

<b>To:</b>	BC MHOs, PHNLs, ICPs, ERDOCs, IDSPEC, MEDMICRO, AMBULANCE, BCCDC Internal Groups, National Surveillance Network Partners
<b>Subject:</b>	November 1, 2013 – Emerging Respiratory Viruses Update
<b>Purpose:</b>	To re-emphasize heightened clinician awareness of A(H7N9) and MERS-CoV through the fall/winter period given recent findings and the expected seasonality of these emerging respiratory viruses
<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 –

Below is a further update on avian influenza A(H7N9) in China and MERS-CoV in the Middle East. Although both remain rare events overall we wish to re-emphasize heightened clinician awareness through the fall/winter period given recent findings and the expected seasonality of these emerging respiratory viruses.

#### 1. H7N9 UPDATE [Total: 138 cases; Deaths: 45], China

Since our last report to you on October 2, 2013, two additional laboratory-confirmed human cases of avian influenza A(H7N9), one a 35-year-old male and the other a 67-year-old male, have been reported in China. These are the first case reports of H7N9 infection since August, with symptom onset dates for these latest cases in early-to-mid October. Both cases were reported in Zhejiang province, one of the most affected provinces during the peak of the outbreak in April 2013.

In a recent *EuroSurveillance* publication, Chen et al. provide detailed epidemiological, clinical and virological information about the first of these two most recent cases in October 2013. This case had no underlying medical conditions and reported no recent contact with patients with influenza-like illness or visits to live animal markets. All 25 close contacts tested negative for the H7N9 virus by PCR. Phylogenetic analysis showed that the viral isolate from this patient belongs to the same cluster as the WHO-recommended vaccine virus, A/Anhui/1/2013(H7N9), and was antigenically similar (>99% sequence identity) to earlier human isolates, including the mammalian adaptive mutations previously reported such as Q226L in the haemagglutinin (HA) gene. Interestingly, the virus bears 5 additional mutations in the neuraminidase (NA) gene not previously identified. The sample was collected within just a few hours of oseltamivir treatment and these additional mutations are not known to confer antiviral (neuraminidase inhibitor) resistance. The implications of these mutations in terms of pathogenesis and transmissibility have yet to be determined.

See: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20616>.

To date, 138 human cases of avian influenza H7N9 have been reported, including 45 deaths. As communicated in previous updates, the age and sex distribution is skewed toward older adult males; 70% of cases with known sex are male, and the median age is ~60 years (range=2-91 years). No sustained human-to-human transmission has been reported at this time, despite sporadic reports of first generation transmission within family clusters. The majority of cases have reported exposure to poultry or live animal markets, and closure of live poultry markets is thought to have contributed significantly to the reduction in cases during the spring outbreak. A recent ecological study, published in *The Lancet*, constructed a statistical model to quantify the effect of live poultry market closures on bird-to-person transmission and

estimated that closures may have reduced the mean number of daily infections by 97-99% in four affected cities in China. The model results were robust after accounting for seasonality effects. However, economic and socio-cultural realities have led to the reopening of most live poultry markets in the originally affected areas. The low pathogenicity of the virus in birds means it can spread surreptitiously because mild or asymptomatic infection in poultry may be missed. These considerations, in combination with the natural seasonality of influenza in temperate regions, raise concerns about re-emergence of the virus during the upcoming fall/winter months. The announcement of two new human cases in October reinforces that concern. While the overall risk assessment and recommendations remain unchanged at this time, clinicians should remain vigilant for patients presenting with severe acute respiratory illness (SARI) with recent travel or epidemiological links to affected areas.

For more information about the above study, see: Yu et al. Lancet. 31 Oct 2013 available from: <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2813%2961904-2/abstract>.

To stay current with ongoing H7N9 developments, consult the WHO avian influenza A(H7N9) page: [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).

## **2. MERS-CoV UPDATE [Total: 150+ cases; Deaths: 64], Middle East**

Since our last update, 11 new laboratory-confirmed cases of MERS-CoV have been reported, including 8 from the Kingdom Saudi Arabia, 2 from Qatar and the first case report from Oman. This most recent report expands the number of affected countries in the Middle East to five (see attached Map). Other affected Middle Eastern countries include Jordan and the United Arab Emirates. As described to you previously, imported cases from the Middle East have been reported in European countries including the United Kingdom, Italy, France, Germany, and in Tunisia, with local secondary transmission reported in some of these countries. No confirmed MERS-CoV infections have been reported yet in Hajj pilgrims who travelled to Saudi Arabia earlier this month.

The epidemiological characteristics of these latest cases are similar to the risk profile of cases overall, with older, adult males comprising the majority of cases. Over one-half of reported cases are  $\geq 50$  years of age and over one-quarter are  $\geq 65$  years of age (age range=2-94 years; median=53 years). Overall, over 60% of reported cases are male. The majority of primary cases have presented with severe respiratory illness, with complications including renal failure and acute respiratory distress syndrome (ARDS) with shock. Diarrhoea has also been commonly reported. Chronic comorbidities have been reported in the majority of primary cases and are associated with more severe disease presentation and fatal outcomes. Mild or asymptomatic infections have been detected during screening of close contacts of confirmed cases. Some limited person-to-person spread in household or health care settings is evident but sustained community transmission has not yet been observed.

To date, at least 150 cases of MERS-CoV have been reported, including 64 deaths. The number of reported MERS-CoV cases has increased since April 2013 relative to earlier time periods and has been sustained in recent weeks (see attached Epidemic Curve). Note that dates of onset are not available for many of the recent cases requiring tally by reporting week instead. Lack of full epidemiologic information on recent cases has made real-time risk assessment more challenging. Improvements in diagnostic testing, enhanced case detection and surveillance, as well as a true increase in disease incidence may all be contributing to current surveillance observations. Note that in both the epidemic curve and the geographic map we have included retrospectively identified cases from a nosocomial cluster reported from Jordan in March-April 2012, which may account, in part, for discrepancies in case tallies across various sources.

While the animal reservoir for MERS-CoV remains unknown, recent serological studies have identified antibodies to MERS-CoV or a closely related virus in camels from the Canary Islands, Egypt and Oman. Phylogenetic analysis has suggested that the MERS-CoV virus is most closely related to a bat-origin coronavirus. However, the MERS-CoV virus has not yet been isolated from any animal source.

For more information, see: Perera et al. EuroSurveill. 2013;18(36) available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20574>, Reusken et al. Lancet Infect Dis. 9 Aug 2013 available from: [http://dx.doi.org/10.1016/S1473-3099\(13\)70164-6](http://dx.doi.org/10.1016/S1473-3099(13)70164-6), and Ithete et al. Emerg Infect Dis. 2013;19(10) available from: [http://wwwnc.cdc.gov/eid/article/19/10/13-0946\\_article.htm](http://wwwnc.cdc.gov/eid/article/19/10/13-0946_article.htm).

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

### **3. ACTION AND ADVICE**

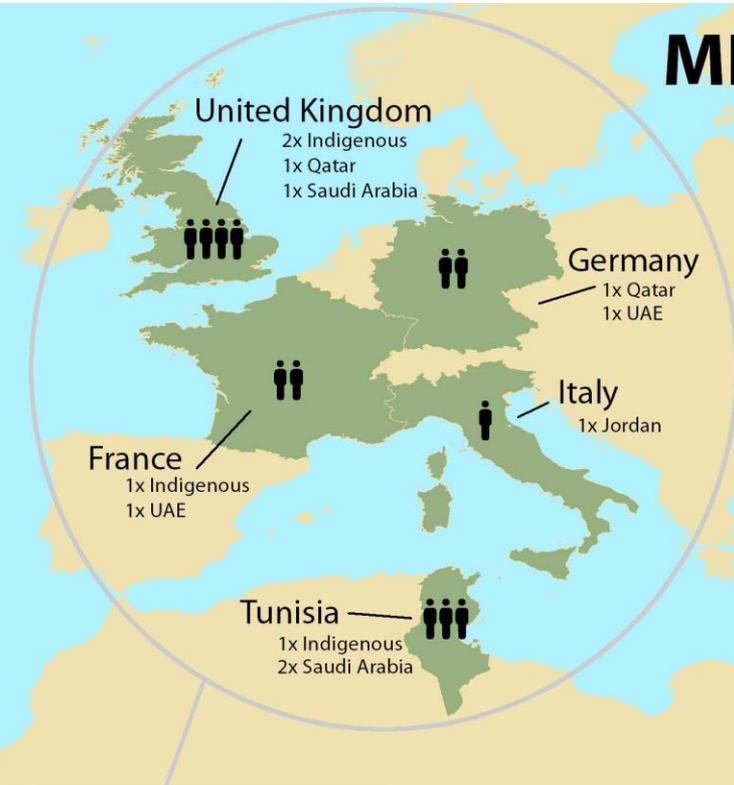
Clinicians should remain alert for patients presenting with severe acute respiratory illness (SARI) with links (i.e. residence, travel history, or direct contact with someone with such history) to affected areas. In the event of a suspected SARI case, clinicians should notify their local health authority/Medical Health Officer immediately. Links to affected areas in the two weeks prior to illness onset are relevant to consider. Furthermore, given a spectrum of illness inclusive of milder or atypical presentations, clinicians should use their judgment if persuaded of risk (e.g. based on contact, comorbidity or clustering history).

Given potential heightened risk of infection in nosocomial settings, clinicians and health care workers should implement respiratory precautions immediately in the event of SARI cases presenting to health care. Cases should be managed in respiratory isolation with contact and droplet precautions. Aerosol-generating procedures may facilitate spread warranting airborne precautions. Per previous bulletins, eye protection may be important to emphasize. Where the index of suspicion and exposure risk may be higher, clinicians are especially encouraged to use their judgement and/or consult infection control for guidance around enhanced measures. Note that infection control precautions are important to protect health care workers as well as other patients or visitors.

For diagnostic testing for suspected H7N9 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) at the BC Centre for Disease Control to arrange advance notification and direct shipping. For H7N9 and MERS-CoV, increasing evidence suggests that upper airway (i.e. nasopharyngeal or throat) swabs for diagnosis may not be as sensitive as lower respiratory specimens. The WHO strongly recommends lower respiratory specimens such as sputum, endotracheal aspirate, or bronchoalveolar lavage where possible and clinically indicated. Follow strict infection prevention and control guidelines when collecting respiratory specimens.

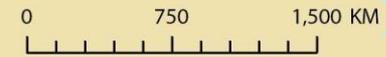
# MERS-CoV case activity as of October 31, 2013

case count: 159  
death count: 64



Individual cases in these countries are confirmed as either imported from the Arabian Peninsula or indigenous to the indicated country.

= MERS-CoV Case  
 = No case location



\*UAE = United Arab Emirates. For countries outside the Arabian Peninsula, non-indigenous cases imported from that region are duplicated as shown. As such, only indigenous cases should be added to those shown within the Arabian Peninsula in deriving the total global case count. Maps produced by British Columbia Centre for Disease Control (BCCDC). Data compiled from Kingdom of Saudi Arabia Ministry of Health, WHO, and European Centre for Disease Prevention and Control (ECDC).

# Oct 31, 2013 MERS-CoV Epidemic Curve

**NOTE: cases for whom date of onset is missing are shown by reporting date with light shading**

