Subject: July 22, 2013 – H7N9, H3N2v and MERS-CoV Updates

Purpose: To provide update on recently emerging respiratory viruses, namely influenza A(H7N9), influenza A(H3N2) variant (H3N2v) and MERS-CoV

Action required: Yes

Recommendations:
- 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).
- In the event of a suspected SARI case, immediately implement respiratory (contact + droplet) precautions and notify your local health unit/Medical Health Officer.
- For diagnostic testing for H7N9, H3N2v or MERS-CoV, please consult a virologist or microbiologist at the BC Public Health Microbiology Reference Laboratory (PHMRL).

This update on recently emerging influenza A(H7N9) in China, influenza A(H3N2) variant (H3N2v) in the United States and MERS-CoV in the Middle East is further to BCCDC’s last bulletin of June 6, 2013.

1. H7N9 Update [Total: 135 cases; Deaths: 43], China

This week, a newly-confirmed case of H7N9 was reported in a 60-65-year-old woman from an area just south-east of Beijing in Hebei province of China. She had onset during the second week of July, 2013 and is currently in critical condition in Beijing. The source of her infection is assumed to be live poultry at a local market. This case is noteworthy as the first to be reported in China in recent months, reinforcing the importance of ongoing vigilance. The last prior H7N9 detection was a child with onset in late May, 2013. This is also the first report from Hebei, representing now the eleventh Chinese province/municipality to have reported H7N9, plus Taiwan.

Since the last update, an additional case of H7N9 was also retrospectively reported in a teenage boy in previously affected Jiangsu province of China with onset in April 2013. Of note, this patient was co-infected with a seasonal influenza A(H3N2) strain, highlighting that co-infections can occur with potential for reassortment between human and avian strains. This case also underscores that, where the index of suspicion is high, detection of another virus does not of itself rule out an emerging pathogen.

Two ferret studies recently published in the journal Nature highlight H7N9 characteristics and transmissibility. Both ferret studies show that influenza A(H7N9) isolates from two fatal human cases (A/Anhui/1/2013 and A/Shanghai/1/2013) were highly transmissible through direct contact, and intermediately transmissible through respiratory droplets. Furthermore, both studies show that these avian-origin influenza strains are capable of efficient replication in human airway epithelial cells and certain animal models; variable binding to human-type receptors (α2,6-linked sialic acid) was demonstrated, particularly for A/Anhui. Together, these findings suggest that H7N9 viruses have the potential for pandemic spread but further adaptation in humans may be required in order to become highly transmissible. For more information:
To stay current with H7N9 developments, consult the WHO avian influenza A(H7N9) web link:

2. H3N2v Update [Total: 333 cases; Deaths: 1], United States

In 2011, 12 human cases of a newly emerging swine-origin influenza A(H3N2) variant (known as “H3N2v”) were reported in the United States. In 2012, a multi-state outbreak of H3N2v resulted in 309 further human cases, including 16 hospitalizations and one death. The first H3N2v outbreak for 2013 was reported in June in Indiana; 12 cases have been reported to date this year in the United States. Most cases have been children and associated with exposure to pigs at agricultural fairs typically held during the summer/fall months in the United States. While limited human-to-human spread has been reported, no sustained or community transmission has been identified at this time.

Note that symptoms and severity of H3N2v are similar to that of seasonal influenza. Hospitalizations have primarily been among young children and those with comorbidity. Published sero-surveys, including from BC, suggest young children and older adults mostly lack antibody to H3N2v whereas teens and young adults may have some pre-existing antibody protection owing to exposure to related human strains from the 1990s. Immunization against recent seasonal influenza strains does not protect against H3N2v. See: http://jid.oxfordjournals.org/content/206/12/1852.full.pdf

To date, no human cases of H3N2v have been reported in Canada. While the risk of H3N2v infection from swine in BC is low, the increased number of individuals visiting agricultural fairs and petting zoos during the summer months warrants general reminder about hygiene measures when in contact with animals in those settings, which those with high-risk conditions should minimize if possible.

Patients presenting with influenza-like illness who have known swine exposure and/or who have recently attended agricultural fairs or petting zoos warrant evaluation in consultation with the local Medical Health Officer and the BC Public Health Microbiology and Reference Laboratory (PHMRL). Appropriate precautions for respiratory droplet or close contact transmission should be followed.


For specific information related to H3N2v, including up-to-date US case counts, please refer to the U.S. Centers for Disease Prevention and Control website: http://www.cdc.gov/flu/swineflu/h3n2v-cases.htm

3. MERS-CoV Update [Total: 98 cases; Deaths: 45+], Middle East

Since the last update, an additional 43 laboratory-confirmed cases of MERS-CoV have been reported, bringing the total global tally to 98 cases, of which approximately one-half have been fatal. Adults continue to be predominantly affected; however, the sex distribution appears to be shifting, with female cases being more equally represented now. Of the newly identified cases, 17 (40%) were female and 13 (30%) were male; sex was unreported for the remaining 13 cases. Of the 33 out of 43 cases where age was reported, the median age was 42 years (interquartile range: 29 to 63 years).

Saudi Arabia continues to report the highest number of confirmed cases; 30 of the 43 newly identified cases and 69 of the 98 cases overall (~70%) have been reported in Saudi Arabia. However, affected countries in the Middle East include Jordan, Qatar, Saudi Arabia and the UAE. Cases with direct or indirect connection to the Middle East, including limited local transmission, have also been reported in Europe from France, Germany, the United Kingdom and Italy, and in North Africa in Tunisia.

At least 23 of the newly identified cases have occurred among health care workers or other close contacts of confirmed cases, including four children identified in Saudi Arabia. Among the most recently identified cases, two hospital-associated clusters were involved: one previous cluster in Jordan in April
2012 with additional retrospective detection of at least 10 cases, most of whom were health care workers, and another cluster in the UAE reported last week including four physicians who likely became infected in association with an elderly patient case. Most of these recently identified cases presented with mild or asymptomatic infection, often in the absence of underlying comorbidities, and were likely detected as a result of enhanced surveillance and active case-finding efforts. Alternatively, mild/asymptomatic cases could signify reduced virulence with human passage or that other cases remain significantly undetected. However, despite sporadic household and limited health care-associated clusters, there is currently no evidence of sustained human-to-human transmission in the community.

As such, overall risk assessment remains the same: sporadic importation of cases is possible but risk of onward transmission is low and can be further minimized through early recognition and implementation of infection control measures by aware clinicians.


4. 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. Given reports inclusive of a prolonged incubation period, 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). Note that H3N2v presents as typical influenza-like illness so that index of suspicion is driven primarily by contact 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. 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, H3N2v or MERS-CoV, please consult a virologist or microbiologist at the BC Public Health Microbiology and 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.