

<b>To:</b>	BC MHOs, PHNLs, ICPs, ERDOCs, IDSPEC, MEDMICRO, AMBULANCE, BCCDC Internal Groups, National Surveillance Network Partners
<b>Subject:</b>	<b>February 7, 2014 – Emerging Respiratory Viruses Update</b>
<b>Purpose:</b>	To re-emphasize heightened clinician awareness for emerging respiratory pathogens
<b>Action required:</b>	Yes
<b>Recommendations:</b>	Enhanced vigilance, notification and infection control by clinicians in response to cases of severe acute respiratory illness (SARI) with links to affected areas in the two weeks prior to symptom onset (i.e. residence, travel history or contact with someone with such history)

**\*\*\* Please share with your workplace colleagues as appropriate. \*\*\***

Dear Colleagues –

The number of human cases of avian influenza A(H7N9) in China has surged in recent weeks.

There have been more human cases of H7N9 reported from China thus far in 2014, than H5N1 cases reported globally during the past three years.

Also, last week, the second ever human case of avian influenza A(H10N8) was reported from China.

Taking into account the population density in affected areas, human infection due to these avian influenza subtypes remains a rare event. However, given their changeability and pandemic potential, all novel influenza viruses causing human infections warrant close monitoring.

Below is an epidemiological update on H7N9 and H10N8 in China and an update on recent MERS-CoV cases in the Middle East.

### **1. H7N9 UPDATE [Total: 317 cases; Deaths: 63], China**

The second wave of H7N9 infections continues in China, with the accumulation of second-wave cases accelerating in the past few weeks. The number of human cases reported since October 2013 (n=181) exceeds that of the first wave in February-May 2013 (n=134) and the majority (>90%) of second-wave cases have been reported in 2014 (see attached epidemic curve).

Cumulatively to date (as of February 7, 2014), 317 cases and 63 deaths due to H7N9 have been reported from 14 provinces or municipalities in southeastern China, as well as the Taipei Centers for Disease Control (Taipei CDC) and Hong Kong Special Administrative Region (SAR). Compared to the first wave, more cases since October 2013 have been reported from southern provinces, notably Zhejiang (79 vs. 45) and Guangdong (55 vs. 0) (see attached map).

In an article published yesterday in the *New England Journal of Medicine*, Li et al. summarize the epidemiology of 139 confirmed H7N9 infections as of December 1, 2013, the majority acquired during the first wave of activity (February to May 2013). The characteristics of these cases are consistent with those previously emphasized and include median age of 61 years (range: 2-91 years), male predominance (>70%), and a substantial proportion (>70%) with underlying medical conditions or other risk factors for influenza-related complications. Most cases (>80%) had a history of exposure to animals, including direct contact with poultry and/or visits to live poultry markets. Forty-seven of the 139 cases (34%) died. Four family clusters were identified for which probable, non-sustained human-to-human transmission could not be ruled out. However, in follow-up investigations of over 2,600 close contacts of confirmed cases, only 1% developed respiratory symptoms within 7 days; H7N9 was not laboratory-confirmed in any of the symptomatic contacts. For more details, see: [www.nejm.org/doi/full/10.1056/NEJMoa1304617](http://www.nejm.org/doi/full/10.1056/NEJMoa1304617).

In contrast to these earlier case reports, the median age of cases reported since October 2013 is slightly lower at 57 years (range: 2-86 years). However, as with the first wave, the majority of second-wave cases

are middle-aged and older men and most have reported a history of exposure to poultry or live bird markets. Among cases identified in the second wave, 12% have died, a lower proportion compared to the first wave (per above 34%), although at the time of writing many cases remain in hospital in critical condition. While milder cases have been reported, the majority have presented with severe acute illness, characterized by rapidly progressing severe pneumonia and acute respiratory distress syndrome (ARDS).

The recent upswing in H7N9 cases is consistent with the natural seasonality of influenza viruses in winter months in temperate regions, and similar seasonal patterns have been observed with other avian influenza viruses known to infect humans, such as H5N1. Despite concerns around increased travel and crowding associated with the Lunar New Year celebrations earlier this month, there is currently no evidence of sustained human-to-human transmission of H7N9 and the risk assessment and recommendations remain unchanged at this time. Given the recent announcement of new cases, clinicians should be alert for patients presenting with severe acute respiratory illness (SARI) with recent travel or epidemiological links to affected areas.

To stay current with ongoing developments, please consult the WHO avian influenza A(H7N9) page: [www.who.int/influenza/human\\_animal\\_interface/influenza\\_h7n9/en/index.html](http://www.who.int/influenza/human_animal_interface/influenza_h7n9/en/index.html).

## **2. H10N8 UPDATE [Total: 2 cases; Deaths: 1], China**

A second human case of avian influenza A(H10N8) was reported last week: a middle-aged woman in Jiangxi Province who developed severe pneumonia. The patient had recent exposure to a live poultry market. This is the second reported case of H10N8 from Jiangxi Province in recent months; however, the two cases are not epidemiologically linked.

The earlier human case of H10N8 infection was reported in December 2013, a 73-year-old woman with multiple underlying co-morbidities who had visited a live poultry market 4 days prior to illness onset. The patient developed severe pneumonia and multiple organ failure and died 9 days after illness onset. There was no evidence of human-to-human transmission during a 2-week follow-up investigation of the patient's 17 close contacts. The virological, clinical and epidemiological characteristics of this first case were summarized in a February 5, 2014 issue of *The Lancet*: [www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60111-2/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60111-2/fulltext).

While human infections with other H10 subtypes, notably H10N7, have been reported previously, and H10N8 has been detected in birds and environmental samples in China, these two case reports are noteworthy as the first ever H10N8 infections in humans. Enhanced surveillance related to other novel influenza viruses may in part account for the detection of these two cases.

## **3. MERS-CoV UPDATE [Total: 182+ cases; Deaths: 79], Middle East**

Since our last update on January 17, 2014, eighteen new cases of MERS-CoV have been reported from Middle Eastern countries, including Saudi Arabia (12), the United Arab Emirates (UAE; 4), Jordan (1), and Oman (1). Saudi Arabia remains the most affected country, accounting for ~80% of MERS-CoV reports, with cases also reported from Jordan, UAE, Oman, Qatar, and Kuwait. A number of European countries have also reported cases in persons with recent travel to the Middle East. Of note, the two probable cases in Spain previously reported to be associated with the Hajj pilgrimage were never confirmed by the WHO and are no longer included in confirmed case tallies.

Of the latest reports, 12/18 cases had severe illness and underlying comorbidities, including a health care worker (HCW); of these 12 cases, 8 have died and 4 are currently in ICU. Of the six patients who were reportedly asymptomatic, five were HCWs and one was the wife of a known case identified through close contact investigation. Consistent with previous summaries, the median age of the 12 recent symptomatic cases was 59.5 years (range: 33-73 years) and, of the 11 cases for whom gender information is available, all were male.

As of 6 February 2014, the WHO has been informed of 182 lab-confirmed cases of MERS-CoV and 79 deaths. Although the animal reservoir for MERS-CoV remains unknown, several studies have suggested a possible role for dromedary camels. Whether camels infect humans or vice versa, and whether both may be exposed to another common source remain unknown. In the meantime, the epidemiologic pattern of human cases is one of sporadic cases with discrete clusters occurring occasionally among their close contacts, including family members and HCWs. There remains no evidence of sustained or community-level transmission at this time.

Given ongoing activity in affected regions, clinicians are reminded to stay alert for possible importations among patients presenting with severe acute respiratory illness (SARI) and links to the Middle East.

For ongoing WHO MERS-CoV updates, see:  
[www.who.int/csr/disease/coronavirus\\_infections/en/index.html](http://www.who.int/csr/disease/coronavirus_infections/en/index.html).

#### **4. ACTION AND ADVICE [abbreviated]**

In the event of severe acute respiratory illness (SARI) in a patient with links to affected areas in the two weeks prior to symptom onset (i.e. residence, travel history or contact with someone with such history), clinicians should notify their local health authority/Medical Health Officer.

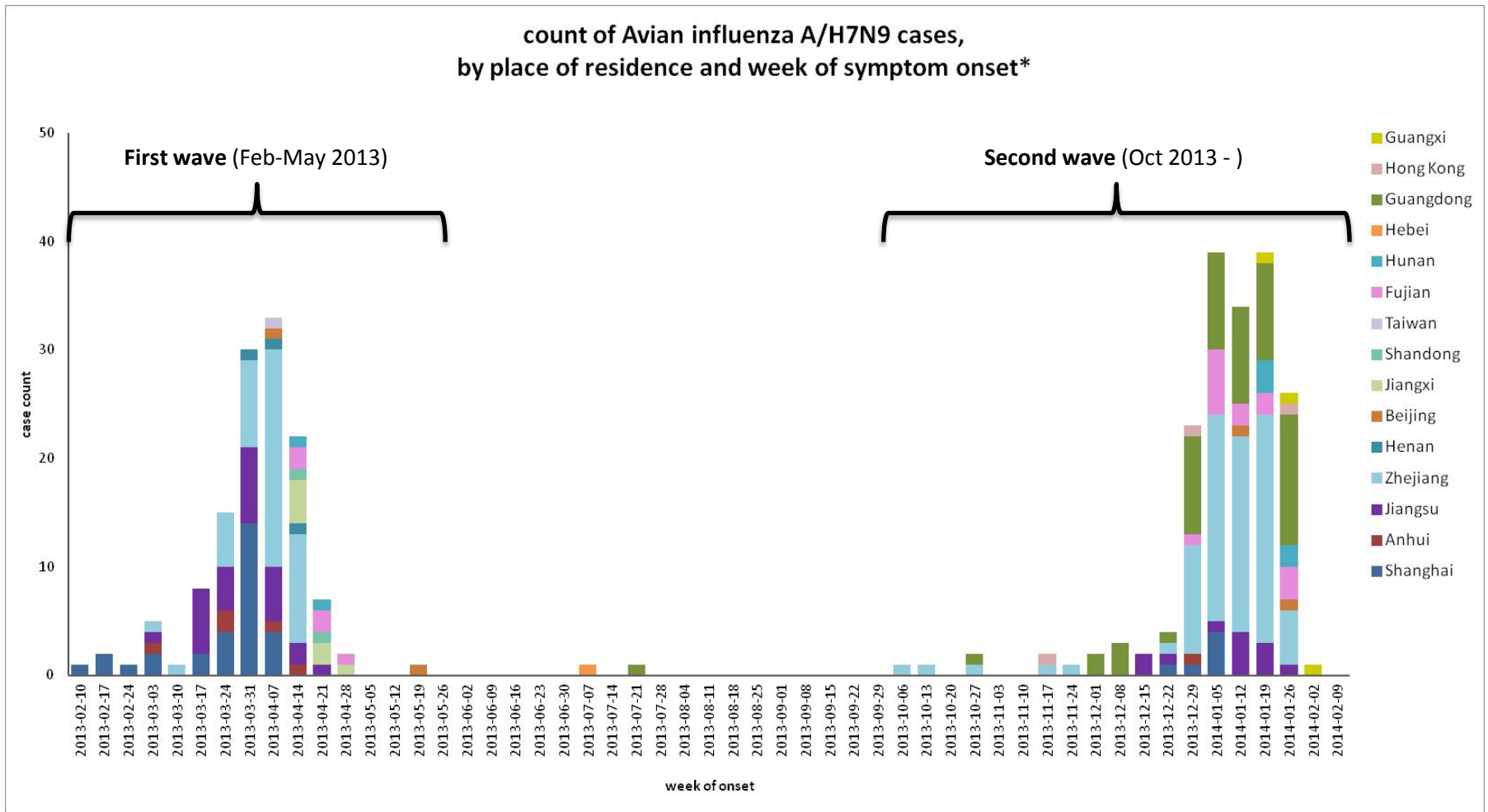
Health care workers should implement respiratory precautions immediately, and cases should be managed in respiratory isolation with contact and droplet precautions. Aerosol-generating procedures may facilitate spread warranting airborne precautions. Given a spectrum of illness inclusive of milder or atypical presentations, clinicians are encouraged to use their judgement and/or consult infection control for guidance around enhanced measures where the index of suspicion and exposure risk (e.g. based on contact, comorbidity or clustering history) may be higher.

For diagnostic testing for suspected novel influenza viruses or MERS-CoV, 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 advance 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.

Influenza & Emerging Respiratory Pathogens  
BC Centre for Disease Control

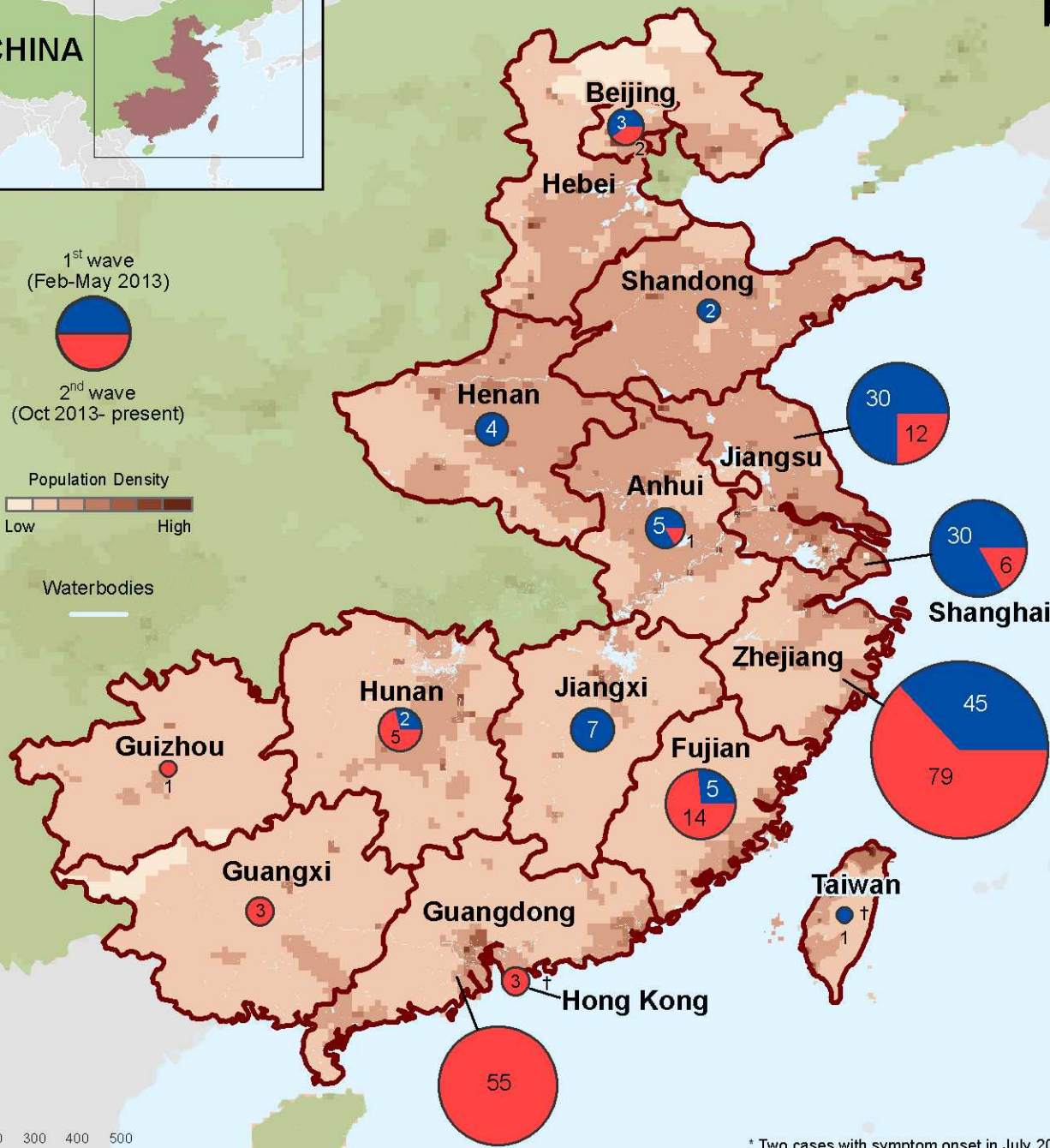
# H7N9 Epidemic Curve

count of Avian influenza A/H7N9 cases,  
by place of residence and week of symptom onset\*

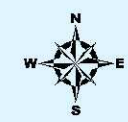
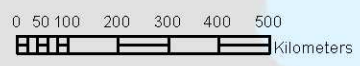


\*Does not include: 1 Henan, 4 Jiangsu, and 1 Guizhou cases with unknown onset date; one asymptomatic case in Beijing.

# H7N9 avian influenza first and second wave cases\* by province of residence as of February 7<sup>th</sup>, 2014

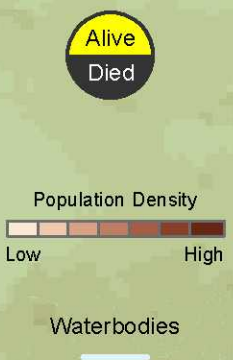


Province	Cumulative cases
Anhui	6
Beijing	5
Fujian	19
Guangdong	56
Guangxi	3
Guizhou	1
Hebei	1
Henan	4
Hunan	7
Jiangsu	42
Jiangxi	7
Shandong	2
Shanghai	36
Zhejiang	124
Hong Kong	3
Taiwan	1
<b>Total</b>	<b>317</b>



\* Two cases with symptom onset in July 2013 (one in Hebei and one in Guangdong) are not represented on the map.  
 † Cases reported travel to mainland China during exposure period.  
 Data compiled from ProMed, GPHIN alerts and other public reports. Map created February 7<sup>th</sup>, 2014 by BCCDC.

# H7N9 avian influenza cases and deaths\* by province of residence as of February 7<sup>th</sup>, 2014



Province	Cumulative cases
Anhui	6
Beijing	5
Fujian	19
Guangdong	56
Guangxi	3
Guizhou	1
Hebei	1
Henan	4
Hunan	7
Jiangsu	42
Jiangxi	7
Shandong	2
Shanghai	36
Zhejiang	124
Hong Kong	3
Taiwan	1
<b>Total</b>	<b>317</b>



\* Three deaths could not be attributed to a province of residence.  
 † Cases reported travel to mainland China during exposure period.  
 Data compiled from ProMed, GPHIN alerts and other public reports. Map created February 7<sup>th</sup>, 2014 by BCCDC.