Frequently Asked Questions (FAQ) on the avian influenza A (H7N9) virus

Human Health

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. 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.

4. 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.

5. 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 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.

6. 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.

7. 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.

8. 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.

Diseased animals and animals that have died of diseases should not be eaten. Do not give or sell these dead animals to other people. Such animals should also not be fed to other animals.

9. 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.

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

Most known human infections results from direct or indirect contact with infected poultry or contaminated live bird market 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.

11. 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 the potential exposure of human. However, other measures taken in markets and along the market value 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 at the market slaughtered, and markets thoroughly cleaned and disinfected. 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.

12. 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.

13. 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.

14. Is Viet Nam at risk of infection with the H7N9 virus?
So far, there have been no reported cases of H7N9 in humans or poultry in Viet Nam. However, this could change quickly, since the virus has been detected in China's Guangxi province, which shares a border with four Vietnamese provinces. If infected poultry from China finds its way into Vietnamese markets, then both poultry and people in Viet Nam are at risk of H7N9 infection. This is why the government is working hard to monitor poultry markets, and to develop emergency plans for how to disrupt the spread of the virus if it is detected in Viet Nam.

15. 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.

16. 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.

17. 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.

Animal Health

18. How is H7N9 associated with poultry?
Chinese authorities have officially reported detection of H7N9 virus in bird samples collected from chickens, ducks and captive-bred pigeons at live bird markets in areas where humans have been affected. Additionally, Guangdong province has detected the virus in chickens in LBMs without any links to human cases.

The only previous reports of animal infections with this virus subtype in Asia come from 2008 surveillance activities in the Republic of Korea and Mongolia where H7N9 subtype was isolated from wild birds. It is important to note that H7 virus subtypes (e.g. H7N2, H7N6, and H7N7) have been identified in poultry from many counties throughout the world.

19. Are wild birds affected?

There has been no evidence of infection of this particular H7N9 virus in wild migratory birds in China since the virus was first identified. Surveillance efforts in wildlife and environmental sampling are ongoing in affected areas. FAO advises strongly against culling wild birds. Poultry and other domestic animals should be kept separate from wild birds and other wildlife.

20. How is the H7N9 virus different from H5N1 in poultry?

Unlike H5N1, which causes sudden death in large numbers of poultry, H7N9 spreads invisibly among poultry and does not produce visible signs in chickens and other birds. By the time it infects humans and produces visible flu-like symptoms, millions of birds may already have been infected.

21. How is H7N9 spreading?

The current understanding is that live bird markets play an important role in the transmission of H7N9, since they receive poultry, eggs, and day old birds from different locations, maintain them in close proximity and potentially dirty premises and then disseminate them through trade to consumers and to other locations.

22. What can be done to prevent the spread of H7N9 in Viet Nam?

The government, market managers, and people involved in different aspects of the poultry trade can work together to disrupt the spread of H7N9 once it has been detected either in poultry or human beings. The government is regularly monitoring key poultry markets, and testing poultry.

The premises of poultry markets where H7N9 is detected must be thoroughly cleaned and disinfected to eliminate the virus. Even in markets where H7N9 has not been detected, experts recommend regular ‘rest days’ when all birds at the market are slaughtered and the market is properly cleaned and disinfected.

23. What precautions should be taken by authorities in a country affected by avian influenza?

It is important that countries like Viet Nam have a well-resourced veterinary system in place for the prevention, detection and rapid response for the incursion of an animal pathogen or other threats. Facilities are required for quarantine of live animals or inspection of animals and products. Well prepared teams of diagnosticians to conduct field investigations and laboratory testing are essential to inform decision makers as to the nature of the problem and trigger a response.

Low pathogenic influenza viruses are difficult to detect in birds because they cause only mild or no disease in poultry. Farmers should look for subtle disease signs like a slight drop in egg production or lowered feed intake. Surveillance of live bird markets along with hygiene and disinfection practices in markets is highly recommended.

In the past, countries infected with low pathogenic avian influenza have relied on: i) targeted surveillance; ii) strengthened biosecurity at the farm and market level; and sometimes iii) the use

of quality controlled vaccine. Some countries have eliminated low pathogenic avian influenza viruses through culling and compensation schemes.

24. Is FAO recommending the vaccination of animals against H7N9?

FAO considers it premature to recommend the vaccination of animal species against avian influenza A(H7N9). The degree to which the virus is circulating in animals is still unknown. Although commercial vaccines exist for H7 viruses, more information is needed to determine whether or not those vaccines can be effective against this new virus or if an appropriate vaccine would need to be developed.

25. Can poultry be vaccinated against H7N9?

At this point, there is no vaccine for poultry against H7N9.

26. What specific precautions should be taken by individuals involved in the sale or transport of poultry?

Poultry producers, transporters, sellers and all other intermediaries in the poultry value chain should use good biosecurity measures to minimize the risk of incursion of the virus into individual production units and minimize the risk of outward and onward transmission through the market value chain.

Transporters of live birds should use cages that: i) are only used for the purpose of transporting birds, and ii) can be easily cleaned and disinfected. All devices used for moving live poultry should be cleaned and disinfected before and after transport.

Veterinarians and other service providers who travel from site to site risk spreading disease if good biosecurity measures are not practiced. Veterinarians should also promote the use of good biosecurity measures to poultry keepers and other people working at in the poultry value chain.

At farm level, good biosecurity measures should be implemented. These include: creating physical barriers at farm entrances, using water and feed sources that are free from contaminants, employing poultry housing that effectively resists wild bird and rodent infestation, preventing poultry unit workers from keeping their own poultry, ensuring outer clothes and footwear are changed upon entry and exit, establishing mandatory rest periods (e.g. minimum 1 day) between farm visits to avoid the risk of intermediaries transferring the disease from one site to another, imposing quarantines on newly introduced or returning birds, keeping animal species separate and thoroughly cleaning and disinfecting premises on a regular basis.

27. What are appropriate hygiene measures to be implemented in live bird markets?

Instituting proper hygiene at live bird markets requires the consultation and involvement of all stakeholders (e.g. market managers and operators, stall holders, local authorities, veterinary services, public health services and sellers). Markets should be easy to clean and disinfect regularly.

Market infrastructure improvements may be required, including installation of solid, easily washable flooring, effective waste disposal systems, proper drainage and reliable running water

supplies. Holding cages should be easy to clean and disinfect.

Locations of animal slaughter points should be distinct from live animal market areas. Wholesale markets should be distinct from retail markets, and individual poultry species held at the market should be kept separate from one another. At retail markets where birds are slaughtered, workers should use protective clothing and equipment that can be easily cleaned and disinfected.

FAO is currently providing support to many countries in the improvement of live animal market infrastructure and organization.

28. What role do live bird markets play in the current situation?

In general, live bird markets likely have an important role in receiving, accumulating and disseminating avian influenza viruses. Current information suggests live bird markets may even be responsible for virus mixing between species including humans, however further information is needed for clarification.

FAO is recommending enhanced, regular surveillance in live bird markets, especially considering that the majority of H7N9 human cases found to date appear to have had a link to live bird markets. If positive animals are found in these markets, it is critical to trace the infection back to the farm of origin and trace it forward to the final destination. Tracing back and forward allows authorities to: i) identify the source of infection; ii) better understand the extent of virus spread and iii) target and implement appropriate control measures.

29. What is FAO doing?

FAO is monitoring the situation closely through its wide network of country offices, reference centres and collaborators.

FAO is liaising with key partners, including the World Health Organization (WHO) and the World Organisation for Animal Health (OIE). FAO and the scientific community are currently studying the virus sequences in order to better understand its properties and ensuring diagnostic approaches are able to detect this new strain of influenza virus.
FAO has set up a website for H7N9 and has posted guidelines for surveillance, risk assessment and risk management for avian influenza A(H7N9) for affected and at risk countries.

In Viet Nam, FAO has worked closely with Viet Nam Government and contributed inputs to the development of the national preparedness plan on prevention and control of H7N9 and dangerous avian influenza virus that can spread to humans". FAO provided comments for the Prime Minister's Directive dated 14 February 2014 that supports the plan's implementation as well as requesting other ministries and provincial authorities to join the national efforts.

FAO is supporting the implementation of surveillance plans in main live bird markets for early detection of H7N9 incursion into Viet Nam in order to help the Government to make informed decisions. FAO has also assisted with laboratory training and building the country capacity for H7N9 diagnostic and weekly participated in joint H7N9 risk assessment. At the same time, FAO

is assisting with risk communication focusing at high risk markets, targeting high risk individuals involved in poultry trading and slaughtering.

30. Is FAO recommending any trade restrictions at this time?

FAO recommends importing countries uphold international standards to ensure veterinary systems for live animal screening, certification and the control of goods. These measures promote the import of healthy and wholesome products and/or animals.

Trade restrictions should always be reviewed in relation to the level of risk posed by specific animal products to a countryand to date no trade restrictions are advised.

For more information please visit:
FAO: http://www.fao.org/ag/againfo/programmes/en/empres/H7N9/
WHO: http://www.who.int/influenza/human_animal_interface/faq_H7N9/en/