

Armed Forces Health Surveillance Branch H7N9 Surveillance Summary (20 JAN 2016)



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DEPARTMENT OF DEFENSE (AFHSB)

Avian Influenza A (H7N9) Surveillance Summary #53

20 JAN 2016 (next Summary 3 FEB 2016)



CASE REPORT: As of 20 JAN 2016, 752 (+24 since the last AFHSB surveillance summary on 13 NOV 2015) human cases of avian influenza A (H7N9) including 266 (+7) deaths have been reported in China, Hong Kong, Taiwan, Malaysia, and Canada. Additionally, cases in Taiwan (4), Hong Kong (13), Malaysia (1), and Canada (2) are thought to have been imported, most likely from Guangdong, China.

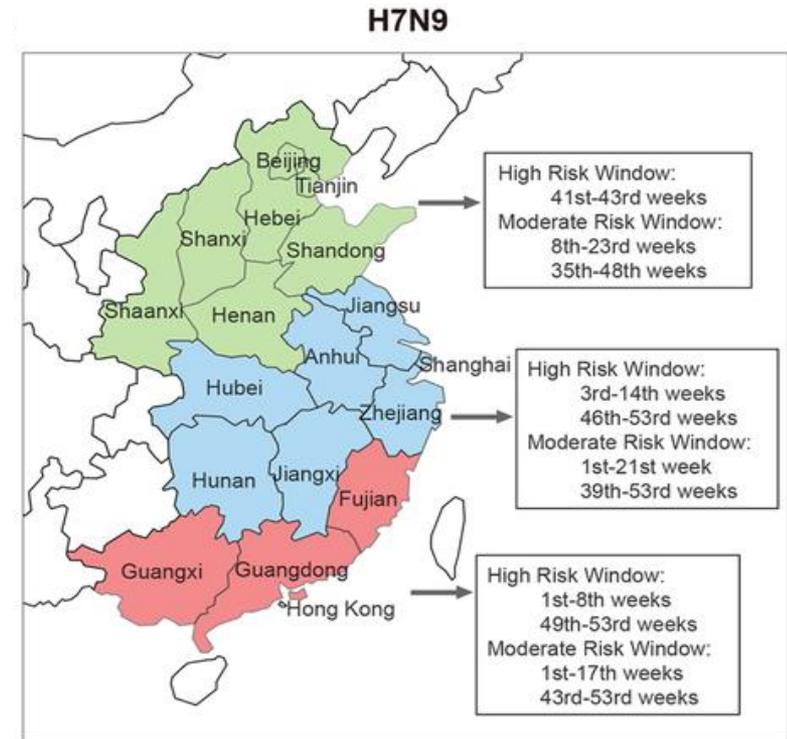
Of the 24 new cases, the majority had recent contact with poultry and reported symptom onset in DEC 2015. Over half of new cases were reported out of Guangdong and Zhejiang provinces.

TRANSMISSION: In a study published in CDC's APR 2015 EID Journal, H7N9 antibodies were found among 6.7% of case contacts identified between MAR 2013 and MAY 2014 in China, suggesting that human-to-human transmission does occur and could cause mild or asymptomatic infections.

A recent study, published in Nature on 11 DEC 2015, found that certain climate factors are related to human infection with avian influenza A (H7N9). More specifically, the study found correlations between transmission and warm temperatures and high humidity; the authors compiled risk maps for areas of transmission in China based on these conclusions (see figure on the right).

DIAGNOSTICS AND TREATMENT: As of 28 APR 2015, updated H7N9 testing and reporting guidelines and a list of DoD laboratories can be found at the AFHSB website. On 19 APR 2013, FDA issued an Emergency Use Authorization for the CDC Human Influenza Virus Real-Time RT-PCR diagnostic panel – Influenza A/H7 assay; this was made available on 26 APR 2013. WHO confirms oseltamivir (Tamiflu) and zanamivir (Relenza) are recommended treatments for H7N9.

A study, published on 7 DEC 2015 in the Lancet, found that a live attenuated influenza vaccine (LAIV) candidate for avian influenza A (H7N9) was well tolerated by the phase one trial participants and showed significant immunogenicity.



This map illustrates predicted risk windows for possible human H7N9 cases in China by epidemiologic week. Predicted periods of climate conditions that are conducive to the spread of H7N9 were based on the temperature and relative humidity ranges in North (green), Central (blue), and South (red) China. The indicated climate high- and moderate-risk windows indicate periods where vigilance for the control of H7N9 infection should be increased.

Source: Figure 3 from Li et al. (2015). Identification of climate factors related to human infection with avian influenza A H7N9 and H5N1 viruses in China. Nature, Scientific Reports 5, Article number: 18094.

Legend: Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous Summary (13 NOV 2015).

All information has been verified unless noted otherwise. Sources include the U.S. CDC, HHS, WHO, FAO, CHP, China CDC, Nature, and The Lancet.

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BACKGROUND: On 1 APR 2013, WHO reported three human cases of infection with a novel influenza A (H7N9) virus in China. This was the first time human infection with H7N9 had been detected. Seasonality has been observed since the beginning of this outbreak with a consistent pattern of declining incidence through the summer months followed by a spike in cases in the winter months. According to a [study](#) in the Journal of Infection in Developing Countries (JIDC), the ongoing H7N9 outbreak can be characterized by three major waves of transmission. FAO [reports](#) that a “fourth wave” of the outbreak has begun and notes this follows the trend from previous years of an uptick in human cases each winter. FAO expects human cases to “rise sharply in the coming weeks or months” as a result of virus seasonality and critical gaps in biosecurity commonly found in the poultry industry, such as the mixing of species, lack of flock identification and movement control, and close contact between birds at live bird markets.

The overall case-fatality proportion among known cases is **35%**, the average age of those affected is 53 years, and **at least 157 (+8) of the cases reported have been female**. The most recent known date of onset was **25 DEC 2015**. **Additionally, one new case in Jiangxi Province reportedly occurred in a healthcare worker; this type of detailed information is often absent from China's more recent updates**. Cases have been reported in 14 provinces of China: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hunan, Jiangsu, Jiangxi, Jilin, Shandong, Zhejiang, and Xinjiang; and two municipalities, Beijing and Shanghai.

AFHSB notes that since much of the reporting out of China occurs in monthly batches, with limited information on age, gender, and location, it is possible that **only the most severe cases and fatalities are being reported by China**. It is unknown how many mild or asymptomatic cases have occurred and how many cases have occurred without laboratory testing. **This lack of information coupled with the infrequent reporting makes spatial and temporal cluster analysis impossible**.

The majority of human cases have reported exposure to poultry, often via live bird markets. **Media report that Ningbo city in Zhejiang Province has kept its urban poultry markets closed since JUL 2015 and taken steps to prevent transmission in the “countryside markets” as well. However, media report that rural residents are at higher risk of contracting the virus during winter “as many turn to breeding poultry in their homes” to avoid the cold conditions.” As H7N9 is usually asymptomatic in birds, many bird owners are unaware of the risk of transmission**. On 15 OCT, FAO released new guidelines for [biosecurity improvements in live bird markets](#) and [risk communication](#) regarding H7N9. Confirmed avian H7N9 has been rare and subclinical but has been identified in chickens, ducks, pigeons, and a wild tree sparrow.

INTERAGENCY/GLOBAL ACTIONS: CDC maintains its [Level 1: Practice Usual Precautions travel advisory for China](#), advising travelers to China to avoid contact with poultry (including poultry markets and farms), birds, and their droppings. CDC and WHO advise no special screenings at points of entry, and no trade or travel restrictions. On 23 OCT, WHO released a [situation update](#) that says the overall public health risk from H7N9 has not changed since its last [Risk Assessment of Human Infections with Avian Influenza A \(H7N9\) Virus](#). On 9 NOV, the China Ministry of Agriculture released [recommendations](#) for how to improve H7N9 prevention and control efforts for the coming flu season. These include strengthening: monitoring and early warning, live bird market regulations for transporting live poultry, sectorial collaboration, emergency preparedness, advocacy, and information dissemination. **The recent increase in cases near the border with Hong Kong in Guangdong Province has led to an increase in health surveillance measures at all border check points by the Hong Kong Centre for Health Protection (CHP)**.

SURVEILLANCE: Reagents to be used for surveillance testing purposes are available via the [CDC website](#). NMRC has produced amplicon H7N9 positive testing control material using the published WHO primers/probes. Kits have been sent to AFRIMS, NAMRU-3, NAMRU-6, NAMRU-2 Phnom Penh, NMRC-A and NHRC for surveillance purposes. Nineteen DoD laboratories have been sent diagnostic kits, as have all 50 states, the District of Columbia, Puerto Rico, and more than 60 international labs.

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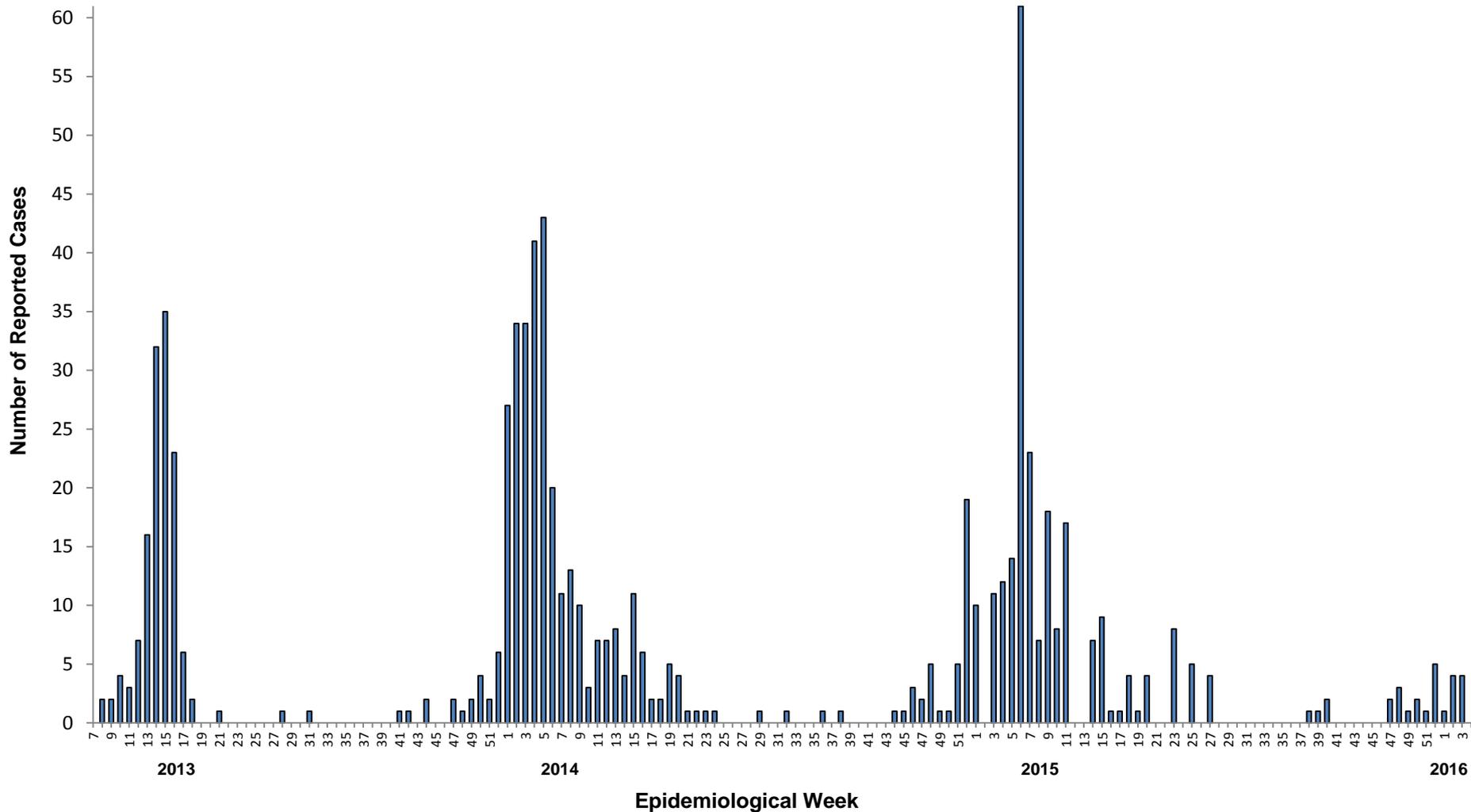
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Avian Influenza A (H7N9) Cases by Estimated Week of Onset As of 20 JAN 2015 (N=752)



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Additional Resources and Media Reports

H7N9 Web Sites

- [AFHSB Detecting and Reporting DOD Cases of Avian Influenza A \(H7N9\)](#)
- [WHO H7N9 Overview](#)
- [WHO Guidelines for H7N9 Post-Exposure Chemoprophylaxis of Close Contacts](#)
- [WHO Risk Assessment for Human Infection of H7N9](#)
- [CDC H7N9 Overview](#)
- [CDC H7N9 Case Definitions](#)
- [CDC H7N9 FAQs](#)
- [CDC H7N9 Risk Assessment](#)
- [CDC Travel Notice](#)
- [HHS EUA Declaration](#)

Information and News

- [Widespread hike in egg prices due to limited supply in many provinces](#) (Tech-Food, 20 JAN)
- [Latest WHO DON on H7N9](#) (WHO, 19 JAN)
- [Government media: 1 New H7N9 case in Fujian province](#) (Fujian Sina, 19 JAN)
- [China's options to tackle stock shortages caused by bird flu in Europe](#) (Health Map, 18 JAN)
- [East China Province Reports One H7N9 Case](#) (Global Times, 6 JAN)
- [Hong Kong Notification: Fatal H7N9 Case In Guangdong Province](#) (Avian Flu Diary, CHP DH, 26 DEC 2015)
- [Identification of climate factors related to human infection with avian influenza A H7N9 and H5N1 viruses in China](#) (Nature, 11 DEC 2015)
- [H7N9 live attenuated influenza vaccine in healthy adults: a randomised, double-blind, placebo-controlled, phase 1 trial](#) (The Lancet, 7 DEC 2015)
- [Experimental infection of peridomestic mammals with emergent H7N9 \(A/Anhui/1/2013\) influenza A virus: Implications for biosecurity and wet markets](#) (Journal of Virology, 6 NOV 2015)
- [Human Infection with Avian Influenza A \(H7N9\) Situation Update as of 23 OCT](#) (WHO, 23 OCT 2015)
- [Fourth wave of H7N9 avian influenza threatens livelihoods, public health](#) (FAO, 15 OCT 2015)
- [Differences in the epidemiology of human cases of avian influenza A\(H7N9\) and A\(H5N1\) viruses infection](#) (Journal of Clinical infectious Diseases, 4 MAY 2015)
- [Detecting Spread of Avian Influenza A \(H7N9\) Virus Beyond China](#) (CDC EID Journal, APR 2015)
- [Transmission Potential of Influenza A \(H7N9\) Virus, China 2013-2014](#) (CDC EID Journal, APR 2015)
- [Avian Influenza A \(H7N9\) Virus Antibodies in Close Contacts of Infected Persons, China, 2013–2014](#) (CDC EID Journal, APR 2015)
- [Co-infection with Avian \(H7N9\) and Pandemic \(H1N1\) 2009 Influenza Viruses, China](#) (CDC EID Journal, APR 2015)
- [Dissemination, divergence and establishment of H7N9 influenza viruses in China](#) (Nature, 11 MAR 2015)
- [Clinical, Virological and Immunological Features from Patients Infected with Re-Emergent Avian-Origin The Third Wave: H7N9 Endemic Reassortment Viruses and Patient Clusters](#) (JIDC, 17 FEB 2015)