Avian Influenza A (H7N9) infection in poultry and humans in China
Updated Situation Assessment (2)

Note: Defra’s International Disease Monitoring (IDM) team monitors outbreaks of high impact diseases around the world. Notifiable Avian Influenzas in wild birds or poultry which are capable of causing either high mortality in birds or infection in humans are of interest.

1 Situation Assessment
As reported previously, in March / April 2013 the first cases of human infection with a novel reassortant avian influenza virus A (H7N9) were first reported by the Chinese Authorities. These reports were soon followed by confirmation of Low Pathogenicity Avian Influenza (LPAI) H7N9 in live bird markets (both in birds and also from environmental samples) in the same regions as the human cases. Up to July 2013, there were 132 human cases and 44 deaths in 10 regions of Eastern China. Between June and September there were only three cases and then from October the number of cases started to increase (CDC, 2014). There is still no evidence of sustained human to human transmission (WHO, 2014).

See map below for current reports of A (H7N9) positive samples from poultry or poultry markets as well as other avian influenza outbreaks over the last 12 months – data from OIE WAHID.
In the last three months there has been a significant rise in cases of A (H7N9) in humans, bringing the current total to 356 laboratory confirmed cases and 86 deaths. Last week, the first case was reported outside China / Taiwan / Hong Kong, when a returning traveller became ill in Malaysia (CDC, 2014). The person had been visiting Guangdong province, where a cluster of cases has been reported recently. In the majority of cases, contact with poultry or live bird markets is a significant risk factor (FAO, 2014).

In terms of the regional spread, new regions in China have reported cases in 2014: Zhejiang and Guangdong in particular have reported clusters of cases; Guangxi in the South is on the border with Vietnam. A consignment of imported live chickens in Hong Kong (from Guangdong) tested positive, but the quick implementation of disease control measures prevented onward spread (OIE, 2014b). Neighbouring countries were reminded about updating their surveillance and preparedness plans by the FAO as there was considered to be an increased likelihood of spread to new regions of China and “moderate to high risk” countries around the time of the lunar New Year (FAO, 2014). The expected increase in poultry trade, consumption of poultry meat and movement of people around this time, coupled with virus survival rates in winter were considered significant risk factors in the increased likelihood of case reporting.

There have been no reports of positive samples from wild birds, pigs or other animals. Despite large levels of surveillance in China there have been only relatively few positive samples from markets and poultry premises and no confirmed wild bird reservoirs. The poultry flocks which have tested positive have not shown any clinical signs. This makes early warning surveillance more complicated but domestic poultry especially chickens are highly susceptible to the virus and should be considered the primary reservoir.

A recent academic paper by Jones et al., (2014) reported on the ability of human H7N9 isolate to replicate in song birds, parakeets and sparrows, which showed no clinical signs but shed virus through the oropharyngeal route (and into shared water troughs); this was only in experimental infections and no pet birds have tested positive, but this may suggest suitable intermediate hosts. It also may explain the comparatively higher rates of infection in elderly men in China, as the pastime of keeping pet birds is more common in this demographic group. More evidence would help determine if passerines, through increased contact with humans, represent an alternative pathway for exposure. The virus isolates from the more recent clusters of cases in Guangdong and Zhejiang have been sequenced and analysis suggests they may be new reassortant strains, which are not classified as highly pathogenic for poultry and almost certainly retain the same infectivity characteristics for domestic birds compared to the strains from earlier cases in Spring 2013, nevertheless it reaffirms these viruses are circulating in poultry and further reassortment with co-circulating viruses is highly possible.
The spread of virus to new regions or countries via travellers infected at source has occurred (Taiwan last year and recent cases in Hong Kong and Malaysia; NaTHNaC, 2014) and raises the possibility that this may potentially be a risk pathway in the future for infection of poultry if contact with susceptible species were to occur during the infectious phase of infection. The risk of disease spreading to Europe via humans is considered low (ECDC, 2014) but this could change if the virus acquired the capability to transmit between humans.

2 Conclusions

The increase in human cases in China is concerning for public health authorities in China and neighbouring regions, but should not signify a change in risk of introduction to the EU. The PHE (2014), WHO (2014) and ECDC (2014) have repeated their assessments that there is no need for travel restrictions for people to China but visitors should be aware of the risks of visiting live bird markets or handling live poultry. Industry should also note this recommendation for their poultry workers.

At present, we continue to consider the risk of introduction of avian influenza A (H7N9) to be negligible through the legal trade in any poultry products. The illegal trade in poultry meat and poultry products is difficult to quantify but there is a risk of HPAI H5N1 in such products and therefore these products are prohibited from regions with outbreaks of any notifiable avian disease.

The UK and EU have statutory surveillance systems in place for monitoring the incursion of new strains of H5 or H7 viruses in poultry well as wild bird surveillance programmes.

We will continue to monitor the situation.

3 Authors

Dr Helen Roberts

Professor Ian Brown

4 References


CDC (2014) Avian Influenza A (H7N9) virus http://www.cdc.gov/flu/avianflu/h7n9-virus.htm

FAO (2014) Addressing Avian Influenza A (H7N9) Qualitative Risk Assessment update no. 2
http://www.fao.org/docrep/019/i3631e/i3631e.pdf


http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20699

NaTHNaC (2014) Imported Avian Influenza A (H7N9) case in Malaysia.
http://nathnac.org/pro/clinical_updates/h7n9_malaysia_140214.htm

OIE (2014) Low Pathogenic avian influenza (poultry), China (People’s Republic of) Follow-up Report No. 12 (OIE Report Reference 14746)

OIE (2014b) Low Pathogenic avian influenza (poultry), China (People’s Republic of) Follow-up Report No. 1 (OIE Report Reference 14749)

PHE (2014) PHE Risk Assessment – Avian Influenza A (H7N9)
http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317140753429