Frequently Asked Questions on human infection caused by the avian influenza A(H7N9) virus

Update as of 14 February 2014

Note that this document supersedes the previous version. Updates will be posted as new information becomes available.

1. What is the avian influenza A(H7N9) virus?
   Avian influenza viruses normally circulate among birds. Although some avian H7 viruses (H7N2, H7N3 and H7N7) have occasionally been found to infect humans, no human infections with H7N9 viruses were reported until reports from China in March 2013.

2. What are the main symptoms of human infection with this H7N9 virus?
   Thus far, most patients with this infection have had severe pneumonia. Common symptoms include fever, cough and shortness of breath. We know of only a small number of people who presented with influenza-like symptoms and then recovered without medical attention.

3. How many human cases of H7N9 virus infection have been reported in China to date?
   New cases that are reported are regularly compiled and posted. The most current information on cases can be found in:
   Disease Outbreak News (DONs)

4. Why is this virus infecting humans now?
   This virus was not previously known to be circulating in poultry or other animals. It is not known why some influenza viruses circulating in animals are better able to cross the species barrier and infect humans than others. WHO and animal health partners monitor these viruses continually throughout the world, to try to understand these questions better.

5. What is known about previous human infections with H7 influenza viruses globally?
   From 1996 to 2012, human infections with H7 avian influenza viruses (H7N2, H7N3, and H7N7) were reported in Canada, Italy, Mexico, the Netherlands, the United Kingdom, and the United States of America. Most of these infections occurred in association with poultry outbreaks. The infections resulted mainly in conjunctivitis and mild upper respiratory symptoms, with the exception of one death, which occurred in a veterinarian in the Netherlands. Until March 2013, no human infections with avian influenza A(H7N9) viruses had been reported in the world.

6. Is the H7N9 virus different from influenza A(H1N1) and A(H5N1) viruses?
   Yes. All three viruses are influenza A viruses but they are distinct from each other. H7N9 and H5N1 viruses are considered animal influenza viruses that sometimes infect people. H1N1 viruses can be divided into those that normally infect people and those that normally infect animals.

7. How are people becoming infected with H7N9 virus?
   The available epidemiological and virological information strongly indicates that most known human H7N9 infections result from direct contact with infected poultry, or indirect contact...
with infected poultry (for example, by visiting wet markets and having contact with environments where infected poultry have been kept or slaughtered). A minority of cases appear to have resulted from limited person to person transmission. Because H7N9 infections do not cause severe disease in poultry, this infection can spread “silently” among poultry. Under such circumstances, the exact exposure for individual cases of human infection may be difficult to establish.

Although there have been clusters* of infection (infections in people in close proximity to one another), the virus does not appear to transmit easily from one person to another and further, onward, or sustained human-to-human transmission has not been reported despite investigations and follow up of cases and close contacts of cases.

* A “cluster” is defined as two or more persons with onset of symptoms within the same 14-day period and who are associated with a specific setting, such as a classroom, workplace, household, extended family, hospital, other residential institution, military barracks or recreational camp.

8. How can infection with H7N9 virus be prevented?

It is always prudent to follow basic hygienic practices to prevent infection. They include ensuring hand and respiratory hygiene and taking food-safety precautions.

**Hand hygiene**

- Wash your hands before, during, and after you prepare food; before you eat; after you use the toilet; after handling animals or animal waste; when your hands are dirty; and before and after providing care to anyone in your home who is sick. Hand hygiene will also prevent the spread of infections to yourself (from touching contaminated surfaces) and in hospitals to patients, health care workers and others.

- Wash your hands with soap and running water when hands are visibly dirty; if hands are not visibly dirty, wash them with soap and water or use an alcohol-based hand cleanser.

**Respiratory hygiene**

- When coughing or sneezing, the person should cover her/his mouth and nose with a medical mask, tissue, or a sleeve or flexed elbow; throw the used tissue into a closed bin immediately after use; perform hand hygiene after contact with respiratory secretions.

**Food safety**

- (see below: 9 & 10)

9. Is it safe to eat meat/animal products, for example, poultry, eggs, and pork?

- Because influenza viruses are inactivated by normal temperatures used for cooking, meat products and eggs can be safely consumed provided they are properly handled during food preparation and thoroughly cooked (so that food reaches 70°C in all parts, e.g. poultry meat is not pink). In areas experiencing outbreaks, the consumption of raw or incompletely cooked meat products and eggs is a high-risk practice and should be discouraged.

- Animals that are clearly sick or that have died of diseases or died unexpectedly should not be eaten.

10. How can meat and eggs be safely prepared?

Always keep raw meat and eggs separate from cooked or ready-to-eat foods to avoid contamination. Do not use the same chopping board or the same knife for raw meat and other foods. Do not handle both raw and cooked foods without washing your hands in between and do not place cooked meat back on the same plate or surface it was on before cooking. Do not use raw or soft-boiled eggs in food preparations that will not be heat treated or cooked. After handling...
raw meat, wash your hands thoroughly with soap and water. Wash and disinfect all surfaces and utensils that have been in contact with raw meat.

11. Is it safe to visit live poultry markets and farms in areas where human cases have been recorded?

When visiting markets where live poultry or other animals are sold, farms, and households keeping poultry, avoid direct contact with live animals and surfaces in contact with animals. Children should be kept away from sick and dead animals and should wash their hands before eating. If you live on a farm or keep poultry or other animals in your household or backyard, maintain good hygiene, especially wherever food is prepared and consumed, and report sick and dead animals immediately to local authorities. Sick animals should not be butchered and prepared for food.

12. Is the source of human infection poultry and live poultry markets?

Most known human infections result from direct or indirect contact with infected poultry or contaminated environments. A minority of cases appear to have resulted from limited person to person transmission. It cannot yet be confirmed that infected poultry are the only source of infection; and other possible animal or environmental sources of infection cannot be excluded.

13. Can closure of live bird markets affect the transmission of this virus?

In areas where virus is circulating, closure of markets where live birds are sold decreases both the potential exposure of humans. However, other measures taken in markets and along the market chain can also reduce these risks.

To maintain overall hygiene, experts recommend that markets where live birds are sold should be closed briefly on a regular basis, all birds temporarily removed, and markets thoroughly cleaned. Regular monitoring and testing of new birds brought into a market for sale can help ensure earlier detection and removal of influenza-infected birds.

Regular maintenance of live bird markets also ensures that economic disruption and consumer access to protein sources are minimized, and that the bird trade is not diverted into uncontrolled distribution and sales channels.

14. Is there a vaccine for the H7N9 virus?

Currently, no vaccine for the prevention of H7N9 infections in humans is commercially available. WHO is working with its partners for vaccine development and some products are now being tested for efficacy and safety.

15. Does treatment exist for H7N9 infection?

Laboratory testing shows that influenza antiviral medicines called neuraminidase inhibitors (e.g. oseltamivir, zanamivir) are effective against H7N9 but another class of antivirals, the adamantanes, are not. Among people with H7N9 infection in China, some of those who received early treatment with neuraminidase inhibitors have developed milder illness than those treated later on.

16. Is the general population at risk of infection with the H7N9 virus?

People are at risk of infection whenever avian influenza viruses are circulating among birds and people are exposed to infected birds or contaminated environments. Although there have been clusters of infection (infections in people in close proximity to another), this virus does not appear to transmit easily from person to person, and sustained human-to-human transmission has not been reported. It is possible that more human infections with H7N9 virus and other non-seasonal influenza subtypes will be detected given the increase in influenza-like infection and severe acute respiratory infection surveillance, testing, and subtyping of influenza A positive specimens throughout the world.

Continued ...
17. Are health care workers at risk of infection with the H7N9 virus?

Health care workers often come into contact with patients with infectious diseases. Therefore, WHO recommends that basic appropriate infection prevention and control measures (standard precautions) be consistently applied in all health care settings at all times, and that the health status of health care workers be closely monitored. Together with standard precautions, health care workers caring for those suspected or confirmed to have H7N9 infection should use additional precautions. See:

- Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care

18. What investigations have begun?

- Chinese Local and national health authorities are taking the following measures, among others:
  - Enhanced surveillance for pneumonia cases of unknown origin to ensure early detection and laboratory confirmation of new cases;
  - Epidemiological investigation, including assessment of suspected cases and contacts of known cases;
  - Close collaboration with animal health organisations to determine the source of the infection.

19. Does this influenza virus pose a pandemic threat?

An animal influenza virus that develops the ability to transmit easily from person to person could theoretically carry a risk of causing a pandemic. However, at present this virus is causing disease in people through exposure to poultry or contaminated environments. Whether the H7N9 virus will ever change to transmit easily from person to person and actually cause a pandemic is unknown.

20. Is it safe to travel to China?

WHO is not recommending travel restrictions related to H7N9.

21. Are Chinese products safe?

WHO advises against any restrictions to trade as there is no evidence to date to link the current cases with any Chinese products.

22. What does WHO recommend regarding air travel?

WHO does not recommend any travel restrictions with respect to this event. WHO will continue to provide updated information as it becomes available.

23. What is WHO’s role in this event?

Since the emergence of this virus, WHO has been working under the International Health Regulations to provide timely and complete information to Member States. WHO is also working with international partners, including animal health partners, to coordinate the global health response, including risk assessment, the provision of updated information on the situation, guidance to health authorities and technical health agencies on interim surveillance recommendations, laboratory testing of cases, infection control, and clinical management.

WHO will continue to work with Member States and international health partners and share updated information as it becomes available.