



# 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 OCTOBER 31, 2022)<sup>1</sup>

#### NOVEL INFLUENZA<sup>1</sup> [N CUMULATIVE CASES<sup>2</sup> (DEATHS), CFR%<sup>3</sup>]

|                             |                    |
|-----------------------------|--------------------|
| A(H7N9)                     | [1,568 (615), 39%] |
| A(H5N1)                     | [885 (462), 52%]   |
| A(H5NX) <sup>4</sup>        | [1(0), 0%]         |
| A(H9N2)                     | [103 (2), 2%]      |
| A(H5N6)                     | [82 (33), 40%]     |
| A(H5N8)                     | [7 (0), 0%]        |
| A(H7N4)                     | [1 (0), 0%]        |
| A(H1N2) <sup>5</sup>        | [2 (0), 0%]        |
| A(H10N3)                    | [2 (0), 0%]        |
| A(H3N8)                     | [2 (0), 0%]        |
| A(H3N2)v                    | [445 (1), <1%]     |
| A(H1N2)v                    | [46 (0), 0%]       |
| A(H1N1)v                    | [41 (0), 0%]       |
| A(H1NX) <sup>6</sup>        | [1 (1), 100%]      |
| Eurasian avian-like A(H1N1) | [10 (0), 0%]       |

#### MERS-CoV<sup>1</sup>

|                   |                    |
|-------------------|--------------------|
| Global case count | [2,579 (882), 34%] |
| Saudi Arabia      | [2,178 (803), 37%] |

<sup>1</sup>Date of 1<sup>st</sup> 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): 2005; A(H1N1)v: 2009; EA A(H1N1): 1986, but the above table counts cases from January 2021 to 2022.  
<sup>2</sup>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 (US CDC) (swine influenza).  
<sup>3</sup>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.  
<sup>4</sup>A(H5NX): virus is an A(H5) virus with pending neuraminidase results.  
<sup>5</sup>A(H1N2): virus is a seasonal reassortant of the A(H1N1)pdm09 and A(H3N2) seasonal strains.  
<sup>6</sup>A(H1NX)v: virus is a novel influenza A(H1) virus with pending neuraminidase results.

A total of 82 laboratory-confirmed human cases of avian influenza A(H5N6), including at least 33 deaths (\*CFR: 40%) have been reported globally since 2014. Since January 2021, 56 cases of avian influenza A(H5N6) have been reported globally (Figure 2); 55 A(H5N6) cases were reported from China and one (1) case was reported from Lao PDR (Figure 3). So far, 24 A(H5N6) human cases have been reported worldwide in 2022. No cases have been reported in Canadian residents.

### 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 thirteen (13) 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(H5N6)

One (1) human case of avian influenza A(H5N6) was reported in October 2022 from China. The case was a 3-year-old male from Guangxi Province, China. The case was hospitalized and was in severe condition with pneumonia as of the time of last report. Prior to illness onset, the case was exposed to backyard poultry. As of the time of reporting, no close contacts of the case had developed symptoms of illness. Environmental samples that were collected tested negative for avian influenza.

\*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.



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Canada

## AVIAN INFLUENZA A(H10N3)

The most recent human case of avian influenza A(H10N3) was reported in September 2022 from China.

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.

## AVIAN INFLUENZA A(H5N1)

Two (2) new human cases of avian influenza A(H5N1) were reported in October 2022 from Spain. The first (1<sup>st</sup>) case was a 19-year-old male and the second (2<sup>nd</sup>) case was a 27-year-old male. Both (2/2; 100%) worked at the same poultry farm in Guadalajara, Spain. Both (2/2; 100%) cases were asymptomatic, as were all 12 workers at the farm. Poultry infected with highly pathogenic avian influenza (HPAI) A(H5N1) was detected at the farm prior to the detection of these two (2) human cases of A(H5N1). Prior to illness onset, both (2/2; 100%) cases experienced direct occupational exposure to infected poultry and the environment at the farm. In total, three (3) close contacts were identified; however, all (3/3; 100%) close contacts tested negative.

There have been 885 human cases of A(H5N1) reported globally since 1997, with a CFR of 52% (Figure 4). These individuals are the third (3<sup>rd</sup>) and fourth (4<sup>th</sup>) cases associated with the recent group of avian influenza A(H5N1) viruses that have been circulating in birds and other animals in Europe and North America. No domestically acquired A(H5N1) infections have ever been reported in Canada, although a significant number of A(H5N1) detections associated with the current 2021–2022 epizootic have been reported in domestic, backyard, and wild bird populations and other wild animal species across Canada. In 2014, Canada (Alberta) reported one single fatal case of A(H5N1) in a resident returning from travel in China.

## AVIAN INFLUENZA A(H5NX)

One (1) new human case of avian influenza A(H5NX) was reported in October 2022 from Vietnam. The case was a 4-year-old female from Phú Thọ, Vietnam. While hospitalized for renal and liver failure, she tested positive for A(H5NX). As of the time of last report, the case was receiving treatment in the intensive care unit (ICU) for renal and liver failure, septic shock and multi-organ failure. Prior to illness onset, the case had exposure to backyard poultry that was not vaccinated against HPAI. Prior to the hospitalization of the case, chicken and ducks in the flock were sick and had died. The remaining sick ducks were slaughtered for food.

As of the time of reporting, no further cases of A(H5NX) have been detected among family members of the case. Samples collected from the case's house and from 4 surrounding households tested negative for A(H5). Identification of the neuraminidase (NA) subtype is pending.

## SWINE INFLUENZA UPDATES

### SWINE ORIGIN INFLUENZA A(H1N2)v

One (1) new human case of swine influenza A(H1N2)v was reported in October 2022 from the Netherlands. The case was a 26-year-old female living in the state of Limburg, Netherlands, who developed mild influenza-like symptoms and was not hospitalized. Prior to illness onset, the case had direct unprotected contact with piglets at the farm where

she is employed. As of the time of reporting, none of the animals at the farm had exhibited clinical signs of illness.

A total of 46 A(H1N2)v cases have been reported globally since 2005, with a 0% CFR. Seven (7) 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

One (1) new human case of swine origin influenza A(H3N2)v was reported in October 2022 from Michigan, United States. The case was <18 years of age, was not hospitalized and has since recovered from illness. Prior to illness onset, the case had indirect swine exposure at an agricultural fair. As of the time of last report, none of the case's household contacts have reported symptoms of illness. No person-to-person transmission of A(H3N2)v associated with this case has been identified.

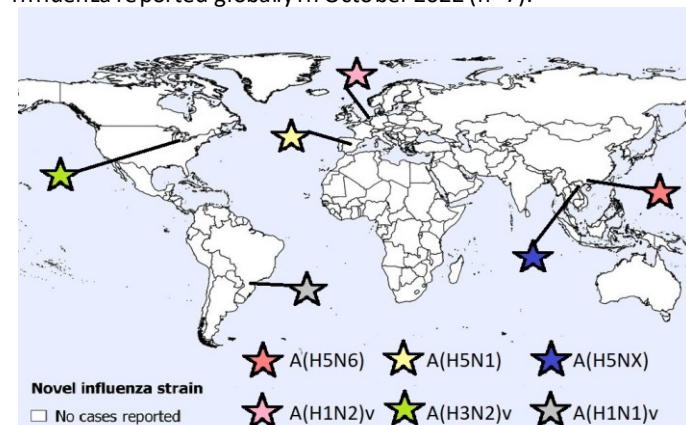
Globally, 445 A(H3N2)v cases have been reported since 2005, with <1% CFR. Four (4) A(H3N2)v cases have been reported worldwide in 2022. Two (2) A(H3N2)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in June 2021.

### SWINE ORIGIN INFLUENZA A(H1N1)v

One (1) new human case of swine origin influenza A(H1N1)v was reported in October 2022 from Brazil. The case was a 60-year-old female from Paraná, Brazil. She was hospitalized for influenza-like symptoms. No specific exposure source was identified; however, the case lives in a rural area where domestic breeding of animals, including pigs, is prevalent. No human-to-human transmission associated with this case has been identified.

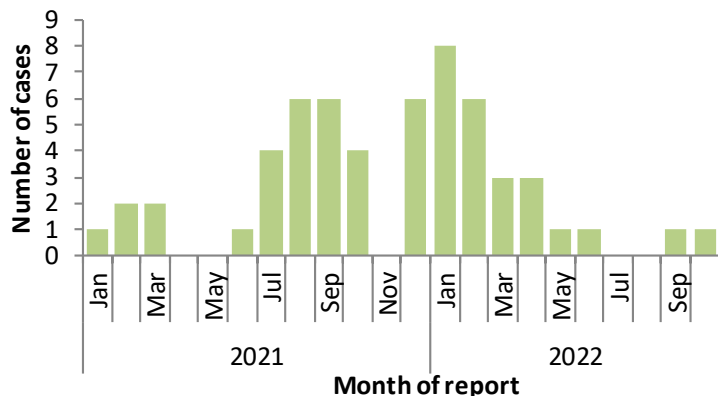
Globally, 41 human cases of A(H1N1)v have been reported since 2005, with no associated fatalities. Four (4) A(H1N1)v cases have been reported worldwide in 2022. Two (2) A(H1N1)v detections have been reported in Canadian residents since reporting began in 2005, with the latest case reported in April 2021.

**Figure 1.** Spatial distribution of human cases of avian and swine influenza reported globally in October 2022 (n=7).



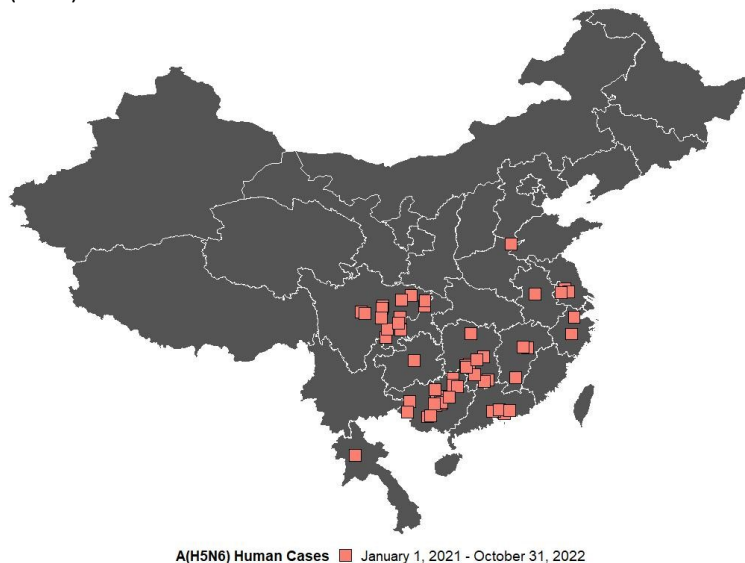
Note: Map was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the latest WHO Event Information Site (EIS) postings. This map reflects data available through these publications as of October 31, 2022.

**Figure 2.** Temporal distribution of human cases of A(H5N6) influenza reported globally, by month, January 1, 2021 to October 31, 2022 (n=56).



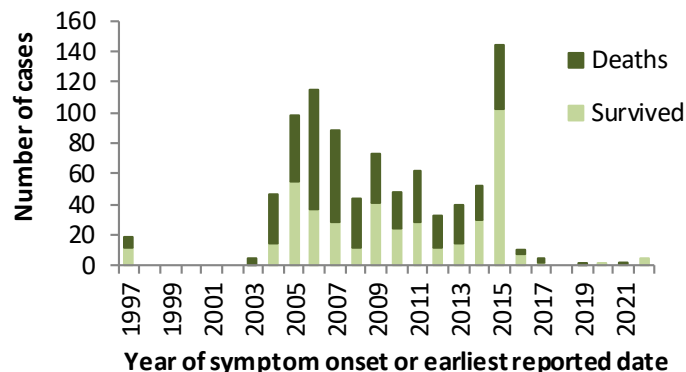
**Note:** Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings and the Hong Kong Centre for Health Protection (CHP) press releases. This graph reflects data available as of October 31, 2022.

**Figure 3.** Spatial distribution of human cases of A(H5N6) influenza reported in China and Lao PDR from January 1, 2021, to October 31, 2022 (n=56).



**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 October 31, 2022.

**Figure 4.** Temporal distribution of human cases of A(H5N1) influenza reported globally, by year, January 1, 1997 to October 31, 2022 (n=885).



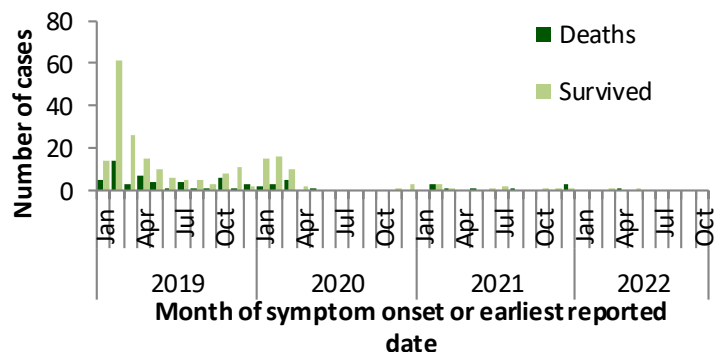
**Note:** Graph was prepared by the Centre for Immunization and Respiratory Infectious Diseases (CIRID) using data from the WHO EIS postings, the US CDC's Health Alert Network (HAN), and WHO cumulative case counts. This graph reflects data available as of October 31, 2022.

## 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 October 31, 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 October 31, 2022.