Influenza at the human-animal interface
Summary and assessment, 9 May to 13 June 2016

- **New infections**: Since the previous update, new human infections with A(H5N1), A(H5N6), A(H7N9) 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). 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, one new laboratory-confirmed human case of avian influenza A(H5N1) virus infection was reported to WHO. A 50-year-old male resident of Dakahlia Governorate, Egypt, had onset of symptoms on 2 May 2016. The case, with an underlying condition, was hospitalized on 10 May with pneumonia and treated with oseltamivir, and passed away on 16 May. The case was in contact with apparently healthy domestic birds inside his house and poultry excreta collected from farms. Investigation and follow up of contacts took place for 14 days with no further cases reported. Avian influenza A(H5N1) viruses are enzootic in poultry in Egypt.

Since 2003, a total of 851 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).

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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/](http://www.who.int/wer/en/).
One new laboratory-confirmed human case of A(H5N6) virus infection was notified to WHO in this reporting period. A 50-year-old male resident of Hunan Province, China, developed symptoms on 23 May 2016. On 24 May, he visited a doctor in a village clinic and on 28 May, was transferred to a hospital and was in critical condition at the time of reporting. No further cases were reported among the close contacts of this case, and the investigation of the source of exposure for the case is ongoing. Additional information on the virus from the case is anticipated.

A total of 14 laboratory-confirmed cases of human infection with avian influenza A(H5N6) virus, including six deaths, have been reported to WHO from China since 2014.4

According to the animal health authorities in China5,6, influenza A(H5N6) viruses have been detected in poultry in recent months in many provinces in the country, including those reporting human cases.

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4 A mild case of infection with an avian influenza A(H5) virus occurred in a child in China in February 2014 and was reported to WHO. The virus was retrospectively subtyped as an A(H5N6) one year later but no additional specimens remain to confirm this at the National Influenza Center in Beijing. Hence, the case is regarded as an infection with an A(H5N1) virus, but is likely the first human case of infection with an A(H5N6) virus.

5 http://www.moa.gov.cn/zwlm/tzgg/gb/sygb/

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 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(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 11 new laboratory-confirmed human cases of avian influenza A(H7N9) virus infection to WHO, including four deaths and one cluster. For more details on these cases, see Table 1 below and the Disease Outbreak News.

A total of 781 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 313 deaths\(^7\), 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\(^8\), positives among virological samples continue to be detected mainly from live bird markets, vendors and some commercial or breeding farms.

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\(^7\) Total number of fatal cases is published on a monthly basis by China National Health and Family Planning Commission.

\(^8\) Food and Agriculture Organization. H7N9 situation update.

Table 1: Human cases of avian influenza A(H7N9) reported from 9 May to 13 June 2016

<table>
<thead>
<tr>
<th>Province or region</th>
<th>Age</th>
<th>Sex</th>
<th>Date of onset (yyyy/mm/dd)</th>
<th>Case condition at time of reporting</th>
<th>Exposure to live poultry or live poultry market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiangsu</td>
<td>61</td>
<td>M</td>
<td>2016/03/23</td>
<td>Died</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>69</td>
<td>M</td>
<td>2016/04/08</td>
<td>Died</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>36</td>
<td>M</td>
<td>2016/04/08</td>
<td>Critical</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>27</td>
<td>F</td>
<td>2016/04/10</td>
<td>Critical</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>67</td>
<td>F</td>
<td>2016/04/05</td>
<td>Died</td>
<td>Yes</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>49</td>
<td>F</td>
<td>2016/04/15</td>
<td>Critical</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>23</td>
<td>M</td>
<td>2016/04/01</td>
<td>Critical</td>
<td>Yes</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>43</td>
<td>F</td>
<td>2016/04/05</td>
<td>Critical</td>
<td>Yes, and to a confirmed case</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>52</td>
<td>M</td>
<td>2016/04/16</td>
<td>Critical</td>
<td>Selling pork in a market</td>
</tr>
<tr>
<td>Anhui</td>
<td>62</td>
<td>M</td>
<td>2016/04/10</td>
<td>Died</td>
<td>Yes</td>
</tr>
<tr>
<td>Shandong</td>
<td>58</td>
<td>M</td>
<td>2016/04/21</td>
<td>Critical</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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.

**Avian influenza A(H9) viruses**

**Update:**
Determination of the N-type of the avian influenza A(H9) virus from the human case reported last month was unable to be completed due to the specimen quantity. The case was also co-infected with influenza B virus. Based on epidemiological evidence of the endemicity of A(H9N2) viruses in poultry in the region, this case is considered as an A(H9N2) case. The risk assessment from last month is unchanged.

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**Swine Influenza Viruses**

**Influenza A(H1N2)v viruses**

**Current situation:**
One new laboratory-confirmed human infection with an A(H1N2)v virus was reported to WHO during this reporting period.

A 55-year-old male resident of Minnesota, United States of America, developed symptoms of an acute respiratory illness on 27 March 2016. The patient, with underlying conditions, was briefly hospitalized and completely recovered. An investigation is ongoing into the source of the patient's infection and to determine if there are other epidemiologically-linked cases of A(H1N2)v virus infection. The virus from this case was determined to be genetically closely related to swine viruses circulating in the USA.

This is the sixth case of A(H1N2)v reported to WHO from the USA since 2005. The previous five cases were mild infections.

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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).\(^\text{10}\) State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory-confirmed\(^\text{11}\) 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.

\(^{10}\) 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)

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  
Cumulative Number of Confirmed Human Cases of Avian Influenza A(H5N1) Reported to WHO  
Avian Influenza A(H7N9) Information  
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  
Food and Agriculture Organization of the UN (FAO) webpage: Avian Influenza  
OFFLU  
http://www.offlu.net/index.html