

WHO RISK ASSESSMENT

Human infections with avian influenza A(H7N9) virus

28 February 2014

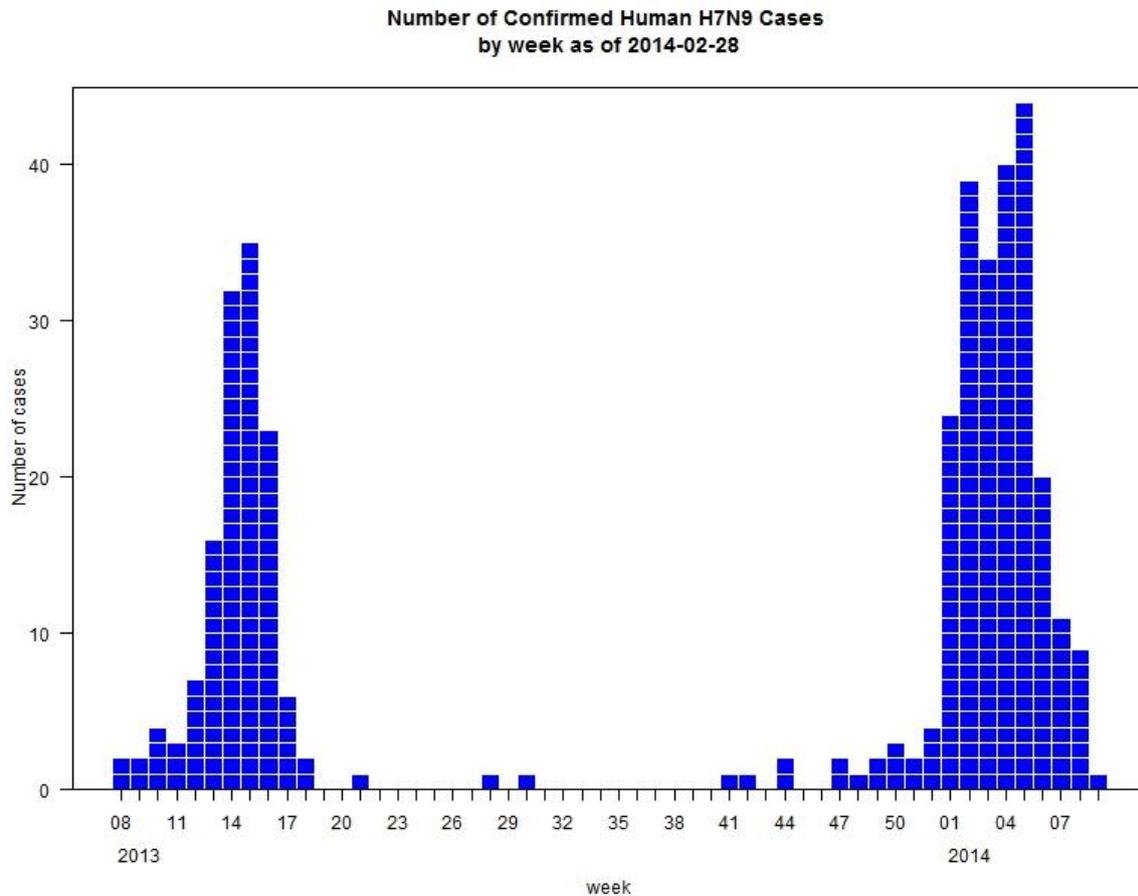
Summary of surveillance and investigation findings

Human cases of avian influenza A(H7N9) virus infection to date

A total of 375 laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including 115 deaths, have been reported to WHO: 367 cases by China National Health and Family Planning Commission, two cases by the Taipei Centers for Disease Control (Taipei CDC), five cases by the Centre for Health Protection, China, Hong Kong SAR, and one case in a Chinese traveller, reported from Malaysia. The cases occurred in a first wave (n=133) from February to May 2013; then two cases were reported in July and August; and from October 2013 a second wave of human cases has been occurring (n= 240 to date) (fig 1)¹. Cases have been reported in both men and women, and across a wide age range. The age distribution in the second wave is very similar to the first wave, with most cases occurring in middle-aged and older men, few in children and even fewer in teenagers and young adults. The mean age is slightly lower in the second wave (53 versus 58 years) compared with the first wave. Infections in men are still more frequently reported than those in women. The case fatality rate among reported cases in the second wave is currently similar to that of the 30% reported in the first wave, though it might increase as some patients are still hospitalized in critical condition. Similar to the first wave, most of the cases in the second wave were considered severe, with the exception of children, who have been primarily presenting with a milder clinical picture.

¹ For the analysis, the cases reported over summer are included in the second wave.

Fig 1: Laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus by week of onset



Virus characteristics

Comparison of avian influenza A(H7N9) viruses isolated from humans and environmental samples using haemagglutination inhibition assays shows that limited antigenic diversity exists and they remain antigenically similar to the candidate vaccine viruses derived from A/Anhui/1/2013-like viruses. Unlike the surface genes, the internal genes were more diverse through reassortment with avian influenza A(H9N2) viruses. All recent avian influenza A(H7N9) viruses that have been tested remain susceptible to the neuraminidase inhibitor class of antiviral drugs. See also http://www.who.int/influenza/vaccines/virus/201402_h5h7h9h10_vaccinevirusupdate.pdf.

Source of human infection

Although much remains unknown about this virus, such as (1) the animal reservoir(s) in which it is circulating, (2) the main exposures and routes of transmission to humans, and (3) the distribution and prevalence of this virus among people and animals (including the distribution in wild birds),

human infection appears to be associated with exposure to infected live poultry or contaminated environments, including markets where live poultry are sold, given the following:

- Around 80% of human cases report a history of exposure to birds or live poultry markets.
- The viruses isolated from humans are avian influenza viruses and genetically similar to those isolated from birds and the environment.
- Targeted testing of poultry and environment in live poultry markets that are epidemiologically linked with human cases of H7N9 infection have revealed more positive results than testing in areas not linked with human cases.

Current evidence suggests that these avian influenza A(H7N9) viruses do not transmit easily from poultry or environments to humans, although their transmissibility may be greater compared with highly pathogenic avian influenza A(H5N1) viruses.

Evidence regarding human-to-human transmission

Information to date suggests that this virus does not transmit easily from human to human, and does not support sustained human-to-human transmission.

The number of clusters of human cases remains comparable to the first wave. Since July, six small family clusters (of 2 to 3 family members) with possible household transmission were reported. With the exception of the family clusters, enhanced surveillance has not revealed additional human infections among contacts of confirmed cases so far in the second wave. Considering that a few cases of H7N9 infection since October were detected through influenza-like illness (ILI) surveillance, continued vigilance is warranted.

Risk assessment

This 25 February 2014 risk assessment has been prepared in accordance with WHO's published recommendations for rapid risk assessment of acute public health events and will be updated as more information becomes available.

Overall, the public health risk from avian influenza A(H7N9) virus has not changed since the previous assessment published on 21 January 2014².

What is the likelihood that additional sporadic human cases of infection with avian influenza A(H7N9) viruses will occur?

The understanding of the epidemiology associated with this virus, including the main reservoirs of the virus and the extent of its geographic spread among animals, remains limited. However, it is likely that most human cases were exposed to the H7N9 virus through contact with infected poultry or contaminated environments, including markets (official or illegal) that sell live poultry. As the virus source has not been identified nor controlled, and the virus continues to be detected in

² http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_20December13.pdf

animals and environments, further sporadic human cases are expected in affected and possibly neighbouring areas.

Other avian influenza viruses such as highly pathogenic avian influenza A(H5N1) have demonstrated a seasonal pattern in which animal outbreaks and human cases have been less frequent in summer months and more frequent in winter months in temperate zones. An increase in avian influenza A(H7N9) virus infections in humans has been noted since October 2013, after a period of relatively few human cases over the summer, indicating that exposure to or infection with these avian influenza A(H7N9) viruses may follow a similar seasonal pattern.

What is the likelihood of human-to-human transmission of avian influenza A(H7N9) viruses?

Current evidence suggests that this virus does not transmit easily among humans.

It is possible that limited human-to-human transmission may have occurred where there is unprotected close contact with symptomatic human cases. The number of clusters remains comparable to the first wave. The clusters involved a maximum three people with potentially common exposure and no further human-to-human transmission was reported. No healthcare-associated clusters have been reported. All these suggest that the transmissibility of the virus among humans remains low.

What is the risk of international spread of avian influenza A(H7N9) viruses by travellers?

Malaysia reported one human case with avian influenza A(H7N9) virus infection. The patient was a Chinese resident who travelled to Malaysia while sick, and was most likely exposed in China. No further cases were reported linked to this case.

It is possible that further similar cases will be detected in other countries among travellers from affected areas. Community-level spread is unlikely as the virus does not transmit easily among people.

Does WHO recommend any travel and trade precautions related to the H7N9 outbreak?

WHO does not advise special screening at points of entry with regard to this event, nor does it currently recommend any travel or trade restrictions.

What should countries do?

WHO advises countries to continue strengthening influenza epidemiological and virological surveillance, reporting human infections as applicable under the IHR (2005), and other national health preparedness actions. Current technical information as well as guidance related to avian influenza A(H7N9) can be found at the WHO website.³

³ http://www.who.int/influenza/human_animal_interface/influenza_h7n9/en/