



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 SEPTEMBER 30, 2022)¹

NOVEL INFLUENZA ¹	[N CUMULATIVE CASES ² (DEATHS), CFR% ³]
A(H7N9)	[1,568 (615), 39%]
A(H5N1)	[883 (462), 52%]
A(H9N2)	[103 (2), 2%]
A(H5N6)	[81 (33), 41%]
A(H5N8)	[7 (0), 0%]
A(H7N4)	[1 (0), 0%]
A(H1N2) ⁴	[2 (0), 0%]
A(H10N3)	[2 (0), 0%]
A(H3N8)	[2 (0), 0%]
A(H3N2)v	[444 (1), <1%]
A(H1N2)v	[45 (0), 0%]
A(H1N1)v	[40 (0), 0%]
A(H1NX)v ⁵	[1 (1), 100%]
Eurasian avian-like A(H1N1)	[10 (0), 0%]
MERS-CoV ¹	
Global case count	[2,579 (882), 34%]
Saudi Arabia	[2,178 (803), 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(H2N2): March 2018; A(H10N3): May 2021; A(H3N8): April 2022; A(H3N2): with M gene from pH1N1: 2011; A(H1N2): 2005; A(H1N1)v: 2005; EA A(H1N1): 1986, but the above table counts cases from January 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(H1N1) virus with pending neuraminidase results.

AVIAN INFLUENZA A(H5N6)

One (1) human case of avian influenza A(H5N6) was reported in September 2022 from China. The case was a 6 year-old female from Nanning, Guangxi Province, China who had no underlying conditions. The case was hospitalized and was in severe condition with pneumonia as of the time of last report. Prior to illness onset, the case had exposure to a live poultry market and poultry that was purchased from a market. As of the time of reporting,

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 twelve (12) times through 2020 to 2022, 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)

The most recent human case of a avian influenza A(H9N2) was reported in August 2022 from China.

To date, 17 human cases of avian influenza A(H9N2) were reported worldwide in 2022. Since the emergence of this virus in the human population in 1998, 103 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.

no close contacts of the case have developed symptoms of illness.

A total of 81 laboratory-confirmed human cases of avian influenza A(H5N6), including at least 33 deaths (CFR: 41%) have been reported globally since 2014. Since January 2021, 55 cases of avian influenza A(H5N6) have been reported globally (Figure 2); 54 A(H5N6) cases were reported from China and one (1) case was reported from Lao PDR (Figure 3). So far, 23 A(H5N6) human cases have been reported worldwide in 2022. No cases have been reported in Canadian residents.

AVIAN INFLUENZA A(H3N8)

The most recent human case of avian influenza A(H3N8) was reported in May 2022 from China.

Since the emergence of this virus in the human population in 2022, two (2) cases have been reported, both from China. The CFR is 0%; however, with only two human cases to date, the full spectrum of disease is highly uncertain.

AVIAN INFLUENZA A(H5N1)

The most recent human case of avian influenza A(H5N1) was reported in April 2022 from the United States.

There have been 883 human cases of A(H5N1) reported globally since 1997, with a CFR of 52% (Figure 4). Two (2) A(H5N1) cases have been reported worldwide in 2022. 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(H10N3)

One (1) human case of avian influenza A(H10N3) was reported in September 2022 from China. The case was a 33 year-old male from Zhejiang Province, China who worked as a butcher. The case was hospitalized for treatment due to repeated high fever. Prior to illness onset, the case had no history of live poultry market activity, live poultry slaughter, or contact with sick or dead poultry. However, the case's family home had poultry on their property. Environmental samples tested negative.

Since the emergence of this virus in the human population in 2021, two (2) cases have been reported, both from China. The CFR is 0%; however, with only two human cases to date, the full spectrum of disease is highly uncertain.

SWINE INFLUENZA UPDATES

SWINE ORIGIN INFLUENZA A(H1N2)v

Three (3) human cases of swine origin influenza A(H1N2)v were reported in September 2022, all (3/3; 100%) from the US in individuals under 18 years of age. The cases were reported from three (3) different states: Michigan, Wisconsin, and Georgia. Two (2/3) cases were not hospitalized and have since recovered from illness. The current condition of the third case is unknown. Prior to illness onset, two (2/3) cases attended agricultural fairs and reported contact with swine. One (1) household

contact of the Michigan case reported respiratory illness. They attended the same agricultural fair and became ill at the same time as the patient. As of the time of reporting, no person-to-person transmission of A(H1N2)v associated with any of the three (3) cases has been identified.

A total of 45 A(H1N2)v cases have been reported globally since 2005, with a 0% case fatality rate. Six (6) A(H1N2)v cases have been reported worldwide in 2022. 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 cases of swine origin influenza A(H3N2)v were reported in August 2022 from the US.

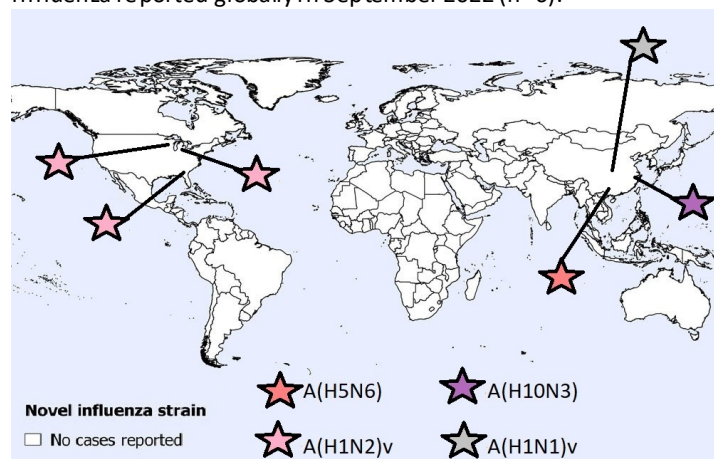
Globally, 444 A(H3N2)v cases have been reported since 2005, with <1% case fatality rate. These are the first three (3) A(H3N2)v cases reported worldwide in 2022. Two (2) A(H3N2)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in June 2021.

SWINE ORIGIN INFLUENZA A(H1N1)v

One (1) new human case of swine origin influenza A(H1N1)v was reported in September 2022 from China. No additional details about the case's demographics or outcome were provided.

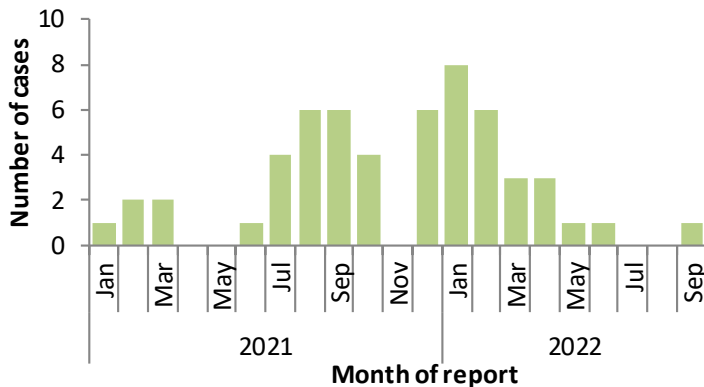
Globally, 40 human cases of A(H1N1)v have been reported since 2005, with no associated fatalities. Three (3) A(H1N1)v cases have been reported worldwide in 2022. Two (2) A(H1N1)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in April 2021.

Figure 1. Spatial distribution of human cases of avian and swine influenza reported globally in September 2022 (n=6).



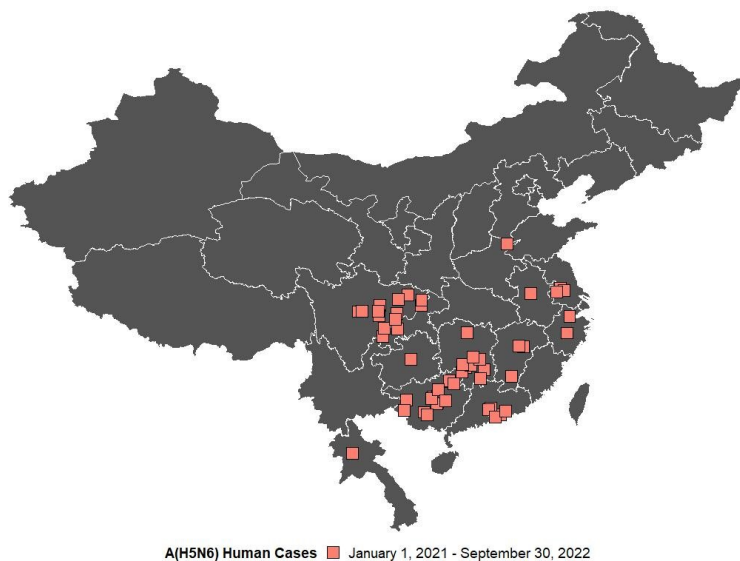
Note: Map was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the latest WHO Event Information Site (EIS) postings. This map reflects data available through these publications as of September 30, 2022.

Figure 2. Temporal distribution of human cases of A(H5N6) influenza reported globally, by month, January 1, 2021 to September 30, 2022 (n=55).



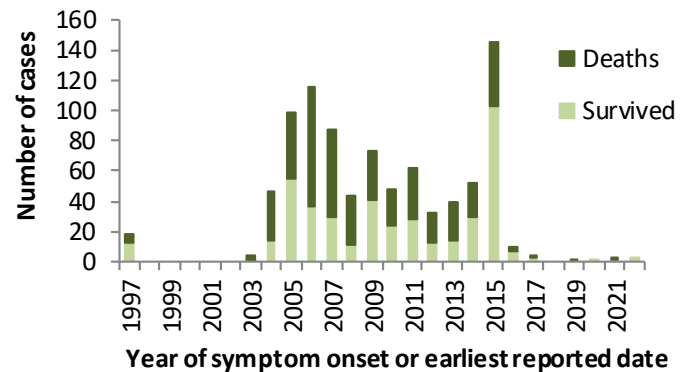
Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This graph reflects data available as of September 30, 2022.

Figure 3. Spatial distribution of human cases of A(H5N6) influenza reported in China and Lao PDR from January 1, 2021, to September 30, 2022 (n=55).



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 September 30, 2022.

Figure 4. Temporal distribution of human cases of A(H5N1) influenza reported globally, by year, January 1, 1997 to September 30, 2022 (n=883).



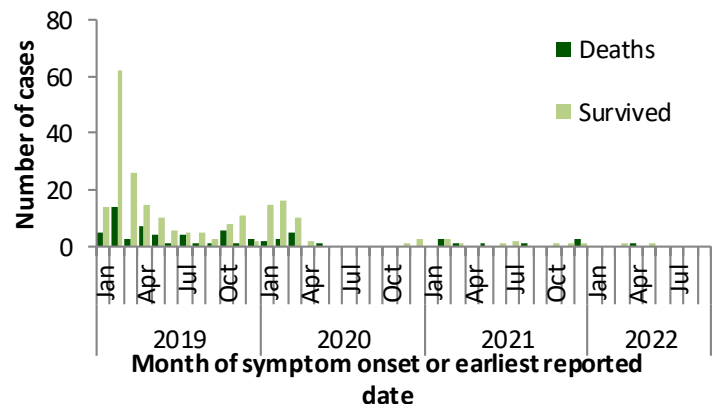
Note: Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings, the US CDC's Health Alert Network (HAN), and WHO cumulative case counts. This graph reflects data available as of September 30, 2022.

MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) UPDATE

The most recent case of MERS-CoV was reported in May 2022 from Oman.

A total of 2,579 laboratory-confirmed cases of MERS-CoV, including 882 deaths, have been reported globally since 2012 by the WHO (CFR: 34%). Three (3) MERS-CoV cases have been reported worldwide in 2022. No cases have 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 September 30, 2022 (n=297).



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 September 30, 2022.