

Influenza at the human-animal interface

Summary and assessment, 21 July to 21 September 2018

- **New infections¹:** Since the previous update, new human infections with avian influenza A(H5N6) and A(H9N2) viruses, and influenza A(H1N2) variant 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.
- **Risk management:** Selection of new candidate vaccine viruses (CVVs) for zoonotic influenza for influenza pandemic preparedness purposes was done during a recent WHO consultation.²
- **IHR compliance:** All human infections caused by a new influenza subtype are required to be reported under the International Health Regulations (IHR, 2005).³ This includes any influenza A virus that has demonstrated the capacity to infect a human and its haemagglutinin 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 20 July 2018, one new laboratory-confirmed human case of influenza A(H5N6) virus infection was reported to WHO. A 42-year-old male resident of Guangxi Zhuang Autonomous Region, China, developed symptoms on 10 August 2018. He initially sought outpatient care but was later admitted to hospital and was diagnosed and treated for pneumonia. The patient had exposure to live poultry before illness onset. Infection with an avian influenza A(H5N6) virus was confirmed and samples collected from the local live bird markets the patient visited tested positive for influenza A(H5) viruses. No further human cases were reported among his close contacts.

A total of 20 laboratory-confirmed cases of human infection with influenza A(H5N6) virus have been reported to WHO from China since 2014.

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. Influenza A(H5N6) viruses have recently been detected in parts of Europe and Asia, however these A(H5N6) viruses are different from the A(H5N6) influenza viruses which have infected humans in China.

¹ For epidemiological and virological 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/

² World Health Organization. Antigenic and genetic characteristics of zoonotic influenza viruses and candidate vaccine viruses developed for potential use in human vaccines. Available at: www.who.int/influenza/vaccines/virus/characteristics_virus_vaccines/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

Risk Assessment:

1. What is the likelihood that additional human cases of infection with avian influenza A(H5) viruses will occur?

Most human cases were exposed to A(H5) viruses through contact with infected poultry or contaminated environments, including live poultry markets. Since the viruses continue to be detected in animals and environments, further human cases can be expected.

2. What is the likelihood of human-to-human transmission of avian influenza A(H5) viruses? Even though small clusters of A(H5) virus infections have been reported previously including those involving healthcare workers, current epidemiological and virological evidence suggests that this and other A(H5) viruses have 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(H5) viruses by travellers?

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 evidence suggests these viruses have not acquired the ability to transmit easily among humans.

Avian influenza A(H7N9) viruses

According to reports from mainland and the Hong Kong Special Administrative Region China and those received by the World Organisation for Animal Health (OIE), A(H7N9) avian influenza viruses continue to be detected in China but at lower levels compared to previous years. A nationwide domestic poultry vaccination campaign began in 2017.

Overall, the risk assessment has not changed.

Avian influenza A(H9N2) viruses

Since the last update on 20 July 2018, one new laboratory-confirmed human case of A(H9N2) virus infection was reported to WHO from China. A 24-year-old pregnant female from Shenzhen, Guangdong Province, China, had onset of illness on 21 July 2018. The case had mild illness and was detected as part of routine influenza sentinel surveillance. The patient did not have known contact with live poultry but during environmental investigation at a farm where she went for dinner, samples from the food preparation areas tested positive for H9N2. No further human cases were reported among her close contacts. 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 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(H9N2) virus by travellers?

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.

Swine Influenza Viruses

Current situation:

Influenza A(H1N2)v viruses

Since the last update on 20 July 2018, 13 new laboratory-confirmed human cases of influenza A(H1N2)v virus infection were detected in the United States of America (USA).

On 10 Aug 2018, the United States (US) IHR National Focal Point (NFP) reported the first 4 cases of human infection with influenza A(H1N2)v viruses in 2018 in 4 children from the states of California (2) and Michigan (2). The children developed mild respiratory illness following direct swine exposure at agricultural fairs in the week before onset of illness. None of the cases required hospitalization and all have recovered. The influenza A(H1N2) variant virus identified in Indiana was sequenced by the Centers for Disease Control and Prevention (CDC) of the US, a WHO Collaborating Centre.

In the following weeks, 9 additional laboratory-confirmed human cases of influenza A(H1N2)v virus infection were detected in the USA, in multiple states. All but one case occurred in children under 18 years of age and all but one case reported attending an agricultural fair prior to illness onset. Of those attending an agricultural fair, all but one reported direct exposure to swine. One individual did not attend a fair and reported no swine exposure, suggesting limited human-to-human transmission. None of the cases were hospitalized and all have fully recovered.

For more information on the A(H1N2)v viruses from these cases, please see the September 2018 report: [Antigenic and genetic characteristics of zoonotic influenza viruses and candidate vaccine viruses developed for potential use in human vaccines.](#)

Since 2011, 25 human infections with influenza A(H1N2)v viruses have been reported to the U.S. CDC.⁴ Swine influenza A(H1N2) viruses are endemic in pig populations and circulate among swine in many regions of the world.

Risk Assessment:

1. What is the likelihood that additional human cases of infection with swine influenza viruses will occur? Swine influenza viruses circulate in swine populations in many regions of the world. Depending on geographic location, the genetic characteristics of these viruses differ. Most human cases are exposed to swine influenza viruses through contact with infected swine or contaminated environments. Human infection tends to result in mild clinical illness. Since these viruses continue to be detected in swine populations, further human cases can be expected.

2. What is the likelihood of human-to-human transmission of swine influenza viruses? Although limited human-to-human transmission may have taken place, current evidence suggests that these viruses have not acquired the ability of sustained transmission among humans, thus the likelihood is low.

3. What is the likelihood of international spread of swine influenza viruses 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 these viruses have not acquired the ability to transmit easily among humans.

⁴ Novel influenza A virus infections web application, Centers for Disease Control and Prevention, United States of America. https://gis.cdc.gov/grasp/fluview/Novel_Influenza.html; accessed 27 September 2018.

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 virological, 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 virological surveillance and the follow-up of suspected human cases should remain high.
- All human infections caused by a new subtype of influenza virus are notifiable under the International Health Regulations (IHR, 2005).⁵ State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory-confirmed⁶ 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 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/

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>

⁵ 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

⁶ World Health Organization. Manual for the laboratory diagnosis and virological surveillance of influenza (2011). Available at: www.who.int/influenza/gisrs_laboratory/manual_diagnosis_surveillance_influenza/en/