

HUMAN EMERGING RESPIRATORY PATHOGENS BULLETIN

MONTHLY SITUATIONAL ANALYSIS OF EMERGING RESPIRATORY DISEASES AFFECTING HUMANS

ISBN/ISSN: 2563-9420 | Catalogue No HP38-6E-PDF | Publication No 230012 *Issue No 79 July 2023*

IN THIS BULLETIN

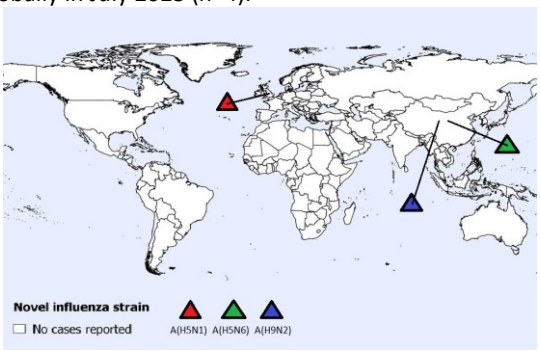
The Human Emerging Respiratory Pathogens (HERP) Bulletin is a monthly publication developed by the Public Health Agency of Canada (PHAC)'s Centre for Emerging and Respiratory Infections and Pandemic Preparedness (CERIPP). The HERP Bulletin serves as a mechanism for information sharing on summary surveillance indicators of global public health events affecting humans in the field of emerging respiratory pathogens. This includes pathogens such as novel influenzas (both avian and swine-origin), Middle East Respiratory Syndrome Coronavirus (MERS-CoV), and other ad-hoc emerging respiratory pathogens.

MONTHLY HIGHLIGHTS

During the month of July 2023, the following human cases have been reported:

- Two (2) new human cases of avian influenza A(H5N1)
- One (1) new human case of avian influenza A(H5N6)
- One (1) new human case of avian influenza A(H9N2)
- One (1) new human case of MERS-CoV

Figure 1. Spatial distribution of human cases of avian and swine influenza reported globally in July 2023 (n=4).



Note: Map was prepared by CERIPP using data from the latest WHO Event Information Site (EIS) postings. This map reflects data available through these publications as of July 31, 2023.

UPDATE ON HUMAN EMERGING RESPIRATORY PATHOGEN PUBLIC HEALTH EVENTS (AS OF JULY 31, 2023)[1]

NOVEL INFLUENZA[1]	[N CUMULATIVE CASES[2] (DEATHS), CFR%[3]]
Avian Influenza	
A(H1N2)[4]	[2 (0), 0%]
A(H3N8)	[3 (1), 33%]
A(H5N1)	[896 (464), 52%]
A(H5N6)	[86 (33), 38%]
A(H5N8)	[7 (0), 0%]
A(H7N4)	[1 (0), 0%]
A(H7N9)	[1,568 (615), 39%]
A(H9N2)	[118 (2), 2%]
A(H10N3)	[2 (0), 0%]
Swine Influenza	
A(H1N1)v	[45 (1), 2%]
A(H1N2)v	[48 (0), 0%]
A(H3N2)v	[446 (1), <1%]
A(H1NX)v[5]	[1 (1), 100%]
Eurasian avian-like A(H1N1)v	[10 (0), 0%]
MERS-CoV[1]	
Global Case Count[6]	[2,605 (936), 36%]
- Within 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. A(H1N1)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, and the United States Centers for Disease Control and Prevention (US CDC).
[3]**Case Fatality Rate (CFR):** the proportion of cases that resulted in death. 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.
[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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AVIAN INFLUENZA UPDATES

AVIAN INFLUENZA A(H5N1)

Two (2) new human cases of A(H5N1) were reported in July 2023, both from the United Kingdom (UK). The first case had fully recovered at the time of report, but previously reported mild symptoms a week after their exposure. The second case was asymptomatic and tested negative by the end of their isolation period. Both cases were occupationally exposed to infected birds, but were detected at different premises. They both belong to clade 2.3.4.4b. There was no evidence of human-to-human transmission.

Since 2022, 15 human cases of A(H5N1) have been reported worldwide (2022 n=5, 2023 n=10) in Cambodia (2), Chile (1), China (2), Ecuador (1), Spain (2), United Kingdom (5), United States (1), Vietnam (1). Of these cases, 13 belonged to clade 2.3.4.4b and two (2) belonged to clade 2.3.2.1c (both from Cambodia). Since the emergence of A(H5N1) in humans in 1997, 896 human cases of A(H5N1) have been reported globally, with a CFR of 52%.

In Canada, a significant number of A(H5N1) detections associated with the current 2021-2023 A(H5N1) clade 2.3.4.4b epizootic have been reported in domestic, backyard, and wild bird populations, as well as other animal species. No domestically acquired human A(H5N1) infections have ever been reported in Canada. In 2014, Canada (Alberta) reported a single fatal case of A(H5N1) in a resident returning from travel in China.

AVIAN INFLUENZA A(H5N6)

One (1) new human case of A(H5N6) was reported in July 2023 in China. The case, a 64-year-old male retiree from Guangxi Province, developed illness on July 4, 2023 and was in severe condition at the time of last report. He had reported exposure to live domestic poultry, but environmental samples tested negative.

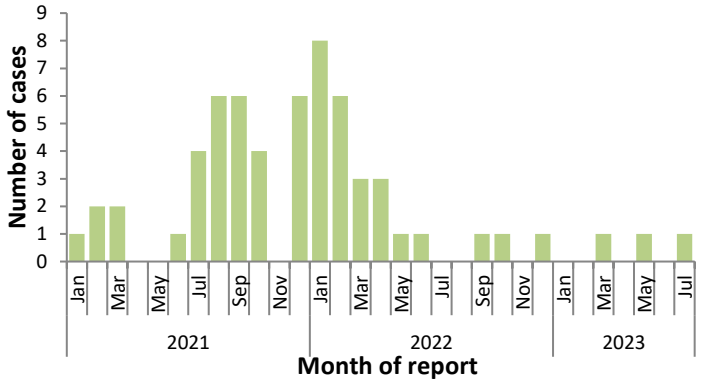
In 2023, three (3) cases of A(H5N6) have been detected. A total of 86 laboratory-confirmed human cases of avian influenza A(H5N6), including at least 33 deaths (CFR: 38%) have been reported globally since 2014. Since January 2021, 60 cases of avian influenza A(H5N6) have been reported globally; 32 cases in 2021, 25 cases in 2022 and three (3) cases in 2023 (Figure 2); the majority of cases (59) 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(H9N2)

One (1) new human infection of A(H9N2) was reported in July 2023 in China. The case, a 59-year-old male farmer from Guangxi Province, reported illness onset on June 22, 2023 and was hospitalized on June 25, 2023. He has since recovered. It is suspected the case was exposed to backyard poultry, although environmental samples tested negative for A(H9).

In 2023, 11 cases of A(H9N2) have been reported globally. Since the emergence of this virus in the human population in 1998, 118 cases have been reported worldwide, with a CFR of 2%. No cases have been reported in Canada.

Figure 2. Temporal distribution of human cases of A(H5N6) influenza reported globally, by month, January 1, 2021, to July 31, 2023 (n=60).

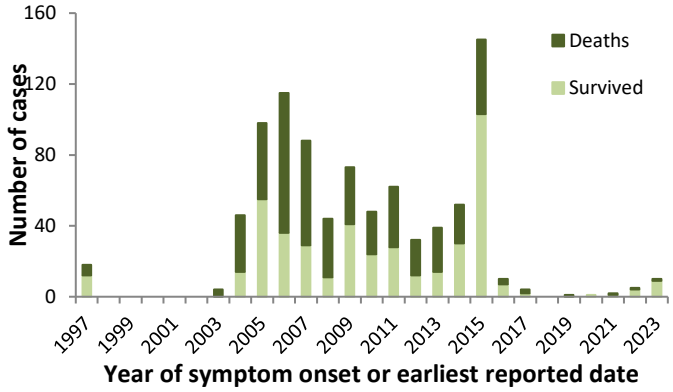


Note: Graph was prepared by CERIPP using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This graph reflects data available as of July 31, 2023.

Figure 3. Spatial distribution of human cases of A(H5N6) influenza reported in China and Lao PDR from January 1, 2021, to July 31, 2023 (n=60).

Note: Map was prepared by CERIPP using data from the WHO EIS postings and the Hong Kong CHP press releases. This map reflects data available through these publications as of July 31, 2023.

Figure 4. Temporal distribution of human cases of A(H5N1) influenza reported globally, by year, January 1, 1997, to July 31, 2023 (n=896).



Note: Graph was prepared by CERIPP 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 July 31, 2023.

SWINE INFLUENZA UPDATES

SWINE ORIGIN INFLUENZA A(H1N1)v

The most recent human case of swine origin influenza A(H1N1)v was reported in June 2023 in Brazil.

There have been four (4) human A(H1N1)v cases reported worldwide in 2023. A total of 45 human cases of A(H1N1)v have been reported globally since 2005, with a 2% CFR. Two (2) A(H1N1)v detections have been reported in Canadian residents since reporting began in 2005, with the first case reported in Ontario in September 2012 and the second case reported in Manitoba in April 2021 (see HERP Bulletin #52).

SWINE ORIGIN INFLUENZA A(H1N2)v

The most recent human case of swine origin influenza A(H1N2)v was reported in May 2023 in Taiwan.

There has been one (1) human A(H1N2)v case reported worldwide in 2023. A total of 48 human cases of A(H1N2)v have been reported globally since 2005, with a 0% CFR. 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 in Manitoba (see HERP Bulletin #59).

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.

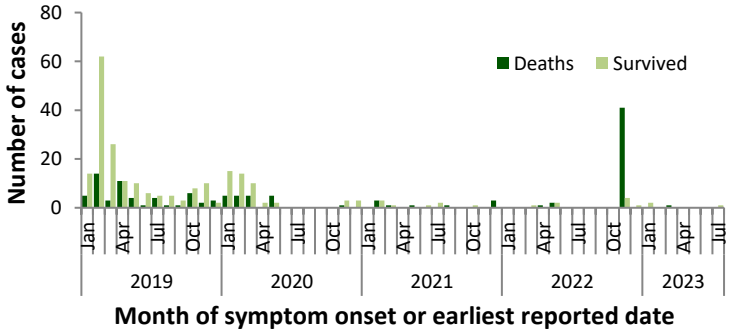
No cases of A(H3N2)v have been detected in 2023. Globally, 446 A(H3N2)v cases have been reported since 2005, with <1% CFR. Two (2) A(H3N2)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in June 2021 (see HERP Bulletin #54).

MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) UPDATE

One (1) new human infection of MERS-CoV was reported in July 2023 in the United Arab Emirates (UAE). The case, a 28-year-old male Indian national, worked in the UAE as a labourer. The case was referred to an intensive care unit and was in critical condition at the time of last report. No secondary cases have been identified.

In 2023, four (4) cases of MERS-CoV were detected. According to the WHO, 2,605 laboratory-confirmed cases of MERS-CoV, including 936 deaths, have been reported globally since reporting began in 2012 (CFR: 36%). 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 July 31, 2023 (n=323).



Note: Graph was prepared by CERIPP using data from the WHO Disease Outbreak News (DON) and Saudi Arabia's Ministry of Health. This graph reflects data available as of July 31, 2023. The data integrates CERIPP real-time reporting with WHO DON retrospective reporting of MERS-CoV cases and deaths. In November 2022, the WHO published a 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.