Influenza at the human-animal interface
Summary and assessment, from 2 March to 7 April 2022[1]

- **New infections[2]:** From 2 March to 7 April 2022, three human cases of infection with avian influenza A(H5N6) viruses and two human cases of infection with avian influenza A(H9N2) viruses were reported officially.
- **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. Human infections with viruses of animal origin are expected at the human-animal interface wherever these viruses circulate in animals.
- **Risk management:** Selection of new candidate vaccine viruses (CVVs) for zoonotic influenza viruses for pandemic preparedness purposes was done during a recent WHO consultation.[3]
- **IHR compliance:** All human infections caused by a new influenza subtype are required to be reported under the International Health Regulations (IHR, 2005).[4] 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 risk assessment on 1 March 2022, three human cases of influenza A(H5N6) virus infection were reported from China to WHO.

All cases had exposure to poultry or poultry-related environments such as live poultry markets. No epidemiological links or clusters of cases were reported associated with these cases. Influenza A(H5) viruses were detected in environment samples during investigations of at least one of these cases.

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.

[1] This summary and assessment covers information confirmed during this period and may include information received outside of this period.
[2] For epidemiological and virological features of human infections with animal influenza viruses not reported in this assessment, see the reports on human cases of influenza at the human-animal interface published in the Weekly Epidemiological Record here.
[3] World Health Organization. Antigenic and genetic characteristics of zoonotic influenza A viruses and development of candidate vaccine viruses for pandemic preparedness in the 2022 - 2023 northern hemisphere influenza season. Available at: https://cdn.who.int/media/docs/default-source/influenza/who-influenza-recommendations/vcm-northern-hemisphere-recommendation-2022-2023/202203_zoonotic_vaccinevirusupdate.pdf?sfvrsn=29b24f50_7
[4] World Health Organization. Case definitions for the 4 diseases requiring notification to WHO in all circumstances under the International Health Regulations (2005). Case definitions for the four diseases requiring notification in all circumstances under the International Health Regulations (2005).

Table 1. Human cases of influenza A(H5N6) reported to WHO from China from 2 March to 7 April 2022.

Onset date	Reporting province	Gender	Age	Hospitalization date	Condition at time of reporting
20 Feb 2022	Jiangxi	F	51	23 Feb 2022	Critical
18 March 2022	Henan	M	28	19 March 2022	Critical
24 March 2022	Jiangsu	F	53	26 March 2022	Critical

Risk Assessment:

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

The overall risk assessment is unchanged. Most human cases were sporadic infections 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 related environments, further human cases can be expected. The rise in numbers of reported human cases of A(H5N6) infection since 2021 may reflect the spread of these viruses in poultry, an increased diagnostic capacity and awareness for respiratory illness etiology amongst human health systems.

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 health care workers, current epidemiological and virological evidence suggests that influenza A(H5) viruses have not acquired the ability of sustained transmission among humans, thus the likelihood is low.

3. What is the risk 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.

A more detailed assessment of risk associated specifically with influenza A(H5N6) has been published here.

Avian influenza A(H7N9) viruses

There have been no publicly available reports from animal health authorities in China or other countries on positive influenza A(H7N9) virus detections in animals in recent months.[5]

Overall, the risk assessment has not changed.

Avian influenza A(H9N2) viruses

Since the last risk assessment on 1 March 2022, one human case of infection with an influenza A(H9N2) virus was reported from China and one from Cambodia.

On 10 March 2022, China reported a case in a two-year-old female from Anhui province, with onset of symptoms on 29 January 2022. The patient had mild disease, did not require hospitalization and has since recovered. Prior to illness onset, the case had exposure to a live poultry market.

[5] Food and Agriculture Organization of the United Nations. H7N9 Situation Update. www.fao.org/ag/againfo/programmes/en/empres/H7N9/situation_update.html

Environmental samples collected from the live poultry market where exposure was suspected to have occurred tested positive for influenza A(H9) viruses.

On 11 March 2022, Cambodia reported a case in a one-year-old female from Siem Reap province, with onset of symptoms on 27 February 2022. She was admitted to hospital on 3 March and discharged the following day. Chickens were kept in the backyard of the case and in the village. Samples from the household's chickens were tested positive for influenza A(H9N2). Samples collected from family members and close contacts were negative for influenza and positive for SARS-CoV-2.

Avian influenza A(H9N2) viruses are enzootic in poultry in Asia and increasingly reported in poultry in Africa.

Risk Assessment:

1. What is the likelihood that additional human cases of infection with avian influenza A(H9N2) viruses will occur?
Most human cases follow exposure to the A(H9N2) virus through contact with infected poultry or contaminated environments. Human infection tends to result in mild clinical illness in most cases. 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 epidemiologic and virologic evidence suggests that influenza A(H9N2) viruses assessed by GISRS 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(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 the A(H9N2) virus subtype has not been confirmed to have acquired the ability to transmit easily among humans.

Overall Risk Management Recommendations:

- WHO does not advise special traveller screening at points of entry or restrictions with regards to the current situation of influenza viruses at the human-animal interface. For recommendations on safe trade in animals and related products from countries affected by these influenza viruses, refer to OIE guidance.
- WHO advises that travellers 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 excreta. 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, epidemiologic and clinical changes associated with circulating influenza viruses that may affect human (or animal) health. 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. Guidance on investigation of non-seasonal influenza and other emerging acute respiratory diseases has been published on the WHO website here: https://www.who.int/publications/i/item/WHO-WHE-IHM-GIP-2018.2.

- In the current COVID-19 pandemic, vigilance for the emergence of novel influenza viruses of pandemic potential should be maintained. WHO has developed practical guidance for integrated surveillance in the context of the cocirculation of SARS-CoV-2 and influenza viruses. The guidance is available here: https://www.who.int/publications/i/item/WHO-2019-nCoV-Integrated_sentinel_surveillance-2022.1
- All human infections caused by a new subtype of influenza virus are notifiable under the International Health Regulations (IHR, 2005).[6] State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory-confirmed[7] case of a recent human infection caused by an influenza A virus with the potential to cause a pandemic[8]. Evidence of illness is not required for this report.
- It is critical that these influenza viruses from animals or from 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 influenza viruses with pandemic potential on a regular and **timely basis**[9] 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
https://www.who.int/teams/global-influenza-programme/avian-influenza
WHO Protocol to investigate non-seasonal influenza and other emerging acute respiratory diseases
https://www.who.int/publications/i/item/WHO-WHE-IHM-GIP-2018.2
Cumulative Number of Confirmed Human Cases of Avian Influenza A(H5N1) Reported to WHO
https://www.who.int/teams/global-influenza-programme/avian-influenza
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: Avian Influenza
https://www.oie.int/en/disease/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.org/

[6] World Health Organization. Case definitions for the four diseases requiring notification in all circumstances under the International Health Regulations (2005).
[7] World Health Organization. Manual for the laboratory diagnosis and virological surveillance of influenza (2011). Available at: https://apps.who.int/iris/handle/10665/44518
[8] World Health Organization. Pandemic influenza preparedness framework for the sharing of influenza viruses and access to vaccines and other benefits. Available at: https://apps.who.int/iris/handle/10665/44796
[9] World Health Organization. Operational guidance on sharing influenza viruses with human pandemic potential (IVPP) under the Pandemic Influenza Preparedness (PIP) Framework (2017). Available at: https://apps.who.int/iris/handle/10665/25940