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A. MAIN MESSAGES

- Human infections with avian influenza of various novel subtypes (H7N9, H5N6, H9N2, H5N1) have been reported from China recently, notably H7N9 for which a fourth wave of human cases is currently underway.
- As previously emphasized, avian influenza viruses, like humanized strains, show winter seasonality. Prior human infections with avian influenza H7N9 and H5N1 that were imported to Canada happened at around this time of year, underscoring the need for vigilance.
- Poultry exposure remains the major risk factor for avian influenza infection. Travelers to affected areas should avoid exposure to poultry and uncooked poultry products.
- Sporadic cases and limited clusters of MERS-CoV also continue to be reported from Saudi Arabia and other countries within the Arabian Peninsula. Travelers to affected areas should avoid close contact with camels, and should not consume raw camel milk, camel urine or meat that has not been properly cooked. Given human-to-human transmission in nosocomial settings, travelers to affected areas should attend health care facilities only when medically necessary.
- Clinicians are reminded that travel history and timely notification are critical to emerging pathogen detection and response.

See following pages for more details.

B. EPIDEMIOLOGICAL UPDATES

1. Avian Influenza, China

A(H7N9)

A fourth wave of H7N9 activity is underway in China.

Since October 2015, 23 human cases of avian influenza H7N9 infection have been reported, of which 16 have been officially confirmed by the WHO to date. Of the 16 WHO-confirmed cases, ages range from 29-77 years (median: 54 years), and half are male. Three of the cases were fatal. Affected provinces are located in eastern China, consistent with the geographic distribution in prior waves, and include: Zhejiang (11), Guangdong (2), Jiangsu (2), and Jiangxi (1). All of these recent cases reported exposure to live poultry.

Since its first emergence in February 2013, H7N9 has followed a winter seasonal pattern, typical of both human and avian influenza viruses, with most cases occurring between October and May each year and generally peaking in January. Avian influenza H7N9 is enzootic in poultry in China and exposure to infected poultry remains the major risk factor for infection with only limited instances of human-to-human transmission.

Since February 2013, a total of 693 human cases of H7N9 and at least 278 deaths (case fatality: 40%) have been reported to the WHO, including four cases reported from Taipei, 13 cases reported from Hong Kong, one case reported from Malaysia, and two cases reported from Canada (British Columbia, see: http://wwwnc.cdc.gov/eid/article/22/1/15-1330_article).

A(H5N6)

China detected the world's first human infection with H5N6, which was fatal, in April 2014, followed by a second severe human infection in December 2014. On 9 February 2015, a third human H5N6 infection, also fatal, was reported by China and in July 2015 a fourth fatal case was reported.

In the past two months alone (since December 2015), five more human cases of avian influenza H5N6 have been reported from China (Guangdong province), bringing the cumulative tally of cases to nine globally (all in China). Cases range in age from 25-58 years (median: 40 years) and 5/9 are male. Four of the eight cases confirmed by the WHO with available information have been fatal.

Avian influenza H5N6 viruses have been detected in poultry in China. As with other avian influenza subtypes, sporadic human cases are possible, with exposure to infected poultry the major risk factor for infection.

A(H9N2)

Influenza H9N2 is enzootic in poultry in parts of Asia, including China, and the Middle East. Since 1999, H9N2 has been associated with about 20 human infections globally, of which three-quarters have been reported from China; cases have also been reported in Egypt and Bangladesh.

Since our last update on December 15, 2015, the WHO has reported four human cases of avian influenza H9N2 in China (one in Anhui province and three in Hunan province), with onset dates ranging from April to October 2015. All four cases were in children <18 years old (three were <5 years old), and 1/4 were male. Consistent with the clinical presentation of prior H9N2 infections in humans, all four cases had mild disease and none required hospitalization. Only two of the four cases had known exposure history and, of those, only one reported exposure to a live poultry market.

A(H5N1)

Last week, sources in China reported a case of human infection with avian influenza H5N1 in a 42-year-old man with exposure to poultry in Sichuan province. This case has not yet been officially confirmed by the WHO. Once confirmed, this will be the first H5N1 case to be reported globally this year (2016) and the first in China since March 2015. A total of 53 H5N1 cases have been reported in China since its emergence in 2003, of which <15 cases have been reported since 2010.

Countries other than China have been more affected by H5N1 recently, most notably Egypt which had 136 (95%) of the 143 cases reported globally in 2015. Since 2003, a total of 845 human cases of H5N1 and 449 deaths (case fatality: 53%) have been reported globally.

2. Other Novel Influenza, United States

From December 4, 2015 to January 2, 2016, the United States Centers for Disease Control and Prevention (US CDC) reported two human cases of swine-origin influenza: one H1N1 variant (H1N1v) case in Minnesota and one H3N2 variant (H3N2v) case in New Jersey. Both cases reported indirect exposure to areas where swine are housed but no direct contact with swine in the week prior to illness onset. Neither case was hospitalized, and both have fully recovered from their illness. No further human-to-human transmission was identified.

3. Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Middle East

Sporadic cases and limited clusters of MERS-CoV continue to be reported from Saudi Arabia and other countries within the Arabian Peninsula. Since our last MERS-CoV update in September 2015, the Saudi Arabia Ministry of Health has reported 45 new cases of MERS-CoV, mostly from the Riyadh (51%) and Hufoof (18%) regions. Nine additional cases were reported in Jordan (5), United Arab Emirates (2), Kuwait (1), and Oman (1). Among the latest 52 cases with available details, ages range from 14-90 years (median: 48 years), and 54% are male. Among those with known exposure history at the time of report, 39% were primary cases with exposure to camels, 37% were healthcare-acquired secondary cases (including an approximately equal proportion of healthcare workers and patients), and 24% were secondary cases in household contacts. Of the secondary cases, five were asymptomatic.

Globally, as of January 6, 2016, 1,626 MERS-CoV cases including at least 586 related deaths (case fatality: 36%) have been reported to WHO.

In other MERS-CoV news, the outbreak in South Korea that resulted in 186 cases and 36 deaths following a single imported case in May 2015 has now officially ended. The outbreak was declared over on December 23, 2015 after two incubation periods (28 days) had passed following the death of the last MERS-CoV-positive patient in that country on November 25, 2015.

C. ACTION AND ADVICE

Clinicians should obtain relevant travel, animal, or other contact exposure history from patients presenting with acute illness that could be due to infectious disease, notably severe acute respiratory illness (SARI). In the event of 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 and consult a virologist or microbiologist at the BCCDC Public Health Laboratory for advice related to diagnostic testing, clearly indicating the relevant travel or other exposure history with any related testing request.

For diagnostic testing for suspected MERS-CoV or avian influenza, 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.

Health care workers should implement respiratory precautions immediately, and cases should be managed in respiratory isolation with contact and droplet precautions, inclusive of eye protection. Airborne precautions are warranted in the event of aerosol-generating procedures or conditions. Facilities should be mindful of the protection of other patients and visitors, in addition to healthcare workers, to minimize nosocomial transmission and risk.

Additional Resources

Avian Influenza

H7N9 Case Definition – www.phac-aspc.gc.ca/eri-ire/h7n9/case-definition-cas-eng.php

ERV/SARI Case Report Form – www.phac-aspc.gc.ca/eri-ire/coronavirus/form-formulaire-eng.php

Case Management Guidelines – www.phac-aspc.gc.ca/eri-ire/h7n9/guidance-directives/h7n9-2-eng.php

Interim Antiviral Treatment Guidelines – www.ammi.ca/guidelines/

MERS-CoV

MERS-CoV Case Definition - www.phac-aspc.gc.ca/eri-ire/coronavirus/case-definition-cas-eng.php

ERV/SARI Case Report Form – www.phac-aspc.gc.ca/eri-ire/coronavirus/form-formulaire-eng.php

Case Management Guidelines - www.phac-aspc.gc.ca/eri-ire/coronavirus/guidance-directives/mers-cov-srmo-2-eng.php

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