

## H7N9 Influenza

### Important information for Clinicians and Laboratories <sup>1</sup>

31 January 2014

**Summary:** As of 30 January 2014, 259 cases of avian influenza A (H7N9), including 56 deaths, have been reported in China (including Hong Kong) and Taiwan. Although the environmental source has not yet been definitively determined, some of the confirmed cases have been associated with contact with chickens or poultry or an animal “wet market” environment.

**Chinese New Year 2014:** Chinese New Year will be celebrated on 31 January 2014. During the latter part of January and the month of February the number of incoming passengers to Australia from China rises substantially. With the anticipated increase in incoming passengers during this period there is a possibility of cases of H7N9 presenting in Australia.

**In patients with acute pneumonia or pneumonitis with a history of travel to China within 7 days of illness onset, or contact with known confirmed or probable cases, the following is recommended:**

- 1. Place the patient in a single room with negative pressure air-handling, or a single room from which the air does not circulate to other areas, and implement standard and transmission-based precautions (contact and airborne), including the use of personal protective equipment (PPE).**
- 2. Investigate and manage the patient as for community acquired pneumonia. Appropriate specimens should also be collected for influenza PCR testing.**
- 3. Arrange testing of any suspected or probable cases (see case definition) in accordance with the instructions below.**
- 4. Notify any suspected, probable or confirmed cases promptly to your local Public Health Unit on 1300 066 055.**

#### What is the H7N9 influenza?

Influenza (A)H7 viruses are a group of influenza viruses that normally circulate among birds. H7N9 is a reassortant derived from three different avian influenza viruses. This strain is distinct from the H1N1/09 (that caused the 2009 pandemic in humans) and H5N1 influenza. H7N9 that is genetically similar to that detected in infected humans has been detected in pigeon and poultry samples collected at a live animal market in Shanghai. Unlike other influenza strains, including highly pathogenic avian influenza H5N1, this new virus is hard to detect in poultry because this novel virus causes little to no signs of disease in animals.

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<sup>1</sup> Adapted from Advice prepared by the Australian Department of Health.

Although there is no evidence of sustained human-to-human transmission of H7N9 to date, sequence analysis indicates the virus has properties to infect mammalian cells; therefore, the potential for avian-human and human-human transmission exists but requires further investigation. Sequences previously associated with high virulence of A(H7) in humans (PB2 gene) have been detected in isolates in the current outbreak.

### **What is the current situation?**

See WHO website on the current situation, including epidemiological updates, Q&A and guidance documents:

Disease Outbreak News (<http://www.who.int/csr/don/en/index.html>)

Influenza at the Human-Animal Interface

([http://www.who.int/influenza/human\\_animal\\_interface/en/](http://www.who.int/influenza/human_animal_interface/en/))

- A total of 238 cases have been reported including 55 deaths. To date cases have been reported from 13 provinces of China (Shanghai, Anhui, Jiangsu, Zhejiang, Fujian, Beijing, Guangdong, Henan, Shandong, Hebei, Hunan, Guizhou and Jaingxi), Hong Kong and Taiwan.
- There continues to be no evidence of sustained human-to-human transmission with medical observation of over 530 contacts ongoing. In Jiangsu, investigation is ongoing into a contact of an earlier confirmed case who developed symptoms of illness.
- The incubation period is not precisely known.
- There is currently no vaccine available for H7N9 influenza. Laboratory testing conducted in China has shown that the influenza A(H7N9) viruses are sensitive to neuraminidase inhibitors (oseltamivir and zanamivir). When these drugs are given early in the course of illness, they have been found to be effective against seasonal influenza virus and influenza A(H5N1) virus infection. However, at this time, there is no experience with the use of these drugs for the treatment of H7N9 infection.
- From 1996 to 2012, human infections with H7 influenza viruses (H7N2, H7N3, and H7N7) were reported in Netherlands, Italy, Canada, USA, Mexico and the United Kingdom. Most of these infections occurred in association with poultry outbreaks.

### **What are the symptoms?**

H7N9 was initially identified in patients with severe pneumonia and/or Acute Respiratory Distress Syndrome (ARDS) but 3 recent cases have been mild. Symptoms include fever  $\geq 38^{\circ}\text{C}$ , cough and shortness of breath. However, information is still limited about the full spectrum of disease that infection with influenza A(H7N9) virus might cause.

Symptoms and signs of A(H7) infections during previous outbreaks mainly resulted in conjunctivitis and mild upper respiratory symptoms, with the exception of one death, which occurred in the Netherlands.

### **Are health workers at risk from H7N9 influenza?**

The routes of transmission to humans of H7N9 influenza have not yet been fully determined, but there is currently no evidence of sustained spread of this strain from human to human. Infection control recommendations in this document for suspected, probable and confirmed cases aim to provide the highest level of protection for health care workers, given the current limited state of knowledge.

### **Has WHO recommended any travel or trade restrictions related to this new virus?**

The number of cases identified in China increasing, but still relatively low. WHO does not advise the application of any travel measures with respect to visitors to China, nor to persons leaving China. There is no evidence to link the current cases with any Chinese products. WHO advises against any restrictions to trade at this time.

### **Who do I test for H7N9 influenza?**

Testing should be considered for:

1. Individuals with acute pneumonia or pneumonitis and history of travel to, or residence in China within the previous 7 days.
2. Individuals with acute pneumonia or pneumonitis and history of contact with those in point 1 above.
3. Health care workers with acute pneumonia, who have been caring for patients with severe acute respiratory infections, particularly patients requiring intensive care, without regard to place of residence or history of travel.

### **How do I test for H7N9?**

- Consult with your local laboratory, infectious disease physicians and local Public Health Unit
- Specimens can be handled and transported routinely. They should be clearly identified as requiring urgent testing for influenza A/H7N9, and separated from non-urgent specimens.
- Collect combined nose and throat swabs (usually from adults) or nasopharyngeal aspirates (usually from children) and place in viral transport medium. Sputum is strongly recommended wherever possible. Bronchoalveolar samples and lung biopsy should also be sent if available.
- Gloves, gown, P2 mask and eye protection should be worn when collecting samples from patients. If a negative pressure room is unavailable, the patient should be placed in a single room with the door closed.
- Testing for other infectious causes can be undertaken at the referring laboratory using PC2 precautions, processing of samples in a biosafety cabinet and use of PPE including a surgical mask and eye protection. Routine tests for acute pneumonia should be performed where indicated, including bacterial culture, serology, urinary antigen testing and tests for influenza viruses.

- **In NSW**, the laboratory carrying out the influenza testing should immediately refer all unsubtype/unsuotypeable and presumptive H7 influenza A virus to ICPMR or SEALS for confirmatory testing. The reference laboratory should be notified that urgent specimens have been dispatched.
- Laboratory staff should handle specimens for respiratory pathogen testing under enhanced PC2 conditions, with handling of open samples in a biosafety cabinet and the use of gloves, gowns, masks and eye protection. PC3 conditions are required for virus culture.

### **What are the recommended isolation and PPE recommendations for patients in hospital?**

While further information is accumulating, current recommendations are for airborne transmission precautions for suspected, probable or confirmed cases.

These recommendations on isolation and PPE for suspected, probable and confirmed cases take a deliberately cautious approach by recommending measures that aim to control the transmission of pathogens that can be spread by the airborne route. These measures are detailed in *NHMRC: Australian Guidelines for the Prevention and Control of Infection in Healthcare – 2010* (<http://www.nhmrc.gov.au/guidelines/publications/cd33>) (particularly section B2.4).

In summary, transmission-based precautions for suspected, probable and confirmed cases should include:

- Placement of cases in a negative pressure room if available, or in a single room from which the air does not circulate to other areas
- Airborne transmission precautions, including routine use of a P2 respirator, disposable gown, gloves, and eye protection when entering a patient care area
- Standard and contact precautions, including close attention to hand hygiene
- If a single or negative pressure room is not available (eg in primary care settings), or if transfer of the confirmed or probable case outside the negative pressure room is necessary, asking the patient to wear a surgical face mask, if tolerated, while they are being transferred and to follow respiratory hygiene and cough etiquette.
- Triage areas should have signs asking that patients with severe respiratory tract infections with a recent history of travel to China should make themselves known so that appropriate arrangements can be made.

## Case Definitions

### 1. Suspected case (under investigation)\*

- A person with an acute febrile respiratory infection with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia, pneumonitis or Acute Respiratory Distress Syndrome (ARDS))

#### AND

- With one or more of the following exposures during the 7 days prior to the onset of symptoms:
  - Travel to a country† where human cases of H7N9 influenza have recently been reported, especially if there was recent direct or close contact with animals (e.g. wild birds, poultry or pigs).
  - Close contact‡ with a laboratory-confirmed case.

### 2. Probable Case

- A person fitting the definition of a Suspected Case but with no possibility of laboratory confirmation for H7N9 influenza, either because the patient or samples are not available for testing AND
- Not already explained by any other infection or aetiology, including all clinically indicated tests for community acquired pneumonia according to local management guidelines.

### 3. Confirmed Case

- A person with laboratory confirmation of infection with H7N9 influenza at a WHO National Influenza Centre.

\* Although most of the cases to date have presented with a severe acute respiratory illness, mild cases have been reported. If doctors are concerned about patients presenting with milder illness, they should discuss this with the local public health authorities.

† Currently, China (including Hong Kong) and Taiwan are the only countries that have recently reported human cases of H7N9 influenza.

‡Close contacts include:

- Any person who provided care for the patient or who had other similarly close physical contact while not wearing appropriate PPE in the 7 days before symptom onset; this includes health care workers or family members.
- Any person who stayed in the same household as a probable or confirmed case while the case was symptomatic.

### Advice for contacts of cases

Contacts of cases should be directed to their local NSW Public Health Unit for advice – call 1300 066 055.

### **Advice for travellers to China**

At this time, it is advisable that travellers to China keep away from sick and dead poultry and livestock and avoid visiting live animal markets.

### **Advice for returned travellers**

At this time, if returned travellers meet the exposure criteria for the case definition but have a less severe respiratory illness, advice regarding further management should be sought from the local NSW Public Health Unit – call 1300 066 055.

### **Other useful links**

NSW Health

[http://www.health.nsw.gov.au/Infectious/alerts/Pages/Influenza\\_H7N9.aspx](http://www.health.nsw.gov.au/Infectious/alerts/Pages/Influenza_H7N9.aspx)

World Health Organization (WHO)

[http://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)

UN Food and Agriculture Organization of the United Nations (FAO)

<http://www.fao.org/news/story/en/item/173655/icode/>

Australian Department of Health – Avian Influenza in China influenza A(H7N9) website

<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-avianflu-china.htm>

Australian Department of Health – Smarttraveller China website

<http://www.smarttraveller.gov.au/zw-cgi/view/Advice/China>