

### Influenza at the human-animal interface

Summary and assessment, 25 February to 4 April 2016

- **New infections<sup>1</sup>:** In this update, new human infections with A(H5N1), A(H5N6) and A(H7N9) viruses were reported.
- **Risk assessment outcome:** The overall public health risk from currently known influenza viruses at the human-animal interface has not changed. Since animals are reservoirs for influenza, further human infections with viruses of animal origin can be expected but the likelihood of sustained human-to-human transmission remains low.
- **Reporting:** All human infections caused by a new influenza subtype are reportable under the International Health Regulations (IHR, 2005).<sup>2</sup> This includes any animal and non-circulating seasonal viruses. Information from these notifications will continue to inform risk assessments for influenza at the human-animal interface.

#### Avian Influenza Viruses

##### Avian influenza A(H5) viruses

##### Current situation:

Five new human A(H5) virus infections were notified to WHO in this reporting period: four human cases of A(H5N1) virus infection were reported from Egypt and one human case of A(H5N6) virus infection was reported from China (Table 1).

**Table 1: Human cases of avian influenza A(H5) reported in 25 February-4 April 2016**

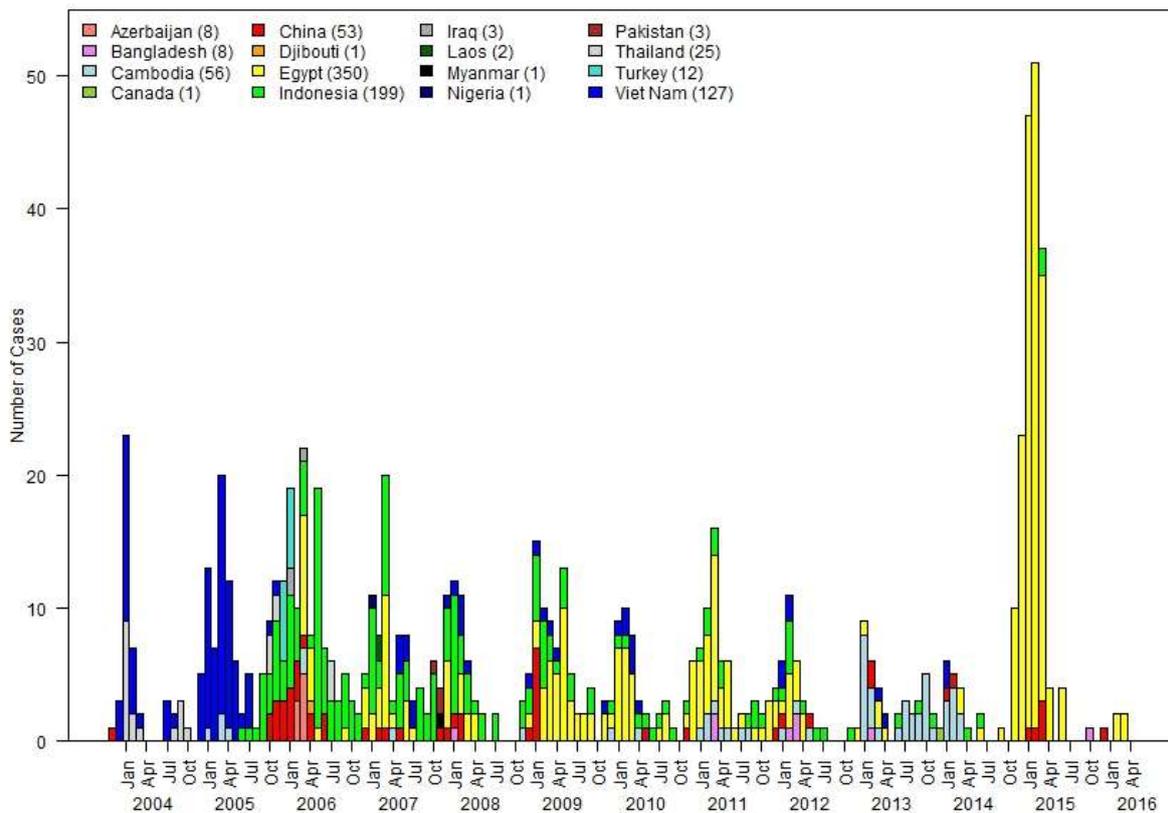
Subtype	Country	Governorate or province	Age	Sex	Date of onset (yyyy/mm/dd)	Case condition at time of reporting	Exposure to
A(H5N1)	Egypt	Sohag	1.5	F	2016/02/25	Recovered	Poultry
A(H5N1)	Egypt	Cairo	7	F	2016/03/04	Recovered	Live and dead backyard poultry
A(H5N1)	Egypt	Giza	5	F	2016/02/24	Recovered	Live and dead backyard poultry
A(H5N1)	Egypt	Giza	70	F	2016/03/08	Critical	On-going investigation
A(H5N6)	China	Guangdong	40	F	2016/02/20	Critical	Live poultry market

<sup>1</sup> 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/](http://www.who.int/wer/en/)

<sup>2</sup> 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](http://www.who.int/ihr/Case_Definitions.pdf)

Since 2003, a total of 850 laboratory-confirmed cases of human infection with avian influenza A(H5N1) virus, including 449 deaths, have been reported to WHO from 16 countries (Figure 1). In addition, a total of 11 laboratory-confirmed cases of human infection with avian influenza A(H5N6) virus, including 6 deaths, have been detected in China since 2013. Although other influenza A(H5) viruses have the potential to cause disease in humans, no human cases have been reported so far. According to reports received by the World Organisation for Animal Health (OIE), various influenza A(H5) subtypes, such as influenza A(H5N1), A(H5N2), A(H5N6), A(H5N8) and A(H5N9), continue to be detected in birds in West Africa, Europe and Asia.

**Figure 1: Epidemiological curve of avian influenza A(H5N1) cases in humans by week of onset, 2004-2016**



The A(H5N1) virus outbreaks in poultry in West Africa continue since 2014 with increasing reports from Nigeria. No human infections associated with these outbreaks in West Africa have been identified to date.

**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(H5N1) 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 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.

### Avian influenza A(H7N9) viruses

#### Current situation:

Since the last update, China reported 29 new laboratory-confirmed human cases of avian influenza A(H7N9) virus infection to WHO (Table 2). Onset dates range from 17 January to 19 February. Cases range in age from 21 to 78 years, with a median age of 57 years. Of these 29 cases, 22 (76%) are male. The majority (24 cases, 83%) reported exposure to live poultry, slaughtered poultry, or live poultry markets; the other five cases had no known exposure history. Cases were reported from 6 provinces and municipalities: Zhejiang (7), Hunan (7), Jiangsu (6), Guangdong (4), Fujian (3) and Shanghai (2). Among these 29 cases, three clusters of two human cases each were reported. For more details on these clusters, see the [Disease Outbreak News](#).

Additionally, one laboratory-confirmed case of avian influenza A(H7N9) virus infection was reported to WHO from Hong Kong Special Administrative Region (SAR) (Table 2). The patient is an 81-year-old woman with underlying illnesses, who travelled to Kaiping, Guangdong Province on 5 March. She developed malaise, headache, shortness of breath and fever on 10 March and, between 14 and 16 March, was admitted to a hospital in Kaiping. Upon returning to Hong Kong on 17 March, the patient visited a hospital and was subsequently admitted for management of pneumonia. She tested positive for avian influenza A(H7N9) virus upon laboratory testing by the Public Health Laboratory Services Branch of the Centre for Health Protection (CHP). The patient was transferred to a different hospital for further management. Currently, she is in stable condition. Initial investigations by the CHP revealed that the patient visited a live poultry market in Kaiping during her stay in Mainland China, where she was exposed to slaughtered poultry.

A total of 752 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 295 deaths<sup>3</sup>, have been reported to WHO (Figure 2, Table 2). According to reports received by the Food and Agriculture Organization (FAO) on surveillance activities for avian influenza A(H7N9) viruses in China<sup>4</sup>, positives among virological samples continue to be detected mainly from live bird markets, vendors and some commercial or breeding farms.

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<sup>3</sup> Total number of fatal cases is published on a monthly basis by China National Health and Family Planning Commission.

<sup>4</sup> Food and Agriculture Organization. H7N9 situation update.

[www.fao.org/ag/againfo/programmes/en/empres/H7N9/situation\\_update.html](http://www.fao.org/ag/againfo/programmes/en/empres/H7N9/situation_update.html)

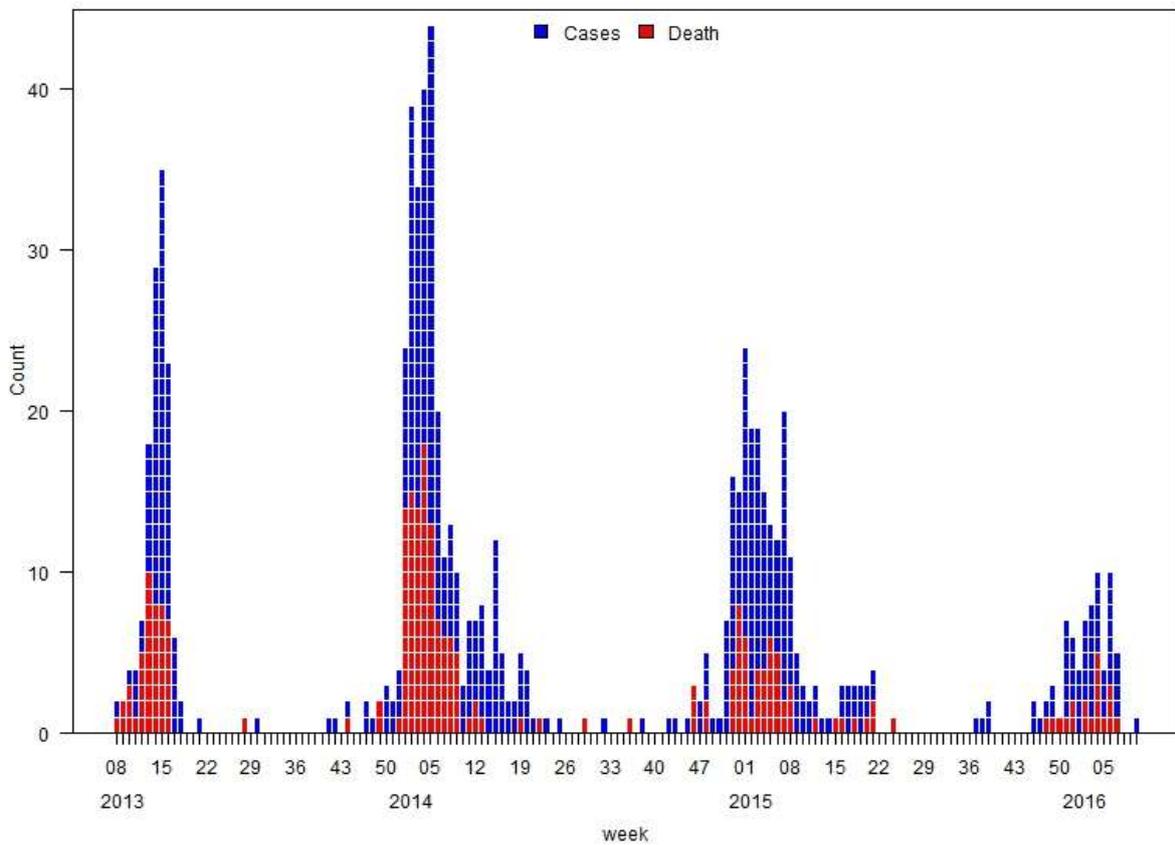
**Table 2: Human cases of avian influenza A(H7N9) reported in 25 February-4 April 2016**

Country	Province or region	Age	Sex	Date of onset (yyyy/mm/dd)	Case condition at time of reporting	Exposure to
China	Hunan	60	M	2016/01/25	Died	Domestic poultry
China	Hunan	52	M	2016/01/17	Died	Poultry industry
China	Hunan	75	M	2016/01/22	NA	Domestic poultry
China	Zhejiang	67	M	2016/01/28	NA	Unknown
China	Hunan	48	M	2016/01/30	Died	Live poultry market
China	Zhejiang	55	F	2016/01/27	NA	Live poultry market
China	Shanghai	67	M	2016/01/28	Died	Live poultry market
China	Jiangsu	41	M	2016/01/28	Died	Poultry purchased and slaughtered in live poultry market
China	Zhejiang	43	F	2016/01/28	NA	Live poultry market
China	Jiangsu	35	M	2016/01/29	NA	No clear evidence of exposure to poultry
China	Guangdong	73	M	2016/02/02	Died	Live poultry market
China	Hunan	78	M	2016/01/31	NA	Live poultry market
China	Jiangsu	35	M	2016/02/01	NA	No clear evidence of exposure to poultry
China	Zhejiang	70	M	2016/01/30	Died	Domestic poultry
China	Guangdong	59	F	2016/02/07	NA	Live poultry market
China	Guangdong	76	F	2016/02/09	NA	Live poultry market
China	Guangdong	58	M	2016/02/12	Died	Poultry
China	Hunan	36	M	2016/02/11	NA	Live poultry market
China	Hunan	62	F	2016/02/11	Died	Domestic poultry
China	Shandong	57	M	2016/02/10	Died	Live poultry market
China	Jiangsu	54	M	2016/02/10	NA	Environment with domestic poultry

China	Zhejiang	57	M	2016/02/10	NA	Unknown
China	Fujian	58	M	2016/02/14	NA	Slaughtered poultry
China	Zhejiang	69	M	2016/02/13	NA	Live poultry market
China	Fujian	74	M	2016/02/15	Died	Live poultry market
China	Zhejiang	29	M	2016/02/15	NA	Live poultry market and a confirmed case
China	Jiangsu	21	F	2016/02/19	NA	Confirmed case
China	Jiangsu	26	M	2016/02/14	NA	Live poultry
China	Fujian	56	F	2016/02/04	NA	Live poultry market
China	Hong Kong SAR	81	F	2016/03/10	Stable	Live poultry market

NA: not available

**Figure 2: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2016**



### 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.
- 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, 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 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.

### 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).<sup>5</sup> State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory-confirmed<sup>6</sup> case of a recent human infection caused by an influenza A virus with the potential to cause a pandemic.<sup>6</sup> 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.

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<sup>5</sup> 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](http://www.who.int/ihr/Case_Definitions.pdf)

<sup>6</sup> 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/](http://www.who.int/influenza/gisrs_laboratory/manual_diagnosis_surveillance_influenza/en/)

**Links:**

WHO Human-Animal Interface web page

[http://www.who.int/influenza/human\\_animal\\_interface/en/](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/](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](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/](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>