Influenza at the human-animal interface

Summary and assessment, 13 February to 9 April 2019

- **New infections[1]:** Since the previous update on 12 February 2019, new human infections with avian influenza A(H7N9) and A(H9N2) viruses were reported.
- **Risk assessment:** The overall public health risk from currently known influenza viruses at the human-animal interface has not changed, and the likelihood of sustained human-to-human transmission of these viruses remains low. Further human infections with viruses of animal origin are expected.
- **IHR compliance:** All human infections caused by a new influenza subtype are required to be reported under the International Health Regulations (IHR, 2005).[2] This includes any influenza A virus that has demonstrated the capacity to infect a human and its heamagglutinin gene (or protein) is not a mutated form of those, i.e. A(H1) or A(H3), circulating widely in the human population. Information from these notifications is critical to inform risk assessments for influenza at the human-animal interface.

Avian Influenza Viruses

Current situation:

Avian influenza A(H5) viruses

Since the last update on 12 February 2019, no new laboratory-confirmed human cases of influenza A(H5) virus infections were reported to WHO. According to reports received by the World Organisation for Animal Health (OIE), various influenza A(H5) subtypes continue to be detected in birds in Africa, Europe and Asia. Overall, the risk assessment has not changed.

Avian influenza A(H7N9) viruses

Since the last update on 12 February 2019, one new laboratory-confirmed human case of influenza A(H7N9) virus infection was reported to WHO by China. An 82-year-old male developed illness on 18 March 2019 and was hospitalized on 31 March 2019 with severe pneumonia. The case was reported from Gansu province, but potential exposure reportedly occurred in the Inner Mongolia region of China. No further human cases were reported among his close contacts. Additional information on the potential exposure and the virus from the case are anticipated.

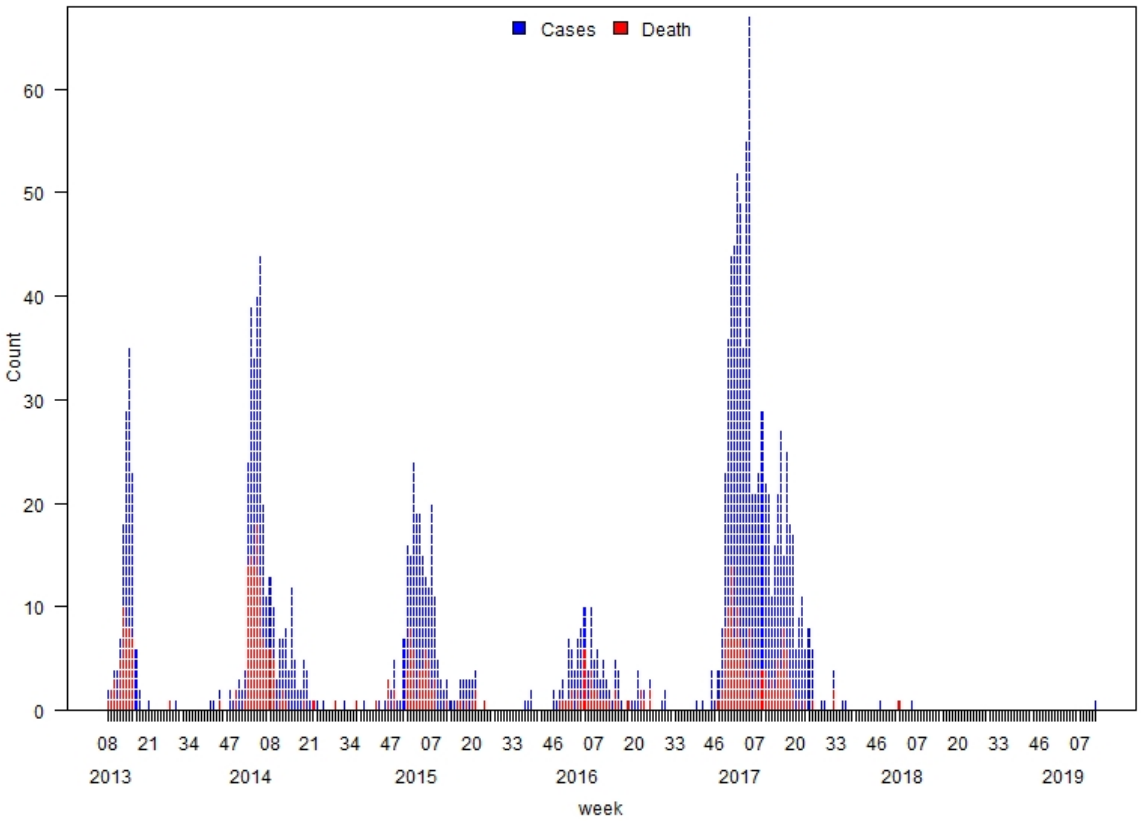
Since 2013, a total of 1568 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, have been reported to WHO (Figure 1). There have been no publicly available reports from animal health authorities in China of detections of influenza A(H7N9) virus in animals this year, except for one report of an outbreak in domesticated birds in Liaoning Province[3].

[1] For epidemiological and virologic features of human infections with animal influenza viruses not reported in this assessment, see the yearly report on human cases of influenza at the human-animal interface published in the Weekly Epidemiological Record. Available at: www.who.int/wer/en/

[3]World Health Organization. Case definitions for the four diseases requiring notification in all circumstances under the International Health Regulations (2005). Available at: www.who.int/ihr/Case_Definitions.pdf

[3] OIE World Animal Health Information Database (WAHIS Interface). www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=29961

Figure 1: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2019.



Risk Assessment:

1. What is the likelihood that additional human cases of infection with avian influenza A(H7N9) viruses will occur? Most human cases are exposed to the A(H7N9) virus through contact with infected poultry or contaminated environments, including live poultry markets. Wherever the virus circulates in animals, further human cases can be expected.

2. What is the likelihood of human-to-human transmission of avian influenza A(H7N9) viruses? Even though small clusters of cases have been reported, including those involving healthcare workers, currently available epidemiological and virological evidence suggests that this virus has not acquired the ability of sustained transmission among humans, thus the likelihood is low.

3. What is the likelihood of international spread of avian influenza A(H7N9) virus by travelers? Should infected individuals from affected areas travel internationally, their infection may be detected in another country during travel or after arrival. If this were to occur, further community level spread is considered unlikely as this virus has not acquired the ability to transmit easily among humans.

Avian influenza A(H9N2) viruses

Since the last update on 12 February 2019, one new laboratory-confirmed human case of influenza A(H9N2) virus infection was reported to WHO from China.

A 9-year-old male from Jiangsu province developed illness on 15 March 2019 and was hospitalized the next day with severe pneumonia. The case reportedly had exposure to a live poultry market. No further human cases were reported among his close contacts. Characterization of the virus from this case has been completed at the WHO Collaborating Centre in Beijing, China.

Avian influenza A(H9N2) viruses are enzootic in poultry in China.

Risk Assessment:

1. What is the likelihood that additional human cases of infection with avian influenza A(H9N2) viruses will occur? Most human cases are exposed to the A(H9N2) virus through contact with infected poultry or contaminated environments. Human infection tends to result in mild clinical illness. Since the virus continues to be detected in poultry populations, further human cases can be expected.

2. What is the likelihood of human-to-human transmission of avian influenza A(H9N2) viruses? No case clusters have been reported. Current epidemiological and virologic evidence suggests that this virus has not acquired the ability of sustained transmission among humans, thus the likelihood is low.

3. What is the likelihood of international spread of avian influenza A(H9N2) virus by travelers? Should infected individuals from affected areas travel internationally, their infection may be detected in another country during travel or after arrival. If this were to occur, further community level spread is considered unlikely as this virus has not acquired the ability to transmit easily among humans.

Overall Risk Management Recommendations:

- WHO does not advise special traveler screening at points of entry or restrictions with regard to the current situation of influenza viruses at the human-animal interface. For recommendations on safe trade in animals from countries affected by these influenza viruses, refer to OIE guidance.
- WHO advises that travelers to countries with known outbreaks of animal influenza should avoid farms, contact with animals in live animal markets, entering areas where animals may be slaughtered, or contact with any surfaces that appear to be contaminated with animal faeces. Travelers should also wash their hands often with soap and water. Travelers should follow good food safety and good food hygiene practices.
- Due to the constantly evolving nature of influenza viruses, WHO continues to stress the importance of global surveillance to detect virologic, epidemiological and clinical changes associated with circulating influenza viruses that may affect human (or animal) health, especially over the coming winter months. Continued vigilance is needed within affected and neighbouring areas to detect infections in animals and humans. Collaboration between the animal and human health sectors is essential. As the extent of virus circulation in animals is not clear, epidemiological and virologic surveillance and the follow-up of suspected human cases should remain high. New guidance on investigation of non-seasonal influenza and other emerging acute respiratory diseases has been published on the WHO website here http://www.who.int/influenza/resources/publications/outbreak_investigation_protocol/en/.
- All human infections caused by a new subtype of influenza virus are notifiable under the International Health Regulations (IHR, 2005).[4] State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory-confirmed[5] case of a recent human infection caused by an influenza A virus with the potential to cause a pandemic. Evidence of illness is not required for this report.
- It is critical that influenza viruses from animals and people are fully characterized in appropriate animal or human health influenza reference laboratories. Under WHO's Pandemic Influenza Preparedness (PIP) Framework, Member States are expected to share their influenza viruses with pandemic potential on a regular and timely basis with the Global Influenza Surveillance and

[4] World Health Organization. Case definitions for the four diseases requiring notification in all circumstances under the International Health Regulations (2005). Available at: www.who.int/ihr/Case_Definitions.pdf

[5] World Health Organization. Manual for the laboratory diagnosis and virologic surveillance of influenza (2011). Available at: www.who.int/influenza/gisrs_laboratory/manual_diagnosis_surveillance_influenza/en/

Response System (GISRS), a WHO-coordinated network of public health laboratories. The viruses are used by the public health laboratories to assess the risk of pandemic influenza and to develop candidate vaccine viruses.

Links:

WHO Human-Animal Interface web page
http://www.who.int/influenza/human_animal_interface/en/
WHO Protocol to investigate non-seasonal influenza and other emerging acute respiratory diseases
http://www.who.int/influenza/resources/publications/outbreak_investigation_protocol/en/
Cumulative Number of Confirmed Human Cases of Avian Influenza A(H5N1) Reported to WHO
http://www.who.int/influenza/human_animal_interface/H5N1_cumulative_table_archives/en/
Avian Influenza A(H7N9) Information
http://www.who.int/influenza/human_animal_interface/influenza_h7n9/en/
WHO Avian Influenza Food Safety Issues
http://www.who.int/foodsafety/areas_work/zoonose/avian/en/
World Organisation of Animal Health (OIE) web page: Web portal on Avian Influenza
http://www.oie.int/animal-health-in-the-world/web-portal-on-avian-influenza/
Food and Agriculture Organization of the UN (FAO) webpage: Avian Influenza
http://www.fao.org/avianflu/en/index.html
OFFLU
http://www.offlu.net/index.html