

<b>To:</b>	BC MHOs, PHNLs, ICPs, ERDOCs, IDSPEC, MEDMICRO, AMBULANCE, BCCDC Internal Groups, National Surveillance Network Partners
<b>Subject:</b>	January 9, 2014 – Human Case of Avian Influenza A(H5N1), Canada
<b>Purpose:</b>	To report a human case of avian influenza A(H5N1) in Alberta, Canada, in a returning traveller from China and to provide relevant background information and risk assessment.
<b>Action required:</b>	Ongoing
<b>Recommendations:</b>	Enhanced vigilance, notification and infection control by clinicians in response to cases of severe acute respiratory illness (SARI) in returning travelers from affected areas within 14 days prior to onset of symptoms.

Dear Colleagues:

A fatal case of avian influenza A(H5N1) in a Canadian traveler returning from Beijing, China was confirmed yesterday by Alberta health officials and the Public Health Agency of Canada. This is the first human case of H5N1 to be reported in North America.

The patient was admitted to hospital in Alberta on 1 January with pneumonia and encephalitis, was transferred to the intensive care unit on 2 January and died on 3 January 2014. In addition to influenza A(H5N1), a known human coronavirus was also identified. The patient's close contacts have received antiviral prophylaxis and none are currently symptomatic. Although no recognized contact with poultry, other animals or ill individuals preceded this patient's infection, investigations into how the infection may have been acquired are ongoing.

This patient traveled from Beijing to Vancouver on flight AC 030 arriving at approximately 12:30PM on 27 December 2013 and then traveled onward the same day on flight AC 224 to Edmonton following a 2.5 hour stopover at the Vancouver airport. The patient had developed symptoms en route which reportedly did not include cough.

### **Background Information**

The first known human infection due to the H5N1 subtype of influenza A virus was reported from Hong Kong during the spring/summer 1997. Re-emergence later that same year led to a mass poultry cull in Hong Kong in December 1997. Following 18 human cases (6 of them fatal) in 1997, the H5N1 subtype did not re-emerge again to cause human illness until 2003 when there was report of two human cases in Hong Kong (one fatal) both with history of travel to Fujian Province, China.

Since 2003 and to date, the WHO reports 648 human cases of H5N1 and 384 deaths (case fatality of 58% among recognized cases) from 15 countries. The most cases to date globally have occurred in Indonesia (195 cases/163 deaths) and Egypt (173/63), the latter country reporting the most cases since 2009. In 2013 there were 38 human cases and 24 deaths (case fatality of 63%). All of the cases reported from June 2013 and until the most recent cases in November 2013 have been from Cambodia (26 cases/14 deaths in total in 2013) and Indonesia (3/3). Earlier in 2013 cases were also reported in Egypt (4/3), China (2/2), Vietnam (2/1) and Bangladesh (1/1).

In China, 45 cases and 30 deaths have been reported in total since 2003 (case fatality of 67%). The latest 2 cases reported in China were recorded in February 2013; both were fatal and from Guizhou Province. These cases were not epidemiologically linked, and neither had documented exposure to poultry. Prior to that, the last reported case in China was in Guangdong Province in September 2012. The last reported case from Beijing, China, was in January 2009. On average, 1-2 cases per year have been reported in China since 2010. Given the population density in that region and other parts of Asia, human infection due to H5N1 is an exceedingly rare event.

H5N1 is designated a highly pathogenic avian influenza (HPAI) virus, a designation that derives from the severity of illness in infected birds and does not necessarily imply severity of illness in humans. In contrast, avian influenza A(H7N9) virus is designated a low pathogenic avian influenza (LPAI) because it causes mild or asymptomatic infection in birds. However, as with H5N1, the H7N9 virus is associated with severe illness in humans (case fatality of approximately 30%). Accordingly, the primary risk factor for H5N1 in the majority of cases has been exposure to sick or dead poultry. A recent review of cases reported in China suggests that the average incubation period is about 3-4 days and the average time from illness onset to hospitalization for severe illness is about 4-5 days. The majority of H5N1 cases have been detected in young adults (20-39 years), followed by children (0-19 years), with about an equal sex distribution, in contrast to H7N9 which has predominately affected older, adult men.

The current seasonal influenza vaccine is not anticipated to protect against H5N1 subtype viruses. Overall, H5N1 viruses are considered susceptible to treatment with neuraminidase inhibitors (e.g., oseltamivir). Antiviral treatment is considered most effective if given within the first 48 hours of onset of influenza symptoms.

### **Risk Assessment**

The H5N1 virus is not easily transmitted from person to person. Although there have been isolated reports of probable person-to-person transmission globally, these have been predominately limited to family clusters. The risk of transmission on an aircraft is believed to be extremely low and the risk of community-level spread in BC is even lower. Furthermore, more than one incubation period has passed since this case's flight. As such, those who may have been exposed on board or in the airport and remain well can be reassured. Nevertheless, airline and passenger contact is a federal responsibility and related follow-up is ongoing by the Public Health Agency of Canada.

Most respiratory illness at this time of year, including among returning travelers, will be due to common seasonal viral illnesses such as the 2009 pandemic H1N1 virus, which remains the predominant circulating influenza strain in BC so far this year.

### **Action and Advice**

As always, clinicians should notify their local health authority/Medical Health Officer in the event of severe acute respiratory illness (SARI) in patients with recent travel to affected areas within 14 days prior to symptom onset. Given a spectrum of illness inclusive of atypical presentations, enhanced vigilance, notification and infection control by clinicians in response to SARI or other severe or unusual clinical outcomes in returning travelers is advised. Clinicians and health care workers should implement respiratory precautions immediately, and cases should be managed in respiratory isolation with contact and droplet precautions. Where the index of suspicion or exposure risk may be high and/or where aerosol-generating procedures that may facilitate spread are used, airborne precautions are warranted.

For diagnostic testing for suspected avian influenza (e.g., H5N1, H7N9), please discuss with your local health authority/Medical Health Officer and consult a virologist or microbiologist at the BC Public Health Microbiology & Reference Laboratory (PHMRL) to arrange advanced notification and direct shipping. Lower respiratory specimens (e.g., sputum, endotracheal aspirate, or bronchoalveolar lavage) are recommended, where possible and clinically indicated. Follow strict infection prevention and control guidelines when collecting respiratory specimens.

### **Additional Resources**

For the latest WHO tally of human H5N1 cases (as of December 10, 2013) see:  
[http://www.who.int/influenza/human\\_animal\\_interface/en/](http://www.who.int/influenza/human_animal_interface/en/)

For the latest WHO summary and assessment of influenza at the human-animal interface see (as of 20 December 2013) including an epidemic curve of H5N1 cases in humans by country and month of onset since 2003 see:

[http://www.who.int/influenza/human\\_animal\\_interface/Influenza\\_Summary\\_IRA\\_HA\\_interface\\_20December13.pdf](http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_20December13.pdf)

For a timeline of major H5N1 events see:

[http://www.who.int/influenza/human\\_animal\\_interface/avian\\_influenza/H5N1\\_avian\\_influenza\\_update.pdf](http://www.who.int/influenza/human_animal_interface/avian_influenza/H5N1_avian_influenza_update.pdf)