

HUMAN EMERGING RESPIRATORY PATHOGENS BULLETIN

MONTHLY SITUATIONAL ANALYSIS OF EMERGING RESPIRATORY DISEASES AFFECTING HUMANS

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IN THIS BULLETIN

COVID-19 UPDATE

On December 31, 2019, cases of a pneumonia of unknown etiology were reported in Wuhan, China. These cases were 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 14 times from 2020 through to 2023, 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)

One (1) new human case of avian influenza A (H9N2) was reported in April 2023 from China. Note that the World Health Organization (WHO) reported new information on three cases but did not distinguish between which one was the new case from the previously reported cases.

The first case was a 10-year-old girl from Hunan province, China, with an illness onset date of October 19, 2022. Her symptoms were of mild severity and she was not hospitalized. The exposure source is unknown. The second case was a 3-year-old girl from Jiangxi province, China, with an illness onset date of January 31, 2023. Her symptoms were of mild severity and she was not hospitalized. The exposure source is suspected to be backyard poultry in Hunan province. The third case was a 2-year-old boy from Hunan province, China, with an illness onset date of February 5, 2023. His symptoms were of mild severity and he was not hospitalized. The exposure source was backyard poultry.

All cases were detected by influenza-like illness surveillance and no suspected cases among family contacts of the cases were reported. No further information was provided.

UPDATE ON HUMAN EMERGING RESPIRATORY PATHOGEN PUBLIC HEALTH EVENTS (AS OF APRIL 30, 2023)[1]

NOVEL INFLUENZA[1]	[N CUMULATIVE CASES[2] (DEATHS), CFR%[3]]
Avian Influenza	
A(H7N9)	[1,568 (615), 39%]
A(H5N1)	[892 (464), 52%]
A(H9N2)	[115 (2), 2%]
A(H5N6)	[84 (33), 39%]
A(H5N8)	[7 (0), 0%]
A(H7N4)	[1 (0), 0%]
A(H1N2)[4]	[2 (0), 0%]
A(H10N3)	[2 (0), 0%]
A(H3N8)	[3 (1), 33%]
Swine Influenza	
A(H3N2)v	[446 (1), <1%]
A(H1N2)v	[47 (0), 0%]
A(H1N1)v	[44 (0), 0%]
A(H1NX)v[5]	[1 (1), 100%]
Eurasian avian-like A(H1N1)v	[10 (0), 0%]
MERS-CoV[1]	
Global Case Count[6]	[2,604 (936), 36%]
Saudi Arabia[7]	[2,196 (855), 39%]

[1] **Date 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(H10N3): May 2021. A(H3N8): April 2022. A(H3N2)v with M gene from pH1N1: 2011. A(H1N2)v: 2005. EA A(H1N1): 1986, but the above table counts cases from January 2021.
[2] **Cumulative 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 (USCDC) (swine influenza).
[3] **Case 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.
[4] **A(H1N2):** virus is a seasonal reassortant of the A(H1N1)pdm09 and A(H3N2) seasonal strains.
[5] **A(H1NX)v:** virus is a novel influenza A(H1) virus with pending, inconclusive, or undetermined neuraminidase results.
[6] **Global Case Count:** cumulative case count and deaths due to MERS-CoV reflect retrospective updates provided in the World Health Organization (WHO) Disease Outbreak News (DON).
[7] **Saudi Arabia:** cumulative case count and deaths due to MERS-CoV in Saudi Arabia reflect retrospective updates provided in the WHO DON.

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Since the emergence of this virus in the human population in 1998, 115 cases have been reported worldwide, with a case fatality rate (*CFR) of 2%. No cases have been reported in Canada.

*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.

AVIAN INFLUENZA A(H5N6)

The most recent human case of avian influenza A(H5N6) was reported in March 2023 from China.

A total of 84 laboratory-confirmed human cases of avian influenza A(H5N6), including at least 33 deaths (CFR: 39%) have been reported globally since 2014. Since January 2021, 58 cases of avian influenza A(H5N6) have been reported globally (Figure 2); 57 A(H5N6) cases were reported from China and one (1) case was reported from Lao PDR (Figure 3). No cases have been reported in Canadian residents.

AVIAN INFLUENZA A(H5N1)

The most recent human cases of avian influenza A(H5N1) were reported in March 2023 from China (1) and Chile (1).

In April 2023, the case from Chile, previously reported as A(H5NX) in the March 2023 HERP bulletin, was confirmed to be avian influenza A(H5N1) and belongs to the phylogenetic clade 2.3.4.4b.

Since the emergence of A(H5N1) in humans in 1997, 892 human cases of A(H5N1) have been reported globally, with a CFR of 52%. No domestically acquired A(H5N1) infections have ever been reported in Canada. In 2014, Canada (Alberta) reported one single fatal case of A(H5N1) in a resident returning from travel in China.

AVIAN INFLUENZA A(H3N8)

The most recent human case of avian influenza A(H3N8) was reported in March 2023 from China.

There have been three (3) human cases worldwide and the first death related to avian influenza A(H3N8) ever reported worldwide. The previous two cases were reported from Henan and Hunan provinces in April and May 2022 respectively and recovered. The CFR for A(H3N8) is 33%; however, with only three human cases to date, the full spectrum of disease is highly uncertain.

SWINE INFLUENZA UPDATES

SWINE ORIGIN INFLUENZA A(H1N2)v

The most recent human case of swine origin influenza A(H1N2)v was reported in December 2022 from Taiwan.

A total of 47 A(H1N2)v cases have been reported globally since 2005, with a 0% CFR. Eight (8) A(H1N2)v cases were reported worldwide in 2022. So far, no human cases of A(H1N2)v have been reported in 2023. Three (3) A(H1N2)v detections have been reported in Canadian residents since reporting began in 2005, and the latest case in Canada was reported in November 2021 from Manitoba.

SWINE ORIGIN INFLUENZA A(H3N2)v

The most recent human case of swine origin influenza A(H3N2)v was reported in November 2022 from the United States.

Globally, 446 A(H3N2)v cases have been reported since 2005, with <1% CFR. Five (5) A(H3N2)v cases were reported worldwide in 2022. Two (2) A(H3N2)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in June 2021.

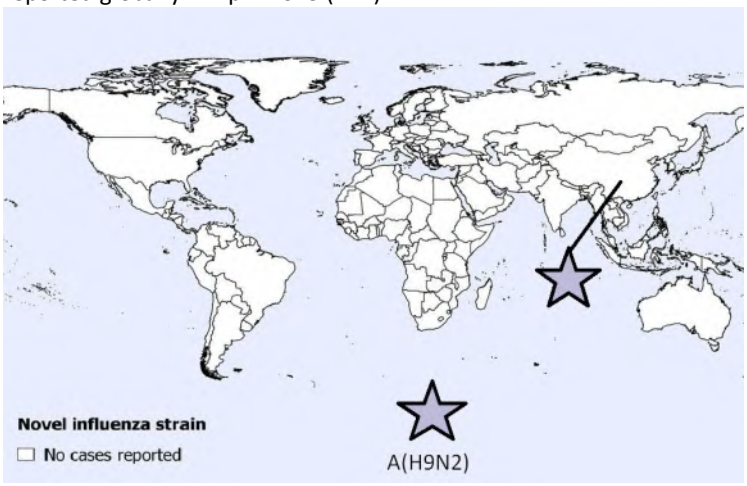
SWINE ORIGIN INFLUENZA A(H1N1)v

There were no new human cases of swine influenza A(H1N1)v reported in April 2023. However, information has been provided regarding the two swine influenza A(H1N1)v cases reported in the March 2023 HERP Bulletin, which contained no details on the cases.

The first case was a 3-year-old female from Sichuan province, China, with an illness onset date of December 27, 2022. Her symptoms were of mild severity and she was not hospitalized. The second case was a 1-year-old female from Jiangsu province, China, with an illness onset date of January 30, 2023. Her symptoms were of mild severity and she was not hospitalized. For both cases, no information on the likely source of exposure to the virus was available at the time of reporting and no suspected cases among family contacts of the cases were reported. No further information was provided.

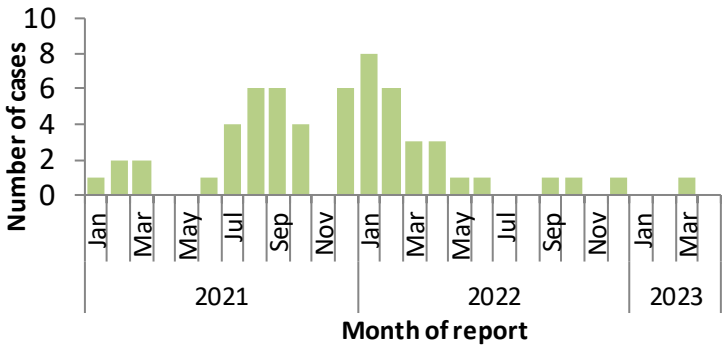
Globally, 44 human cases of A(H1N1)v have been reported since 2005, with no associated fatalities. Three (3) A(H1N1)v cases have been reported worldwide in 2023. Two (2) A(H1N1)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in April 2021.

Figure 1. Spatial distribution of human cases of avian and swine influenza reported globally in April 2023 (n=1).



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. This map reflects data available through these publications as of April 30, 2023.

Figure 2. Temporal distribution of human cases of A(H5N6) influenza reported globally, by month, January 1, 2021, to April 30, 2023 (n=58).

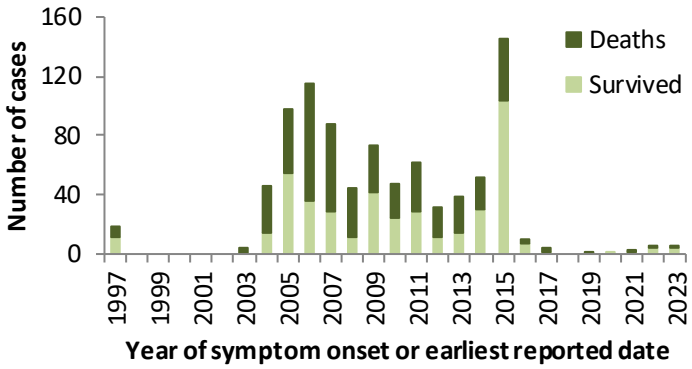


Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This graph reflects data available as of April 30, 2023.

Figure 3. Spatial distribution of human cases of A(H5N6) influenza reported in China and Lao PDR from January 1, 2021, to April 30, 2023 (n=58).

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 April 30, 2023.

Figure 4. Temporal distribution of human cases of A(H5N1) influenza reported globally, by year, January 1, 1997, to April 30, 2023 (n=892).



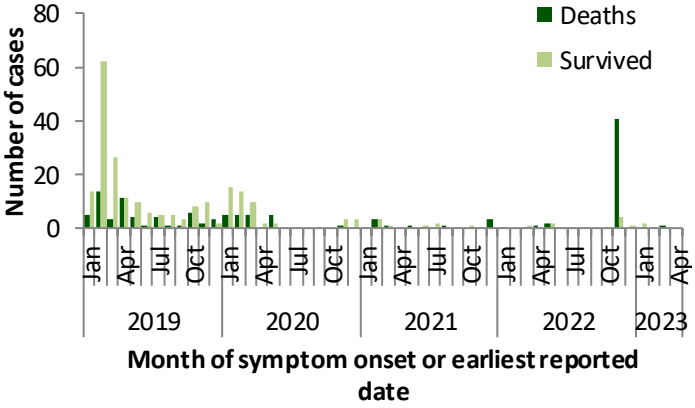
Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings, the US CDC's Health Alert Network (HAN), and WHO cumulative case counts. This graph reflects data available as of April 30, 2023.

MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) UPDATE

The most recent human case of MERS-CoV was reported in March 2023 from Saudi Arabia.

According to the WHO, 2,604 laboratory-confirmed cases of MERS-CoV, including 936 deaths, have been reported globally since reporting began in 2012 (CFR: 36%). Three (3) MERS-CoV cases have been reported globally in 2023. No cases have ever been reported in Canada.

Figure 5. Temporal distribution of human cases of MERS-CoV reported to the WHO, globally, by month and year, January 1, 2019, to April 30, 2023 (n=322).



Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO Disease Outbreak News (DON) and Saudi Arabia's Ministry of Health. This graph reflects data available as of April 30, 2023. The data integrates CIRID real-time reporting with WHO DON retrospective reporting of MERS-CoV cases and deaths. In November 2022, the WHO published a Disease Outbreak News (DON) article that updated their counts with retrospective cases and deaths, which resulted in an increase of an additional 5 cases and 41 deaths compared to their previous MERS-CoV-related DON.