Inc. vaccine, see [FDA Approves First U.S. Vaccine for Humans Against the Avian Influenza Virus H5N1](#). For information about other H5N1 and pandemic flu vaccine research activities visit [Vaccine Research](#).

What is the benefit of the FDA-approved H5N1 vaccine produced by sanofi pasteur Inc?

The H5N1 vaccine approved by the U.S. Food and Drug Administration (FDA) on April 17, 2007, was developed as a safeguard against the possible emergence of an H5N1 pandemic virus. However, the H5N1 virus is not a pandemic virus because it does not transmit efficiently from person to person, so the H5N1 vaccine is being held in stockpiles rather than being used by the general public. This vaccine aids H5N1 preparedness efforts in case an H5N1 pandemic virus were to emerge.

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, February 4, 2005, and June 7, 2006; all three notices reminded public health departments about recommendations for detecting (domestic surveillance), diagnosing, and preventing the spread of H5N1 virus. The notices also recommended measures for laboratory testing for H5N1 virus. To read these notices, 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, East Asia and the Pacific, Europe and Eurasia, Near East, and South Asia. 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 specified countries. For more information see USDA's [Animal and Animal Product Import](#). 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 for [Animal and Plant Health Inspection Service](#).

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 specified countries. For more information, see USDA's [Animal and Animal Product Import](#).

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, there is no risk of becoming infected with H5N1 virus from bird feeders. 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, none occurred in the U.S. and 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 for which there is little or no human immunity; 2) it must infect humans and causes illness; and 3) it must spread easily and sustainably (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 190 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 another mammal. The result could be a fully transmissible pandemic virus—that is, a virus that can spread easily and directly between 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 has developed and is distributing the first FDA approved test for the detection of the H5 viruses that first emerged in Asia in 2003.

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 domestic 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). The avian influenza A (H5N1) virus that emerged in Asia in 2003 is evolving and it's possible that other mammals may be susceptible to infection as well. CDC is

working closely with domestic and international partners to continually monitor this situation and will provide additional information to the public as it becomes available.

Can domestic cats be infected with avian influenza viruses?

While domestic cats are not usually susceptible to influenza type A infection, it is known that they can become infected and die (both experimentally and naturally) with avian influenza A (H5N1) viruses and, in a laboratory/research setting can spread the virus to other cats. It is not known whether domestic cats can spread the virus to other domestic cats under natural conditions.

How do cats become infected with avian influenza A (H5N1) viruses?

All of the cases of influenza A (H5N1) infection in domestic 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 birds.

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 euthanized 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 meat from an infected bird.

What is the risk to humans or other species from cats infected with avian influenza H5N1 virus?

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 in the United States will become infected with influenza A (H5N1)?

As long as there is no influenza A (H5N1) in the United States, there is no risk of a U.S. cat becoming infected with this disease. The virus circulating in Asia, Europe and Africa has not yet entered the United States. CDC is working closely with domestic and international partners to continually monitor this situation and will provide additional information to the public as it becomes available.

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. Additionally, the Food and Agriculture Organization has produced guidance for areas where H5N1 HPAI has been diagnosed or is suspected in poultry or wild birds.

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

For more information about avian influenza in cats, see [Avian influenza — Frequently asked questions \(from the American Veterinary Medical Association\)](#).

Can dogs be infected with avian influenza?

While dogs are not usually susceptible to avian influenza viruses, the avian influenza A (H5N1) virus that emerged in Asia in 2003 has been documented to infect other carnivore species (e.g. cats, tigers, leopards, stone martens). This has raised concern that this strain of avian influenza A (H5N1) virus may be capable of infecting dogs. An unpublished study carried out in 2005 by the National Institute of Animal Health in Bangkok indicated that dogs could be infected with the virus, but no associated disease was detected. This limited information is not enough to determine definitively whether dogs are susceptible to the virus. CDC is coordinating with USDA, veterinary associations, and other partners domestically and internationally on this issue and will provide additional information to the public as it becomes available.

How would dogs be infected with avian influenza A (H5N1)?

There is not enough information available about avian influenza A (H5N1) infection in dogs to know how infection would occur. Affected domestic cats in Europe appear to have become infected by feeding upon raw infected poultry or wild birds. If dogs are susceptible to avian influenza A (H5N1), infection may be by the same route.

What is the current risk that a dog in the United States will become infected with avian influenza A (H5N1)?

As long as there is no influenza A (H5N1) in the United States, there is no risk of a U.S. dog becoming infected with this disease. The virus circulating in Asia, Europe and Africa has not yet entered the United States. CDC is working closely with domestic and international partners to continually monitor this situation and will provide additional information to the public as it becomes available.

SOURCE: The Centers for Disease Control and Prevention's Web site, <http://www.cdc.gov/flu/avian/gen-info/qa.htm>.