Influenza at the human-animal interface

Summary and assessment as of 10 December 2013

Human infection with avian influenza A(H5N1) viruses

From 2003 through 10 December 2013, 648 laboratory-confirmed human cases with avian influenza A(H5N1) virus infection have been officially reported to WHO from 15 countries. Of these cases, 384 died.

Since the last WHO Influenza at the Human Animal Interface update on 7 October 2013, seven new laboratory-confirmed human cases of influenza A(H5N1) virus infection were reported to WHO from Cambodia (6) and Indonesia (1).

In Cambodia, the reported incidence of human cases has increased in 2013 (26 cases in 2013 compared with 21 cases from 2005 through December 2012). This might be due to improvements in surveillance and physician awareness or to a potential increased circulation of the virus in poultry. The case fatality rate among reported cases, however, has decreased (54% in 2013 compared with 90% over all previous years).

Before 2013, H5N1 viruses from clade 1.1 predominated in Cambodia. Analysis of isolates from human cases and birds from the beginning of 2013 revealed the emergence of a new H5N1 genotype resulting from the reassortment of clade 1.1 and clade 2.3.2.1 viruses. The link between the emergence of this reassortant virus and the increase in human cases observed in 2013 is yet to be determined.¹

All seven human cases reported in this summary are considered to be sporadic, with no evidence of community-level transmission. As influenza A(H5N1) virus is thought to be circulating widely in poultry in Cambodia and Indonesia, additional sporadic human cases or small clusters might be expected in these countries in the future.

¹ V Duong et al, A new genotype resulting from the reassortment of clade 1.1 and 2.3.2.1 at the origin of the human and animal H5N1 virus cases in Cambodia in 2013; http://optionsviii.controlinfluenza.com/optionsviii/assets/File/Options_VIII_Abstracts_2013.pdf, accessed 28 Nov 2013
Table 1: Laboratory-confirmed human cases of avian influenza A(H5N1) virus infection (7 October 2013 – 10 December 2013)

<table>
<thead>
<tr>
<th>Country</th>
<th>Province</th>
<th>Age</th>
<th>Sex</th>
<th>Date of onset</th>
<th>Date of Hospitalisation</th>
<th>Oseltamivir treatment Start date</th>
<th>Date of death</th>
<th>Exposure to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>Kampong Thom</td>
<td>8</td>
<td>F</td>
<td>08/10/2013</td>
<td>11/10/2013</td>
<td>14/10/2013</td>
<td>NA</td>
<td>Dead poultry</td>
</tr>
<tr>
<td></td>
<td>Battambang</td>
<td>6</td>
<td>F</td>
<td>14/10/2013</td>
<td>19/10/2013</td>
<td>24/10/2013</td>
<td>NA</td>
<td>Dead poultry</td>
</tr>
<tr>
<td>Pursat</td>
<td>2</td>
<td>F</td>
<td></td>
<td>17/10/2013</td>
<td>24/10/2013</td>
<td>NA</td>
<td>26/10/2013</td>
<td>Under investigation</td>
</tr>
<tr>
<td>Kampot</td>
<td>10</td>
<td>M</td>
<td></td>
<td>28/10/2013</td>
<td>07/11/2013</td>
<td>07/11/2013</td>
<td>09/11/2013</td>
<td>Dead chicken</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>3</td>
<td>M</td>
<td></td>
<td>05/11/2013</td>
<td>08/11/2013</td>
<td>08/11/2013</td>
<td>NA</td>
<td>Sick and dead poultry</td>
</tr>
<tr>
<td>Pailin</td>
<td>29</td>
<td>M</td>
<td></td>
<td>26/10/2013</td>
<td>03/11/2013</td>
<td>06/11/2013</td>
<td>06/11/2013</td>
<td>Sick and dead poultry</td>
</tr>
</tbody>
</table>

NA: not applicable or not available

Overall public health risk assessment for avian influenza A(H5N1) viruses: Whenever influenza viruses are circulating in poultry, sporadic infections or small clusters of human cases are possible, especially in people exposed to infected household poultry or contaminated environments. However, this influenza A(H5N1) virus does not currently appear to transmit easily among people. As such, the risk of community-level spread of this virus remains low.

Figure 1: Epidemiological curve of avian influenza A(H5N1) cases in humans by country and month of onset
**Human infection with other non-seasonal influenza viruses**

**Avian influenza A(H7N9) in China**

Since the last update of 7 October 2013, China has reported six new cases of human infection with avian influenza A(H7N9) virus, from Zhejiang (5) and Guangdong (1) provinces, with onset dates between 8 October and 29 November. In addition, the Centre for Health Protection, China, Hong Kong SAR has reported two human cases, one with an onset date of 21 November 2013 and the other with onset at the beginning of December. Both cases had been in Guangdong province in China in the week before clinical onset. Most patients presented with pneumonia.

Most human A(H7N9) cases have reported contact with poultry or live bird markets. Knowledge about the main virus reservoirs and the extent and distribution of the virus in animals remains limited and, because this virus causes only subclinical infections in poultry, it is possible that the virus continues to circulate in China and perhaps in neighbouring countries without being detected. As such, reports of additional human cases and infections in animals would not be unexpected, especially with onset of winter in the Northern Hemisphere.

Although five small family clusters have been reported (including one among recent reported cases in Zhejiang province), evidence does not support sustained human-to-human transmission of this virus.

**Overall public health risk assessment for avian influenza A(H7N9) virus:** Sporadic human cases and small clusters would not be unexpected in previously affected and possibly neighbouring areas/countries of China. The current likelihood of community-level spread of this virus is considered to be low.

Continued vigilance is needed within China and neighbouring areas to detect infections in animals and humans. WHO advises countries to continue surveillance and other preparedness actions, including ensuring appropriate laboratory capacity. All human infections with non-seasonal influenza viruses such as avian influenza A(H7N9) are reportable to WHO under the IHR (2005).

Current technical information as well as guidance related to avian influenza A(H7N9) can be found at: http://www.who.int/influenza/human_animal_interface/influenza_h7n9/en/index.html

**Influenza A(H3N2) variant virus infections in humans in the USA**

Since the last update of 7 October 2013, one new case of human infection with influenza A(H3N2)v was reported from the State of Iowa in the United States of America (USA). To date in 2013, the USA has reported 19 cases of human infection with influenza A(H3N2)v from Illinois (1), Indiana (14), Iowa (1), Michigan (2) and Ohio (1). Only one person was hospitalized and no deaths have occurred. All cases reported close contact with swine in the week before illness onset and no ongoing human-to-human transmission has been identified.

Limited serological studies indicate that adults may have some pre-existing immunity to this virus but children do not. Seasonal vaccines do not provide cross-protection to influenza A(H3N2)v viruses in adults or children. Three candidate vaccine viruses specific for A(H3N2)v have been developed in the USA and could be used to produce a human (H3N2)v vaccine if needed.

**Overall public health risk assessment for influenza A(H3N2)v viruses:** Further human cases and small clusters may be expected as this virus is circulating in the swine population in the USA. The current likelihood of community-level spread and public health impact of this virus is considered low.
Close monitoring of the situation, including continued characterization of viruses to detect any changes, is warranted.

**Outbreaks in animals with highly pathogenic avian influenza viruses with potential public health impact**

Overall, official reports of animal influenza outbreaks are at their expected seasonal level ([http://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI](http://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI)). Owing in part to the emergence of avian influenza A(H7N9) virus and infections of humans with this virus in China, there is enhanced surveillance for various subtypes of avian influenza in both humans and animals in China, the countries neighbouring China, and globally. It is therefore expected that more influenza A(H5N1) and A(H7N9) events in humans and animals will be detected and reported, as well as identification and reporting of infections with a variety of other influenza subtypes and reassortant viruses. It is critical that all influenza events be reported through the appropriate channels and that viruses be collected and fully characterized in appropriate animal or human health influenza reference laboratories in order to detect changes that may affect public (or animal) health.

Because of the constantly evolving nature of influenza viruses, WHO continues to stress the importance of global monitoring of influenza viruses in animals and people and recommends that all Member States strengthen routine influenza surveillance. All human infections with non-seasonal influenza viruses are reportable to WHO under the IHR (2005).

**Links:**

WHO human-animal interface web page

Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO
[http://www.who.int/influenza/human_animal_interface/EN_GIP_LatestCumulativeNumberH5N1cases.pdf](http://www.who.int/influenza/human_animal_interface/EN_GIP_LatestCumulativeNumberH5N1cases.pdf)

H5N1 avian influenza: timeline of major events

Avian influenza A(H7N9) information

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](http://www.offlu.net/index.html)