Influenza at the human-animal interface

Summary and assessment, 16 March to 20 April 2017

- **New infections**[1]**:** Since the previous update, new human infections with 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 animal and non-circulating seasonal influenza viruses. Information from these notifications is critical to inform risk assessments for influenza at the human-animal interface.

Avian Influenza Viruses

Avian influenza A(H5) viruses

Current situation:

Since the last update, no new laboratory-confirmed human cases of influenza A(H5) virus infection were reported to WHO. Influenza A(H5) subtype viruses have the potential to cause disease in humans and thus far, no human cases, other than those with influenza A(H5N1) and A(H5N6) viruses, have been 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.

Avian influenza A(H7N9) viruses

Current situation:

During this reporting period, 86 laboratory-confirmed human cases of influenza A(H7N9) virus infection were reported to WHO from China. Case details are presented in the table in the Annex of this document. For additional details on these cases, public health interventions, and the recently detected highly pathogenic avian influenza (HPAI) A(H7N9) viruses, see the Disease Outbreak News.

As of 20 April 2017, a total of 1393 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 534 deaths[3], have been reported to WHO (Figure 1).

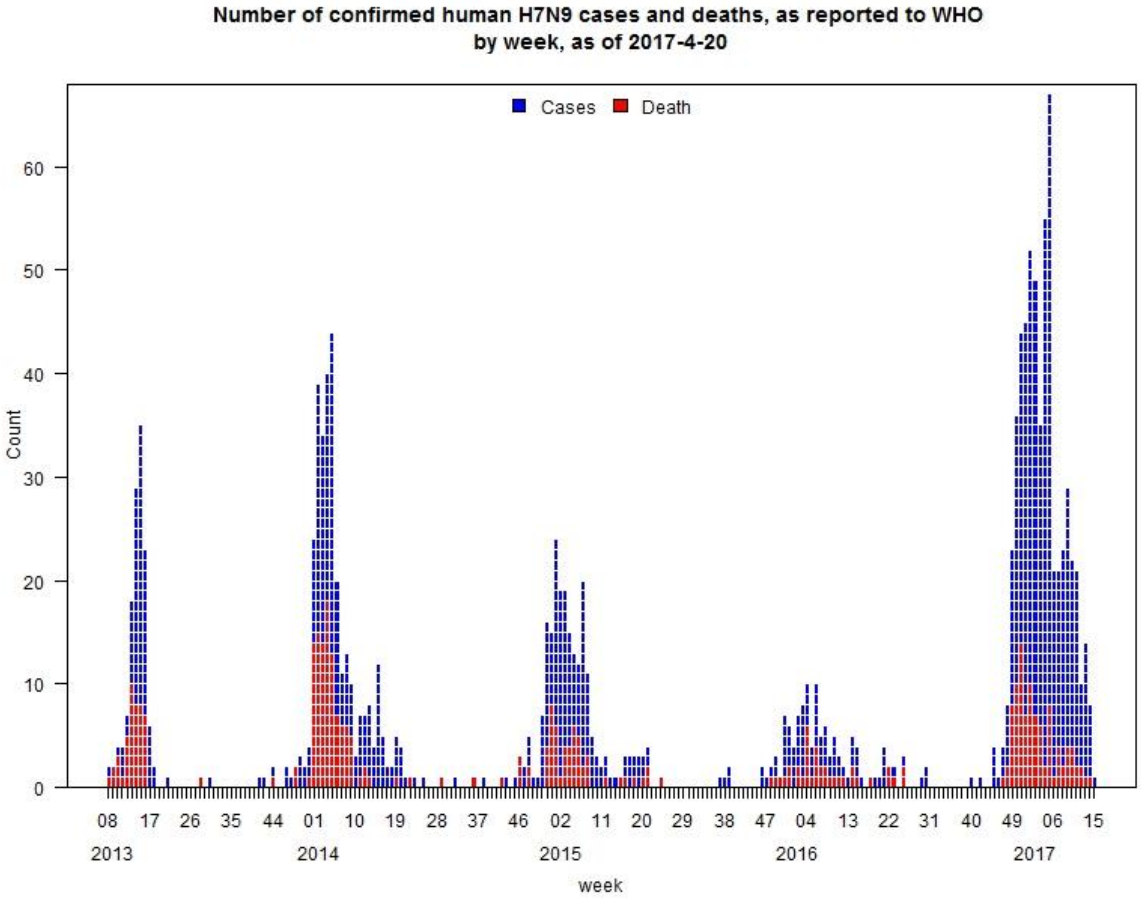
[1] For epidemiological and virological features of human infections with animal influenza viruses not reported in this assessment, see the yearly report on human cases of influenza at the human-animal interface published in the Weekly Epidemiological Record. www.who.int/wer/en/

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

[3] Total number of fatal cases is published on a monthly basis by China National Health and Family Planning Commission.

According to reports received by the Food and Agriculture Organization (FAO) on surveillance activities for avian influenza A(H7N9) viruses in China[4], positives among virological samples continue to be detected mainly from live bird markets, and some commercial and backyard farms.

Figure 1: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2017



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. Since the virus continues to be detected in animals and environments, further human cases can be expected. Additional sporadic human cases of influenza A(H7N9) in other provinces in China that have not yet reported human cases are also 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.

[4] Food and Agriculture Organization. H7N9 situation update.
www.fao.org/ag/againfo/programmes/en/empres/H7N9/situation_update.html

3. **What is the risk of international spread of avian influenza A(H7N9) 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.

Avian influenza A(H9N2) viruses

Current situation:

One new laboratory-confirmed human case of A(H9N2) virus infection was reported to WHO from China in an eleven-month-old boy from Gansu province. The case developed mild illness on 6 February 2017, was hospitalized and has recovered. He had exposure to backyard poultry prior to illness onset. This is the first human case of avian influenza A(H9N2) virus infection reported to WHO since December 2016 and the first human case reported from Gansu province. 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. 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 risk 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.

Overall Risk Management Recommendations:

- WHO does not advise special traveller 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 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 faeces. Travellers should also wash their hands often with soap and water. Travellers 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.

Continued vigilance is needed within affected and neighbouring areas to detect infections in animals and humans. 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 influenza subtype 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-confirmed[6] case of a recent human infection caused by an influenza A virus with the potential to cause a pandemic.[6] 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 and reported according to international standards. 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://who.int/influenza/human_animal_interface/influenza_h7n9/en/index.html
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). www.who.int/ihr/Case_Definitions.pdf
[6] World Health Organization. Manual for the laboratory diagnosis and virological surveillance of influenza (2011). www.who.int/influenza/gisrs_laboratory/manual_diagnosis_surveillance_influenza/en/

Annex:

Table 1: Laboratory-confirmed human cases of avian influenza A(H7N9) virus infection (reported from 16 March to 20 April 2017)

Province or region reporting (province of assumed exposure, if different from reporting province or region)	Age	Sex	Case condition at time of reporting	Date of onset (dd/mm/yyyy)	Exposure history (at time of reporting)
Guizhou	43	M	Severe	28/02/2017	Live poultry market
Hunan	59	M	Severe	07/03/2017	Live poultry market
Guangdong	63	M	NR	02/03/2017	Poultry from market
Guangxi	48	M	Severe	04/03/2017	Occupational exposure
Henan	40	M	NR	05/03/2017	To be investigated
Guizhou	53	M	Severe	07/03/2017	Domestic poultry
Hunan	33	M	NR	03/03/2017	Live poultry market
Guangdong	55	M	Fatal	04/03/2017	Live poultry market
Guangdong	51	M	Severe	02/03/2017	Domestic poultry
Hunan	63	M	Fatal	07/03/2017	Live poultry market
Guangxi	77	M	Severe	02/03/2017	Domestic poultry
Jiangxi	62	M	NR	04/03/2017	To be investigated
Guangxi	52	M	NR	04/03/2017	Domestic poultry
Henan	51	M	NR	08/03/2017	Poultry sale
Hunan	38	M	Fatal	09/03/2017	Live poultry market
Chongqing	43	M	Severe	06/03/2017	Live poultry market
Hunan	51	F	NR	13/03/2017	Live poultry market
Fujian	60	M	Severe	10/03/2017	Domestic poultry
Guangxi	58	F	Severe	03/03/2017	Domestic poultry
Guangxi	71	M	NR	07/03/2017	Domestic poultry
Guizhou	61	M	Severe	08/03/2017	Live poultry market
Guangxi	48	M	Severe	08/03/2017	To be investigated
Zhejiang	64	F	NR	14/03/2017	Domestic poultry
Hunan	53	M	Severe	12/03/2017	Live poultry market
Guangxi	69	F	Severe	12/03/2017	Domestic poultry
Hunan	37	F	Severe	13/03/2017	Domestic poultry
Hubei	55	F	Severe	11/03/2017	No known exposure
Guangxi	53	M	Severe	14/03/2017	Live poultry market
Hubei	69	F	Severe	10/03/2017	Domestic poultry
Hunan	45	F	Severe	11/03/2017	Poultry from market
Fujian	84	M	Severe	15/03/2017	Domestic poultry
Guangxi (Hunan)	79	M	Fatal	11/03/2017	Domestic poultry
Guangxi	39	M	Severe	11/03/2017	Live poultry market
Guangxi	72	M	NR	10/03/2017	Poultry from market
Hunan	86	M	Severe	10/03/2017	Domestic poultry
Zhejiang	67	M	Severe	13/03/2017	Domestic poultry
Henan	74	M	Fatal	15/03/2017	Domestic poultry
Jiangxi	71	M	Severe	13/03/2017	Domestic poultry
Anhui (Jiangsu)	81	F	Severe	11/03/2017	No known exposure
Guizhou	60	M	Severe	09/03/2017	Poultry from market
Hunan	81	M	Severe	14/03/2017	Domestic poultry
Zhejiang (Henan)	48	M	Fatal	18/03/2017	Live poultry market
Jiangsu	60	M	Severe	15/03/2017	Live poultry market
Jiangsu	62	M	Fatal	06/03/2017	Live poultry market
Hunan	61	M	NR	18/03/2017	Poultry from market
Jiangsu	53	M	Severe	16/03/2017	Live poultry market
Guangxi	68	M	NR	21/03/2017	Domestic poultry
Guizhou	57	F	Severe	18/03/2017	Live poultry market
Guizhou	37	M	Fatal	20/03/2017	No known exposure
Hunan	35	M	Severe	16/03/2017	Live poultry market
Guangxi	50	M	Severe	07/03/2017	Domestic poultry
Guangxi	52	M	NR	18/03/2017	Domestic poultry
Fujian	47	M	Severe	24/03/2017	Live poultry market
Hunan	50	M	Severe	24/03/2017	Live poultry market
Hunan	57	M	Severe	21/03/2017	Poultry from market
Fujian	52	F	NR	12/03/2017	Poultry from street vendors

Hunan	71	F	Severe	18/03/2017	Poultry from market
Fujian	70	M	Fatal	25/03/2017	Live poultry market
Beijing (Hebei)	59	M	Severe	22/03/2017	Live poultry market
Hunan	65	F	NR	25/03/2017	Poultry from market
Henan	45	F	Severe	14/03/2017	Backyard poultry
Zhejiang	60	F	Severe	27/03/2017	Poultry from street vendors
Chongqing	46	M	Severe	19/03/2017	Live poultry market
Shandong	58	M	NR	20/03/2017	Poultry from market
Tibet	41	M	Severe	27/03/2017	Occupational exposure
Jiangsu	39	M	Severe	27/03/2017	Backyard poultry
Guizhou	38	M	NR	01/04/2017	Poultry from street vendors
Beijing	52	M	NR	01/04/2017	Poultry from street vendors
Jiangsu	59	F	Severe	01/04/2017	No known exposure
Beijing	66	M	Severe	01/04/2017	Poultry from street vendors
Hunan	47	M	NR	04/04/2017	Poultry from market

NR: not reported