



## Influenza at the human-animal interface

Summary and assessment, 13 June to 19 July 2016

- **New infections<sup>1</sup>:** Since the previous update, new human infections with A(H5N1), A(H7N9), A(H9N2) and A(H1N2)v viruses were reported.
- **Risk assessment outcome:** The overall public health risk from currently known influenza viruses at the human-animal interface has not changed. 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:

Since the last update<sup>3</sup>, three new laboratory-confirmed human cases of avian influenza A(H5N1) virus infection were reported to WHO. A 2-year-old male resident of Cairo Governorate, Egypt, had onset of influenza-like illness (ILI) symptoms on 30 May 2016, and a sample collected as part of ILI surveillance tested positive for influenza A(H5N1). The case was hospitalized, treated with antivirals for pneumonia and recovered. Prior to his illness, the case had visited a family member who raised birds.

In addition, a 30-year-old woman from Menia Governorate had onset of illness on 11 June and an 8-year-old girl from Cairo Governorate had onset of illness on 18 June. Both cases had exposure to poultry or poultry-related environments prior to illness, were hospitalized with pneumonia, received antiviral therapy and have recovered. Investigation and follow up of contacts of the three cases took place for 14 days with no further cases reported. Avian influenza A(H5N1) viruses are enzootic in poultry in Egypt.

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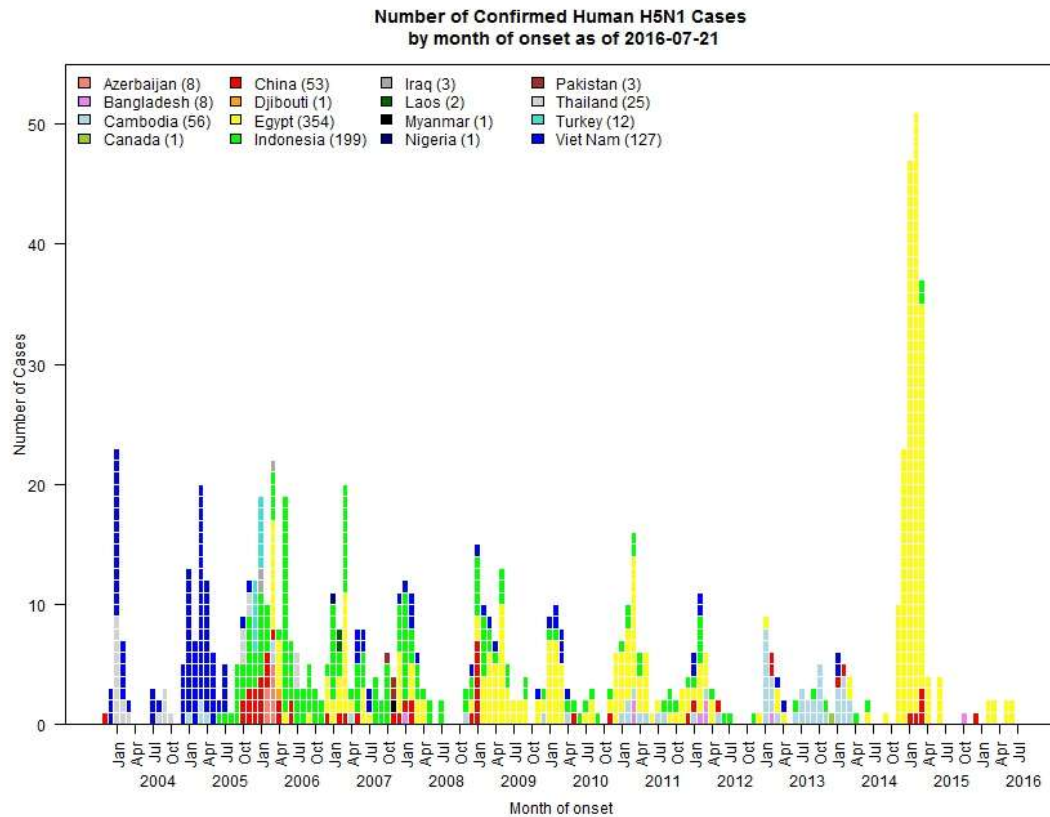
<sup>1</sup> For epidemiological and virological features of human infections with animal influenza viruses not reported in this assessment, see the yearly report on human cases of influenza at the human-animal interface published in the Weekly Epidemiological Record. [www.who.int/wer/en/](http://www.who.int/wer/en/)

<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)

<sup>3</sup> [http://www.who.int/influenza/human\\_animal\\_interface/Influenza\\_Summary\\_IRA\\_HA\\_interface\\_05\\_09\\_2016.pdf?ua=1](http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_05_09_2016.pdf?ua=1)

Since 2003, a total of 854 laboratory-confirmed cases of human infection with avian influenza A(H5N1) virus, including 450 deaths, have been reported to WHO from 16 countries (see Figure 1).

**Figure 1: Epidemiological curve of avian influenza A(H5N1) cases in humans by week of onset, 2003-2016**



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 continue to be detected in birds in West Africa, Europe and Asia. The A(H5N1) virus outbreaks in poultry in West Africa continue since 2014 with Cameroon now reporting outbreaks. No human infections associated with these outbreaks in Western and Central 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(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 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:

During this reporting period, China reported 12 new laboratory-confirmed human cases of avian influenza A(H7N9) virus infection to WHO, including five deaths. Six cases were reported from provinces/municipalities in northern China, including two newly-affected areas, Liaoning province and Tianjin city. For more details on these cases, see Table 1 below and the [Disease Outbreak News](#).

A total of 793 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 319 deaths<sup>4</sup>, have been reported to WHO (Figure 2). According to reports received by the Food and Agriculture Organization (FAO) on surveillance activities for avian influenza A(H7N9) viruses in China<sup>5</sup>, positives among virological samples continue to be detected mainly from live bird markets, vendors and some commercial or breeding farms.

### 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, 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.

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<sup>4</sup> Total number of fatal cases is published on a monthly basis by China National Health and Family Planning Commission.

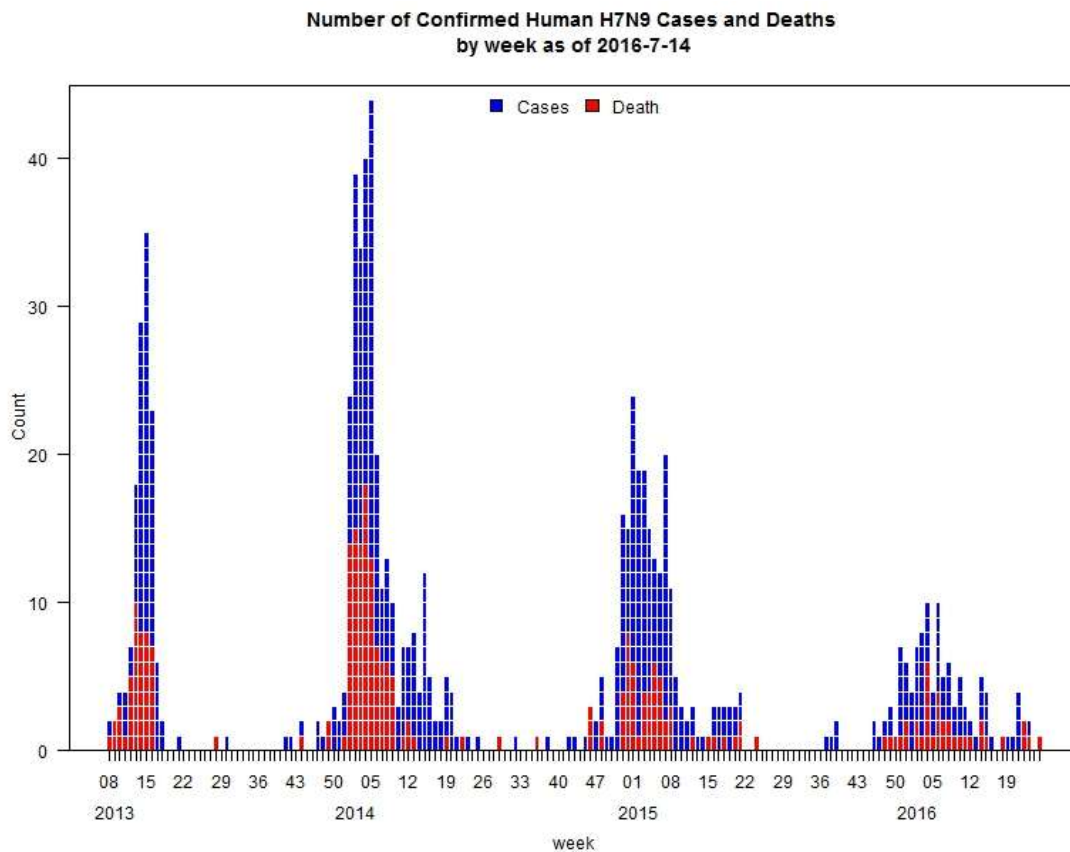
<sup>5</sup> Food and Agriculture Organization. H7N9 situation update.

[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 1: Human cases of avian influenza A(H7N9) reported from 13 June to 19 July 2016**

Province or region reporting (province of assumed exposure, if different from reporting province or region)	Age	Sex	Date of onset (yyyy/mm/dd)	Case condition at time of reporting	Exposure to live poultry or live poultry market
Guangdong	63	M	2016/05/07	Died	Yes
Hebei	57	M	2016/05/10	Critical	Undetermined
Jiangsu	53	F	2016/05/22	Critical	Yes
Beijing	49	M	2016/05/22	Critical	Yes
Jiangsu	45	M	2016/05/20	Critical	Yes
Jiangsu	61	M	2016/05/26	Severe	Yes
Anhui (Henan)	54	F	2016/05/28	Severe	Exposure history not available
Beijing (Hebei)	68	F	2016/06/03	Died	Yes
Tianjin (Hebei)	67	F	2016/06/10	Severe	Yes
Tianjin	62	M	2016/05/30	Died	Yes
Liaoning	66	M	2016/06/05	Died	Yes
Zhejiang	52	M	2016/06/23	Died	Yes

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



## Avian influenza A(H9N2) viruses

### Current situation:

Since the last update<sup>6</sup>, one new laboratory-confirmed human case of avian influenza A(H9N2) virus infection was reported to WHO. A 4-year-old female resident of Guangdong Province, China, had onset of illness on 10 June 2016. She was hospitalized on 12 June in serious condition but improved after treatment. A sample from the case tested positive for influenza A(H9N2) virus and investigation revealed exposure to live poultry prior to onset of illness. Follow up of contacts was ongoing at the time of reporting. 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 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.

## Swine Influenza Viruses

### Influenza A(H1N2)v viruses

#### Current situation:

WHO was notified of two new laboratory-confirmed human infections with A(H1N2)v viruses in the United States of America (USA) during this reporting period. One case, from the state of Wisconsin, was hospitalized and was recovering at the time of notification. The second human infection occurred in the state of Minnesota. In April 2016, the person was infected with an A(H1N2)v virus. The patient was not hospitalized and has fully recovered from their illness. Both cases reported contact with swine prior to illness onset and no human-to-human transmission or other cases were identified surrounding both cases.

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<sup>6</sup> [http://www.who.int/influenza/human\\_animal\\_interface/Influenza\\_Summary\\_IRA\\_HA\\_interface\\_05\\_09\\_2016.pdf?ua=1](http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_05_09_2016.pdf?ua=1)

These are the seventh and eighth cases of A(H1N2)v influenza virus infection detected in the USA since 2005. Most cases were associated with mild illness and two were hospitalized. The previous case who was hospitalized had underlying conditions.<sup>7</sup> Virological characterization of the viruses from these two cases indicates that they are similar to A(H1N2) viruses currently circulating in swine in the USA.

#### **Risk Assessment:**

- 1. What is the likelihood that additional human cases of infection with influenza A(H1N2)v viruses will occur?** Influenza A(H1N2) 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 the A(H1N2) virus 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 influenza A(H1N2)v viruses?** No case clusters have been reported. 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 risk of international spread of influenza A(H1N2)v 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 these viruses have 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>8</sup> State Parties to the IHR (2005) are required to immediately

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<sup>7</sup> [http://www.who.int/influenza/human\\_animal\\_interface/Influenza\\_Summary\\_IRA\\_HA\\_interface\\_06\\_13\\_2016.pdf?ua=1](http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_06_13_2016.pdf?ua=1)

<sup>8</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)

notify WHO of any laboratory-confirmed<sup>9</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.

#### **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>

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<sup>9</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/)