

HUMAN EMERGING RESPIRATORY PATHOGENS BULLETIN

MONTHLY SITUATIONAL ANALYSIS OF EMERGING RESPIRATORY DISEASES AFFECTING HUMANS

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UPDATE ON HUMAN EMERGING RESPIRATORY PATHOGEN PUBLIC HEALTH EVENTS (AS OF DECEMBER 31, 2021)¹

COVID-19 UPDATE

On December 31, 2019, cases of a pneumonia of unknown etiology were reported in Wuhan, China. These cases have since been determined to be due to a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease 2019 (COVID-19). On January 30, 2020, the World Health Organization (WHO) first declared the outbreak a Public Health Emergency of International Concern (PHEIC). On March 11, 2020, the WHO characterized the outbreak as a global pandemic. The WHO Director-General convened the International Health Regulations (IHR) Emergency Committee (EC) on COVID-19 nine (9) times throughout 2020 and 2021, continually assessing that COVID-19 constitutes a PHEIC.

The Public Health Agency of Canada is monitoring the situation closely. For the most up-to-date information, please visit:

<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html>

AVIAN INFLUENZA UPDATES

AVIAN INFLUENZA A(H9N2)

On December 4, 2021, the National Health Commission of the People's Republic of China notified the WHO of one (1) human case of avian influenza A(H9N2). The case is a 7-year-old male from Heyuan, Guangdong who experienced illness onset on November 28, 2021 after history of exposure to a live poultry market. At the time of report, the case was in mild condition. No further cases were suspected amongst the case's family members.

On December 13, 2021, the National Health Commission of the People's Republic of China notified the WHO of one (1) human case of avian influenza

NOVEL INFLUENZA ¹	[N CUMULATIVE CASES ² (DEATHS), CFR% ³]
A(H7N9)	[1,568 (615), 39%]
A(H5N1)	[881 (462), 52%]
A(H9N2)	[86 (2), 2%]
A(H5N6)	[58 (27), 47%]
A(H5N8)	[7 (0), 0%]
A(H7N4)	[1 (0), 0%]
A(H1N2) ⁴	[2 (0), 0%]
A(H3N2)v	[441 (1), <1%]
A(H1N2)v	[39 (0), 0%]
A(H1N1)v	[36 (0), 0%]
A(H1NX)v ⁵	[1 (0), 0%]
A(H10N3)	[1 (0), 0%]
Eurasian avian-like A(H1N1)v	[10 (0), 0%]
Reassortant novel influenza ⁶	[1 (0), 0%]

MERS-CoV¹

Global case count	[2,576 (880), 34%]
Saudi Arabia	[2,178 (802), 37%]

¹Date of 1st Reported Case of Human Infection: MERS-CoV: February 2013 (retrospective case finding September 2012). A(H7N9): March 2013. A(H5N1): 1997. A(H9N2): 1998. A(H5N6): 2014. A(H5N8): December 2020. A(H7N4): February 2018. A(H1N2): March 2018. A(H3N2)v with M gene from pH1N1: 2011. A(H1N2)v: 2005. A(H1N1)v: 2005. EA A(H1N1): 1986, but the above table counts cases from January 2021. A/Denmark/1/2021: February 2021.

²Cumulative Case Counts: updated using data reported by the World Health Organization (avian and swine influenza, MERS CoV), and the United States Centers for Disease Control and Prevention (US CDC) (swine influenza).

³Case Fatality Rate (CFR): the proportion of cases that resulted in death. For events with active cases, may be updated retrospectively as final disposition is known.

⁴A(H1N2): virus is a seasonal reassortant of the A(H1N1)pdm09 and A(H3N2) seasonal strains.

⁵A(H1NX)v: virus is a novel influenza A(H1) virus with pending neuraminidase results.

⁶Reassortant novel influenza: refers to A/Denmark/1/2021 A(H1N1) of the pdm09 lineage.

A(H9N2). The case is a 7-year-old female from Meizhou, Guangdong who experienced illness onset on December 6, 2021 after history of exposure to backyard poultry. Environmental samples tested positive for H5. At the time of report, the case was in mild condition and no family members had developed any symptoms.



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These cases mark the 19th and 20th human detections of A(H9N2) in 2021, with the majority (19/20; 95%) of cases reported out of China. No cases have been reported in Canada. Since the emergence of this virus in the human population in 1998, 86 cases have been reported worldwide, with a case fatality rate (CFR) of 2%.

AVIAN INFLUENZA A(H5N6)

Six (6) human cases of avian influenza A(H5N6) were reported in December 2021.

To date in 2021, 32 cases of avian influenza A(H5N6) have been reported globally (Figure 2); 31 A(H5N6) cases were reported from China and one (1) case was reported from Lao PDR. The 31 cases from China were reported from seven (7) different regions (Figure 3): Guizhou Province, Anhui Province, Guangxi Zhuang Autonomous Region, Sichuan Province, Hunan Province, Guangdong Province, and Chongqing Municipality. The median age of the cases reported in 2021 was 48.9 years (age range: 1-72 years) and 56% (18/32) of these cases were male. At least eight (8) cases reported this year died (*CFR: 25%); however, most cases were in critical condition at the time of report. None of these cases were known to be connected to each other, or to previously reported cases, other than one couple (husband and wife) who shared a common exposure source (slaughtered and cooked duck). There is no evidence of human-to-human transmission of the virus.

A total of 58 laboratory-confirmed human cases of avian influenza A(H5N6), including at least 27 deaths (*CFR: 47%) have been reported globally since 2014. No cases have been reported in Canadian residents.

*CFR: case fatality rate. Note that this rate is dependent on accurately reported deaths. For events with active cases, this value may be updated retrospectively as final disposition of the cases is known.

SWINE INFLUENZA UPDATES

SWINE ORIGIN INFLUENZA A(H1N2)v

The most recent cases of swine origin influenza A(H1N2)v were reported in November 2021 from the US and Canada.

Three A(H1N2)v detections have been reported in Canadian residents since reporting began in 2005. A total of 39 cases have been reported globally since 2005, with a 0% case fatality rate. There have been 11 A(H1N2)v cases reported globally in 2021.

SWINE ORIGIN INFLUENZA A(H3N2)v

The most recent case of swine origin influenza A(H3N2)v was reported in October 2021 from the US.

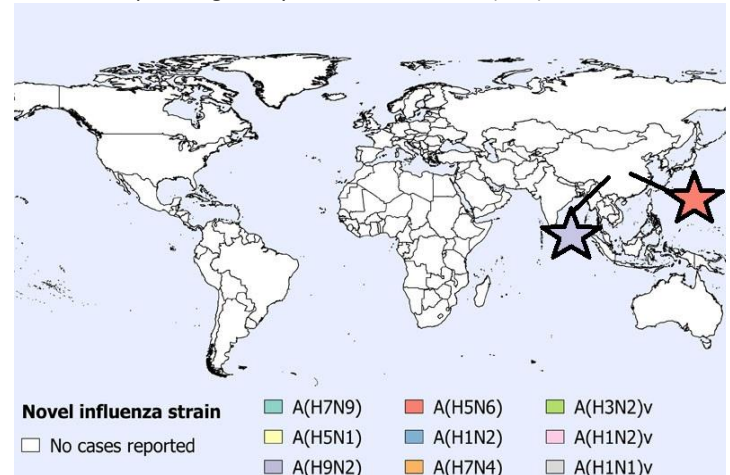
Two A(H3N2)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in June 2021. Globally, 441 A(H3N2)v cases have been reported since 2005, with <1% case fatality rate. There have been 5 A(H3N2)v cases reported worldwide in 2021.

SWINE ORIGIN INFLUENZA A(H1N1)v

The most recent cases of swine origin influenza A(H1N1)v were reported in November 2021 from the US.

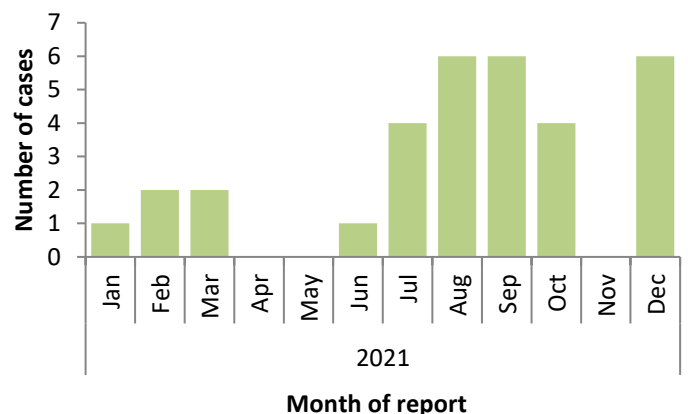
Two A(H1N1)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in April 2021. Globally, 36 human cases of A(H1N1)v have been reported since 2005, with no associated fatalities. There have been seven (7) A(H1N1)v cases reported worldwide in 2021.

Figure 1. Spatial distribution of human cases of avian and swine influenza reported globally in December 2021 (n=8).



Note: Map was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the latest WHO Event Information Site (EIS) postings and Weekly US Influenza Surveillance Reports (FluView). This map reflects data available through these publications as of December 31, 2021.

Figure 2. Temporal distribution of human cases of A(H5N6) influenza reported globally, by month, January 1, 2021 to December 31, 2021 (n=32).



Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This graph reflects data available as of December 31, 2021.

Figure 3. Spatial distribution of human cases of A(H5N6) influenza reported in China in 2021 (n=31).



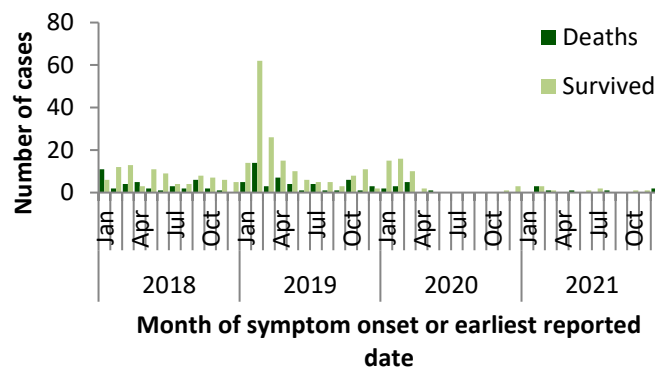
Note: Map was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This map reflects data available through these publications as of December 31, 2021.

MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) UPDATE

On December 30, 2021, the Kingdom of Saudi Arabia's Ministry of Health reported four new MERS-CoV cases. The first case is a 50-year-old male in Hafer Albatin city who reported contact with camels. He is classified as a primary case, indicating that it is unlikely he contracted the virus from another person. This case is deceased. The second case is a 45-year-old male in Riyadh city who reported no contact with camels. He is classified as a primary case and has recovered. The third case is a 79-year-old male in Riyadh city who reported no contact with camels. He is classified as a primary case and is deceased. The fourth case is a 49-year-old in Turabah city who reported no contact with camels. They are classified as a primary case and their current status is active.

Including these cases, 19 cases of MERS-CoV have been reported worldwide in 2021 [eight (8) of them fatal], with 17 of these cases reported from Saudi Arabia and two (2) from the United Arab Emirates. A total of 2,576 laboratory-confirmed cases of MERS-CoV, including 880 deaths, have been reported globally since 2012 by the WHO (CFR: 34%). No cases have been reported in Canada.

Figure 4. Temporal distribution of human cases of MERS-CoV reported to the WHO, globally, by month and year, January 1, 2018 to December 31, 2021 (n=421).



Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO Disease Outbreak News and Saudi Arabia's Ministry of Health. This graph reflects data available as of December 31, 2021.