Armed Forces Health Surveillance Center
H7N9 Surveillance Summary
(6 MAY 2015)

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For questions or comments, please contact:
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DEPARTMENT OF DEFENSE (AFHSC)

Avian Influenza A (H7N9) Surveillance Summary #51

6 MAY 2015 (next Summary as needed)

CASE REPORT: As of 6 MAY 2015, 693 (+6) human cases of avian influenza A (H7N9) including 244 deaths have been reported in China, Hong Kong, Taiwan, Malaysia, and Canada. Very little information on cases has been released by provincial governments since 9 MAR. AFHSC notes China and Hong Kong have reported increased incidence of seasonal flu and Urumqi province has reported significant increases in respiratory illnesses since 9 MAR.

Media report that the 'third wave' of the outbreak may have subsided. However, it is possible only the most severe cases and/or 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.

TRANSMISSION: In a recent study published in CDC's 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.

DIAGNOSTICS AND TREATMENT: As of 7 JAN 2015, updated H7N9 testing and reporting guidelines and a list of DoD laboratories can be found at the AFHSC 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.

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, DC, Puerto Rico, and more than 60 international labs.

INTERAGENCY/GLOBAL ACTIONS: CDC posted interim guidance for H7N9 case definitions in the U.S. and also updated FAQs for H7N9 on 9 SEP 2014. On 6 FEB 2015, CDC issued a travel notice 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 FEB, WHO released an updated Risk Assessment of Human Infections with Avian Influenza A (H7N9) Virus which states public health risk from H7N9 has not changed since the beginning of the outbreak.

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 published in the Journal of Infection in Developing Countries (JIDC), the ongoing H7N9 outbreak can be characterized by three major waves of transmission. **Page 5** illustrates these ongoing seasonal trends for H7N9 cases.

The overall case-fatality proportion among known cases is 35%, the average age of those affected is 53 years, and at least 145 of the cases reported have been female. The most recent known date of onset was 27 APR 2015, although most cases have been reported without such detailed information. 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. Four cases identified in Taiwan are presumed to have become infected while traveling in Jiangsu. Additionally, cases in Hong Kong (13), Malaysia (1), and Canada (2) are thought to have been imported, most likely from Guangdong, China.

At least 20 small clusters of confirmed illness have been identified since APR 2013, although the majority of human cases have reported exposure to poultry, often via live bird markets. According to health officials, live bird market closures will continue in Shanghai annually for the next five years, pending evaluation of future need. Shanghai did not report cases of H7N9 during the 2013 closures.

In early FEB 2015, media reported that Urumqi live bird market operations in Xinjiang province have been suspended until further notice and Guangdong bird markets are scheduled to close intermittently for cleaning in the upcoming months. On 27 FEB, a study was published in PLoS One confirming H7N9 is endemic in poultry in the Guangdong province. Guangzhou's Office of Food Safety Commission announced on 30 MAR that restrictions on live poultry markets would be expanded starting 1 APR. Confirmed avian H7N9 has been rare and subclinical but has been identified in chickens, ducks, pigeons, and a wild tree sparrow.

A study published in Nature on 11 MAR 2015 suggests that the spread of H7N9 from eastern to southern China and its continued prevalence in poultry "has led to the establishment of multiple regionally distinct lineages with different reassortant genotypes." The authors note that "repeated introductions of viruses from Zhejiang to other provinces and the presence of H7N9 viruses at live poultry markets have fuelled the recurrence of human infections," and that the expansion of geographical distribution and genetic diversity of H7N9 poses a "direct challenge to current disease control systems," and "may become a long-term threat to public health." The article notes that H7N9 viruses have become enzootic in China and "may spread beyond the region, following the pattern previously observed with H5N1 and H9N2 influenza viruses."

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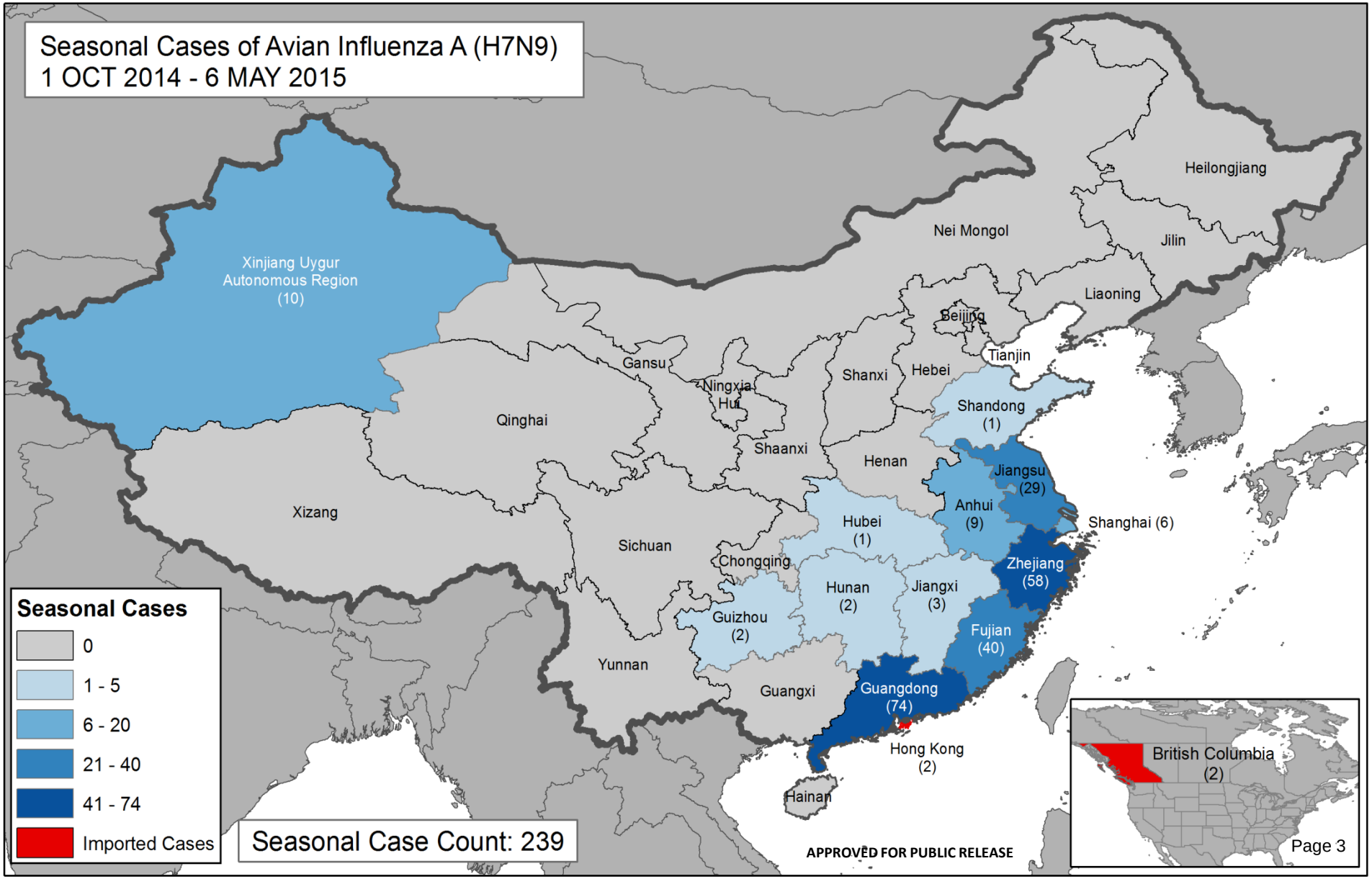

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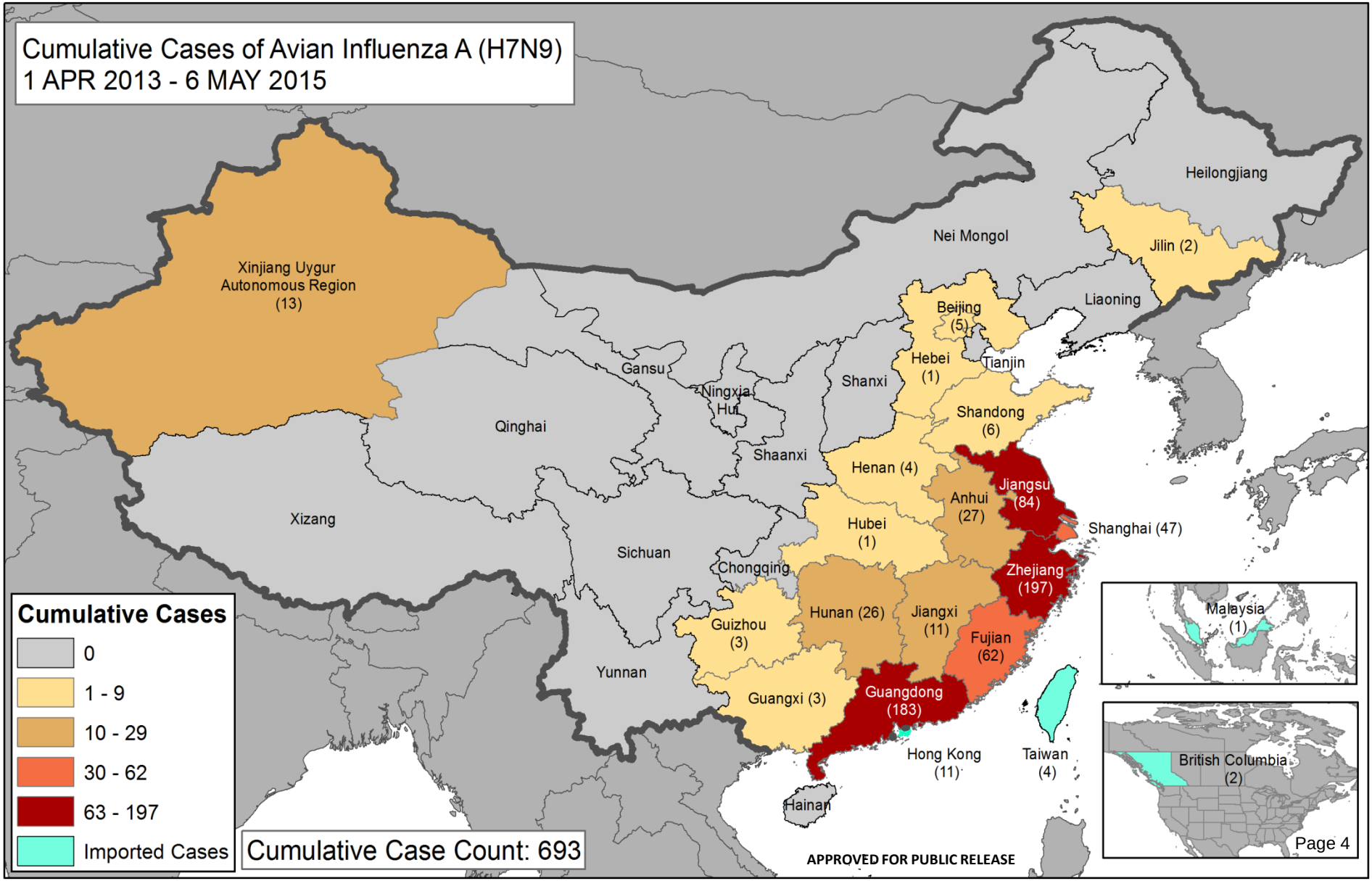

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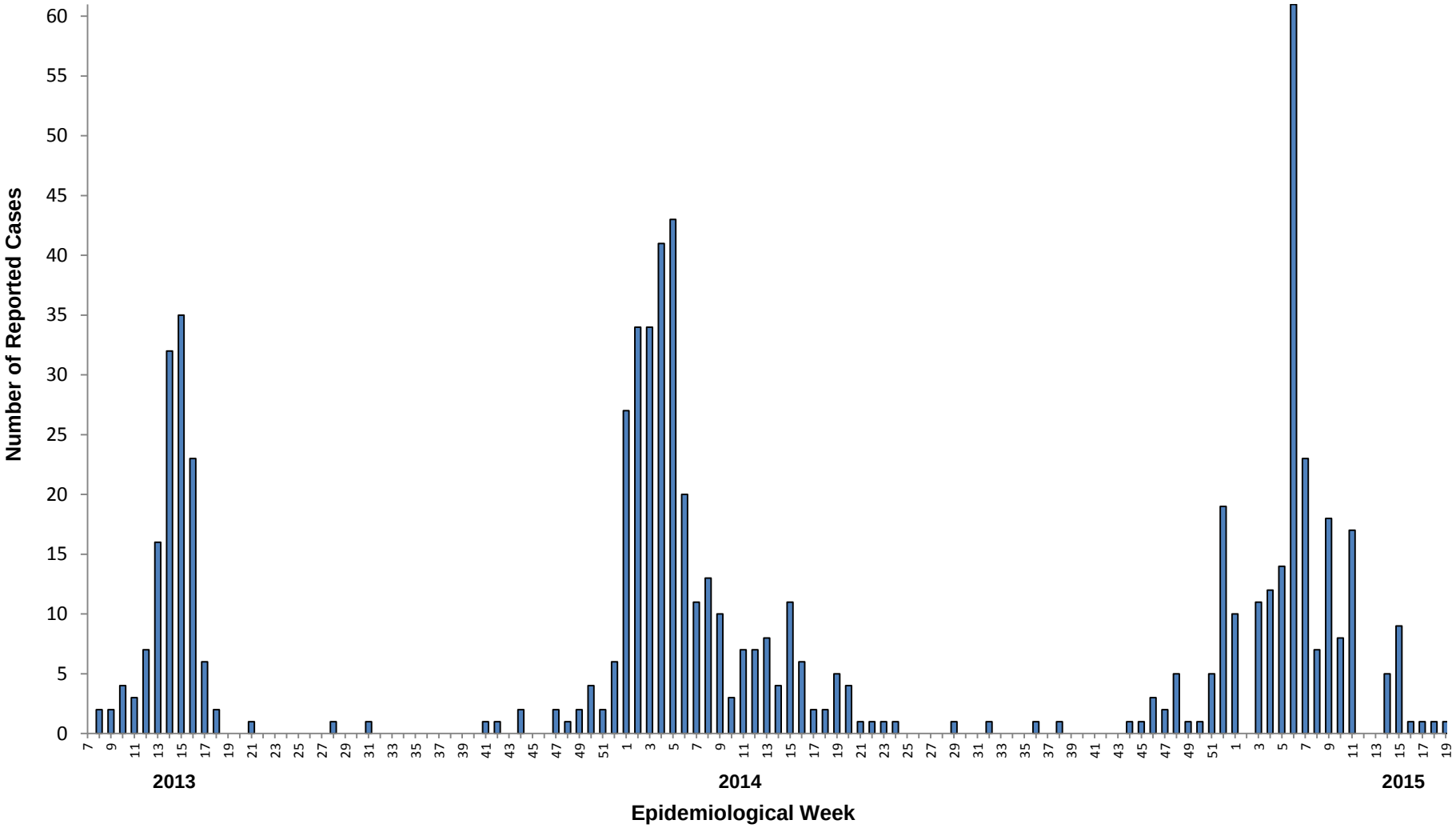

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Additional Resources and Media Reports

H7N9 Web Sites

- AFHSC 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

- The third outbreak of influenza A(H7N9) virus seems to be over (VDU Blog, 4 MAY)
- Differences in the epidemiology of human cases of avian influenza A(H7N9) and A(H5N1) viruses infection (Journal of Clinical infectious Diseases, 4 MAY)
- Latest WHO DON on H7N9 (WHO, 15 APR)
- 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)
- Evaluation of MDCK Cell-Derived Influenza H7N9 Vaccine Candidates in Ferrets (PLoS One, 23 MAR)
- 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)
- Household transmissibility of avian influenza A (H7N9) virus, China, February to May 2013 and October 2013 to March 2014 (Eurosurveillance, 12 MAR)
- Dissemination, divergence and establishment of H7N9 influenza viruses in China (Nature, 11 MAR)
- Clinical, Virological and Immunological Features from Patients Infected with Re-Emergent Avian-Origin Human H7N9 Influenza Disease of Varying Severity in Guangdong Province (PLoS One, 27 FEB)
- The Third Wave: H7N9 Endemic Reassortment Viruses and Patient Clusters (JIDC, 17 FEB)
- Urumqi Live Bird Market Operations Have Been Closed (FluTrackers, 1 FEB)