Update on Monitoring and Preventing Zoonotic HPAI Threats in the WHO European Region

1st GF-TADS Regional Conference of Standing Groups of Experts on Priority Transboundary Animal diseases in the European Region

24 September 2025, Belgrade, Serbia

Marc-Alain Widdowson
Head, Pandemic Threats, Communicable Diseases and Antimicrobial Resistance (PCT)

World Health Organization
European Region

Table 1. Summary of Virologically or Serologically Confirmed Reports of Zoonotic Influenza A Virus Infections in Humans, by Subtype Group

Subtype Group	Year First Detected	Year Last Detected	Countries[a] of Occurrence	Confirmed Cases, No.; Confirmed Fatalities, No.	Representative Reference(s) for Each Country
H1N1v	1958	2016	Canada, China, Czechoslovakia, Italy, Netherlands, Russia, Spain, Switzerland, Thailand, US	41; 6	[3, 9–16]
HPAI H7N7	1959	2003	Australia, US, Netherlands	91; 1	[7, 17, 18]
LPAI H7N7	1979	2013	US, Italy, United Kingdom	5; 0	[6, 19, 20]
H3N2v	1992	2017	Canada, Hong Kong SAR, Netherlands, US, Vietnam	380; 2	[14, 21–24]
HPAI H5N1	1997	2017	Azerbaijan, Bangladesh, Cambodia, Canada,[b] China, Djibouti, Egypt, Hong Kong, Indonesia, Iraq, Laos, Myanmar, Nigeria, Pakistan, Thailand, Turkey, Vietnam	856; 453	[25–27]
LPAI H9N2	1998	2015	Bangladesh, China, Egypt, Hong Kong, SAR[b]	36; 1	[28–31]
LPAI H7N2	2003	2017	United Kingdom, US	7; 0	[8, 32, 33]
HPAI H7N3	2004	2012	Canada, Mexico	4; 0	[34, 35]
LPAI H10N7	2004	2012	Australia, Egypt	4; 0	[36, 37]
LPAI H7N3	2006	2006	United Kingdom	1; 1	[18]
H1N2v	2007	2015	Brazil, Philippines, US	10; 0	[14, 16, 38]
LPAI H7N9	2013	2017	Canada,[b] China, Malaysia,[b] Taiwan[b]	1393; 534	[39]
LPAI H10N8	2013	2014	China	3; 2	[40]
LPAI H6N1	2013	2013	Taiwan	1; 0	[41]
HPAI H5N6	2014	2016	China	17; 12	[42]
HPAI H7N9	2017	2017	China, Taiwan[b]	8; 4	[43]

Adapted and updated from articles by Perdue and Swayne [25], Myers et al [44], and Freidl et al [45]. Influenza viruses that normally circulate in swine are called "variant" viruses and are designated by the letter *v* (eg, "H1N1v") when they occur in humans. Human infections with novel influenza viruses, including variant influenza viruses, were notifiable diseases only after the revision of the International Health Regulations in 2005.

Abbreviations: LPAI, low-pathogenicity avian influenza virus; HPAI, high-pathogenicity avian influenza virus; SAR, Special Administrative Region of China.

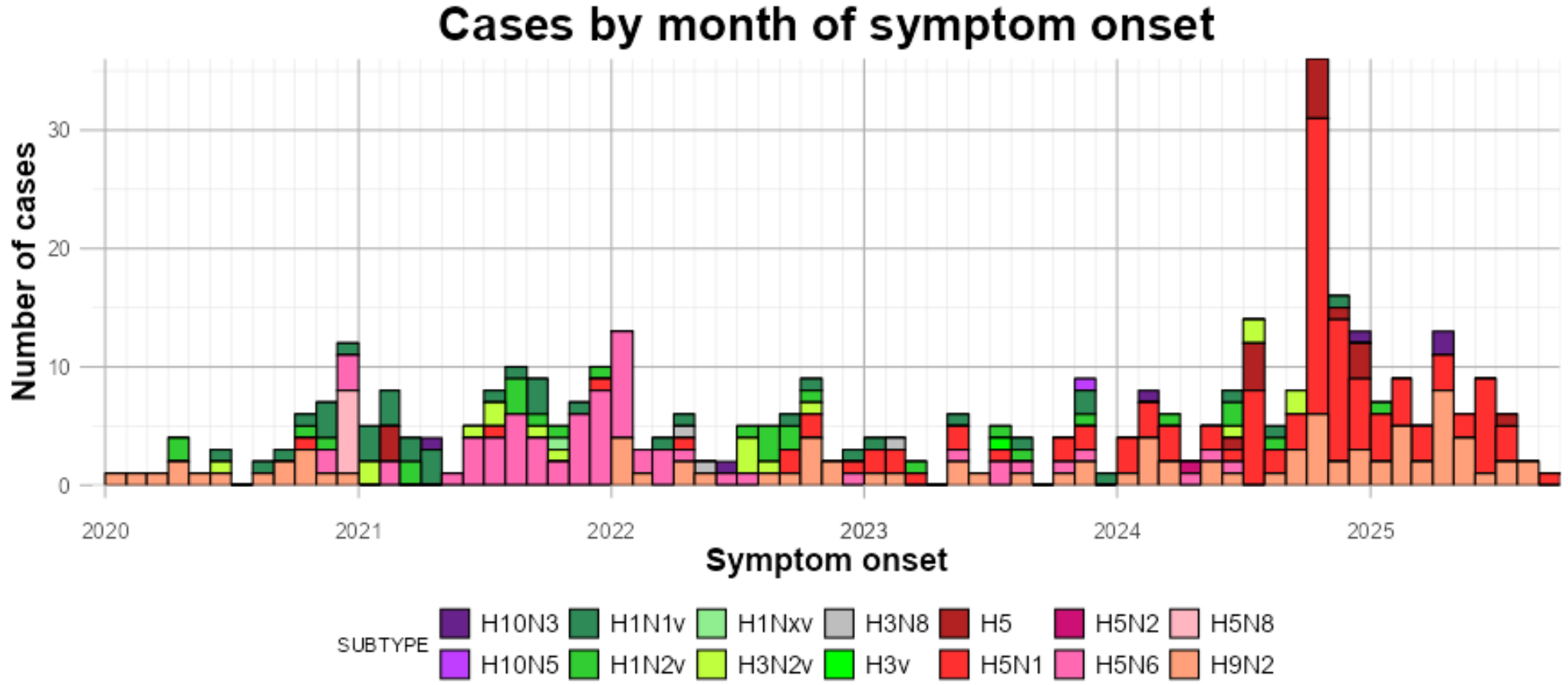
[a]Includes Taiwan and Hong Kong SAR.

[b]Imported case(s).

Widdowson et al JID 2017

Detections of zoonotic influenza A viruses in humans

2020 to 19 Sept 2025

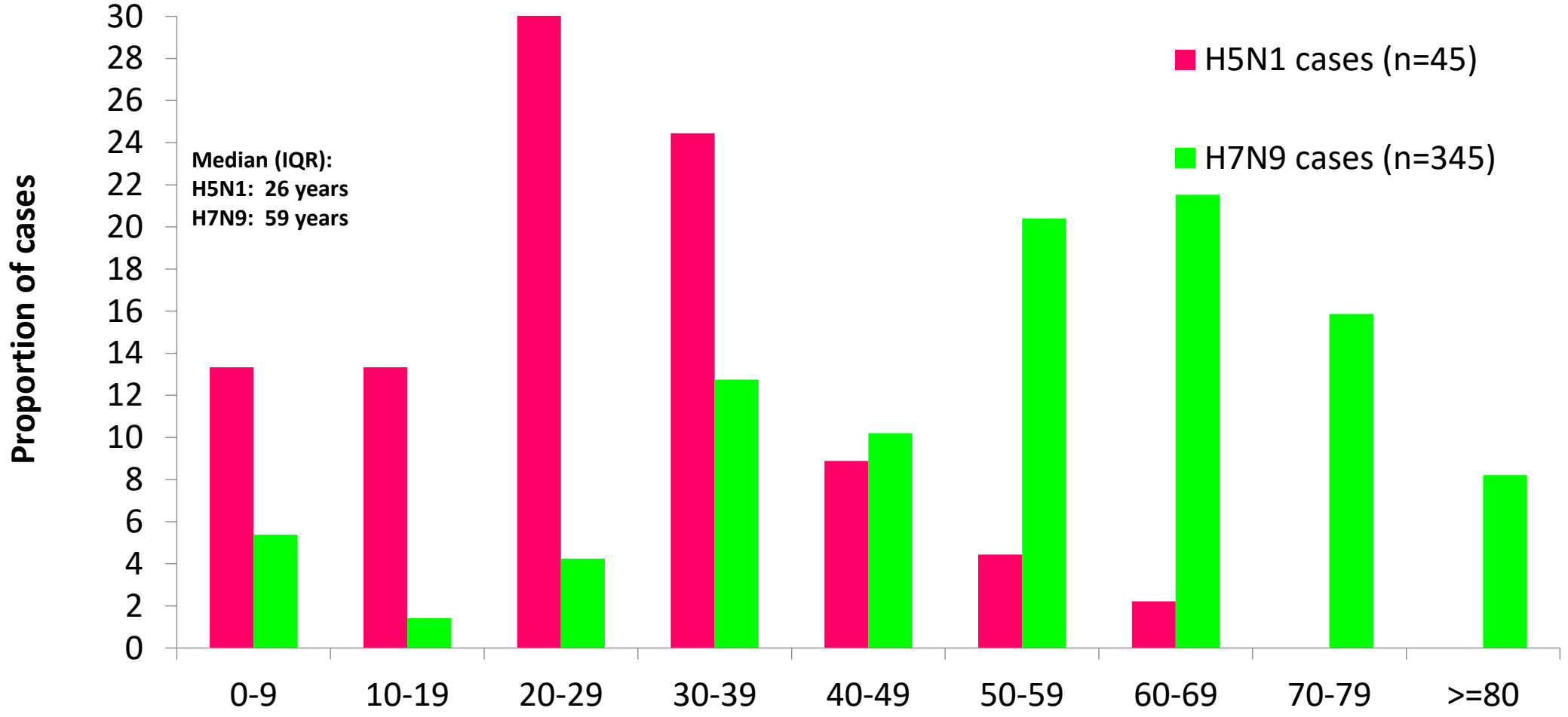


World Health Organization

*This may include detections in persons without symptoms that could represent contamination and not infection.

HEALTH EMERGENCIES programme

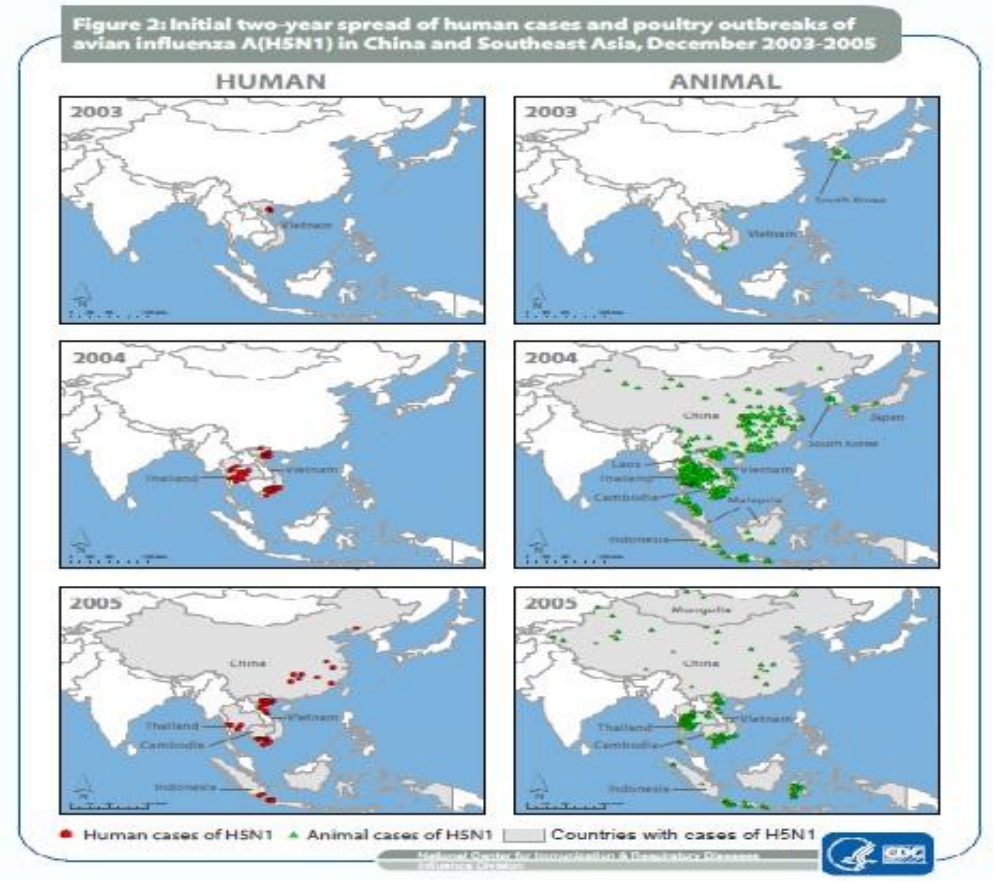
Age Distribution of H5N1 Compared to H7N9 cases in China



World Health Organization

HEALTH EMERGENCIES programme

H5N1 avian influenza spread regionally...but not H7N9 avian influenza

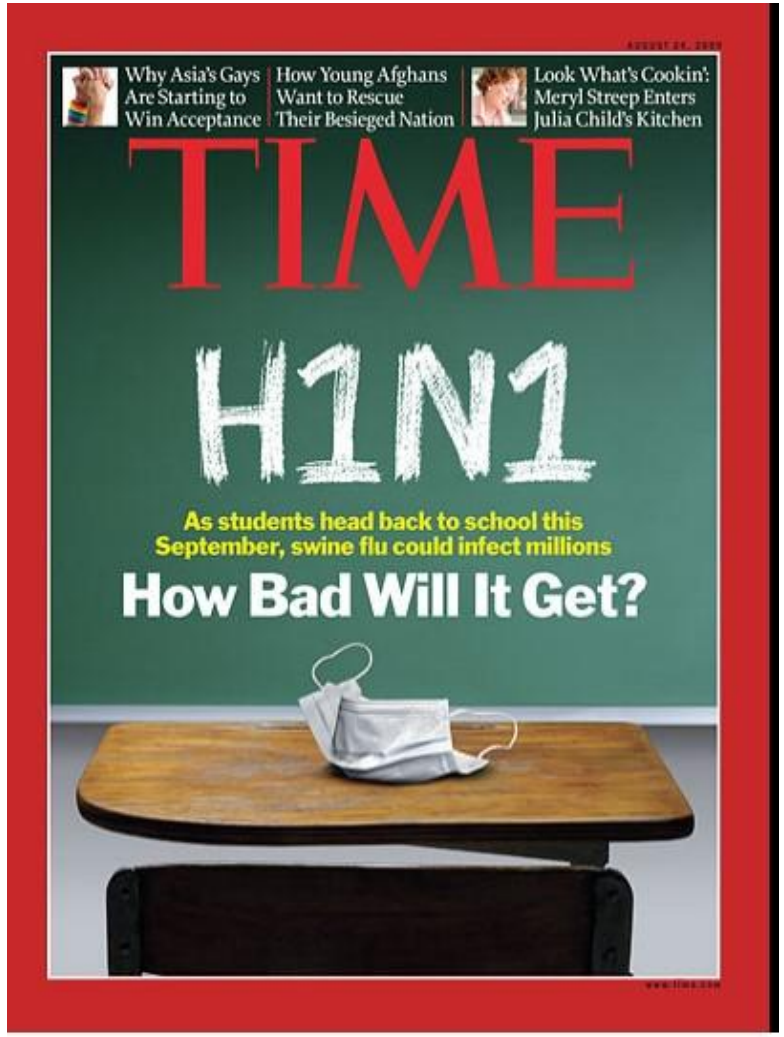


https://flutrackers.com/forum/forum/china-h7n9-outbreak-tracking/h7n9-who-wpro-ecdc-oie-fao-moa-chp-cnfpc-reports-and-updates/779934-china-fao-h7n9-situation-update-1582-confirmed-cumulative-human-cases-including-610-deaths-july-26-2017

World Health Organization

EMERGENCIES programme

Birds in South East Asia
early 2000's



Pigs in Mexico
2009

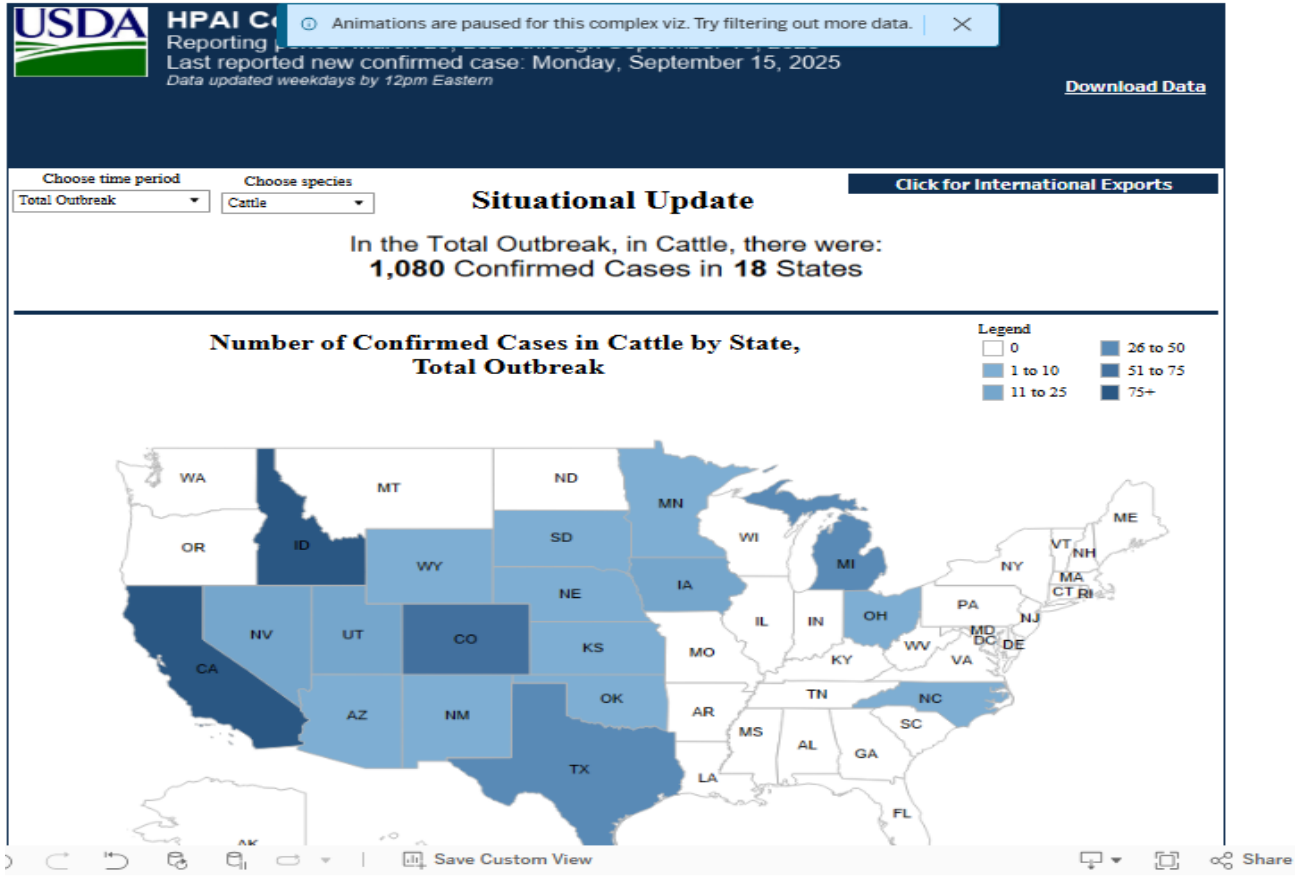
Zoonotic Influenza Detections in Humans in EURO Region reported since 2021 through IHR and other sources

Updated	Country	Subtype
01/25/2025	United Kingdom	H5N1
12/24/2024	United Kingdom	H5N1
05/02/2024	Spain	H1N1v
12/12/2023	Switzerland	H1N1v
30/11/2023	United Kingdom	H1N2v
08/09/2023	Netherlands (the)	H1N1v
July 2023	United Kingdom	H5N1
5/07/2023	United Kingdom	H5N1
23/05/2023	United Kingdom x2	H5N1
09/12/2022	Spain x 2	H5N1
18/10/2022	Netherlands (the)	H1N2v
13/05/2022	Germany	H1N1v
28/01/2022	Denmark	H1N1v
11/01/2022	United Kingdom	H5N1
27/12/2021	Germany	H1N1v
03/11/2021	Netherlands (the)	H1N1v
03/11/2021	Denmark	H1N1v
03/11/2021	Germany	H1N1v
07/10/2021	Austria	H1N2v
22/09/2021	France	H1N2v
04/03/2021	Russian Federation (the)	H5N8

- 23 zoonotic influenza infections since 2021
- The five H5N1 infections in UK are of clade 2.3.4.4b often detected through enhanced surveillance.
- In the United kingdom, two cases of H5 (reported in January 2025 and January 2022) are managed as true infections.

World Health Organization
European Region

Situation update on H5N1 (August, 2025)



- Two introductions
  - Genotype B3.13 in March 2024 (Texas)
  - Genotype D1.1 twice in Jan and Feb 2025 (Nevada and Arizona)
    - Detected through systematic milk testing

- 18 States and 100-200 herds infected
- Ongoing spread between cows though milking, cow movements and indirectly between farms likely via fomites / environment
- Spill-over infections likely to cats, mice and other mammals near farms
- 20% of commercial pasteurized milk positive

- Virus not changed from previously detected 2.3.4.4b clade of H5N1

World Health Organization
European Region

H5 Bird Flu: Current Situation (US CDC)

Situation summary of confirmed and probable human cases since 2024

Confirmed Cases | Probable Cases

State or territory

National

Person-to-person spread

NONE — There is no known person-to-person spread at this time.

Current public health risk

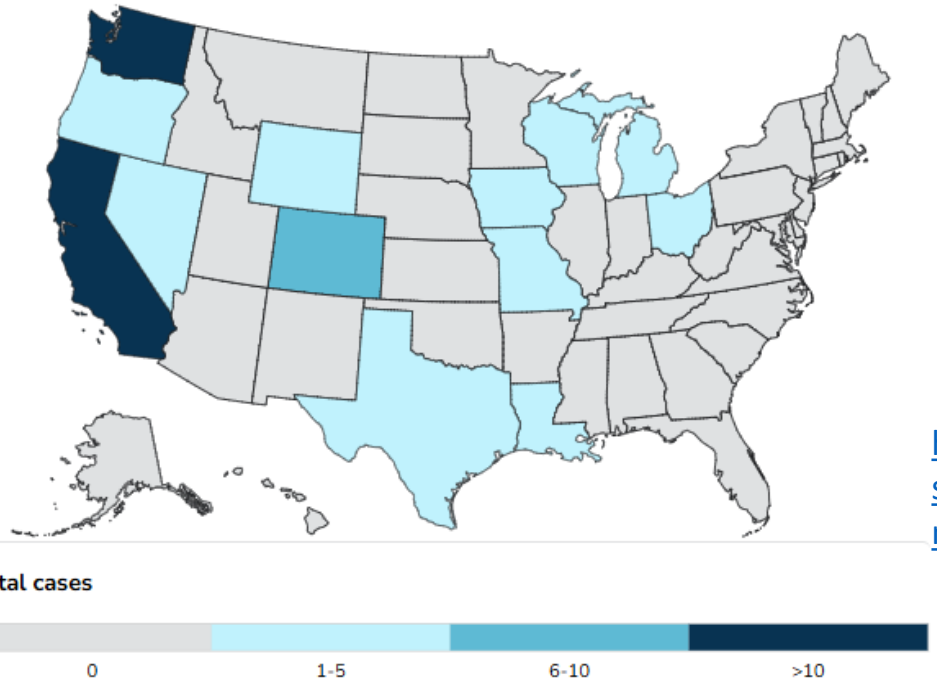
LOW — The current public health risk is Low.

National Total Cases: 70

Cases	Exposure Source
41	Dairy Herds (Cattle)*
24	Poultry Farms and Culling Operations*
2	Other Animal Exposure†
3	Exposure Source Unknown‡

NOTE: One additional case was previously detected in a poultry worker in Colorado in 2022. Louisiana reported the first H5 bird flu death in the U.S.

*Exposure Associated with Commercial Agriculture and Related Operations
†Exposure was related to other animals such as backyard flocks, wild birds, or other mammals
‡Exposure source was not able to be identified



https://www.cdc.gov/bird-flu/situation-summary/?CDC_AAref_Val=https://www.cdc.gov/flu/avianflu/avian-flu-summary.htm

World Health Organization

HEALTH EMERGENCIES programme

Human case epidemiology, USA, March 2024-May 2025

- Of 70 case patients, 41 were exposed to infected or presumably infected dairy cows; 24 were exposed to infected commercial poultry, 2 to backyard poultry, and 3 had an unidentified source of exposure. All sequenced viruses were clade 2.3.4.4b.
- 68 case patients were adults and two were children aged <18 years. 91% reported Hispanic/Latino
- 62 cases (89%) reported eye redness, 32 (46%) fever, and 29 (41%) respiratory symptoms; 54 of 67 cases (81%) reported receiving antiviral treatment. One third of all case patients (n = 22) reported symptoms of conjunctivitis only.
- Most illnesses were mild; however, four patients were hospitalized. Of the hospitalized patients, three had pneumonia and one died.
- No human-to-human transmission detected.

Morbidity and Mortality Weekly Report

Highly Pathogenic Avian Influenza A(H5N1) Virus Infection in a Child with No Known Exposure — San Francisco, California, December 2024–January 2025

Farrell A. Tobolowsky, DO[1]; Eric Morris, MPH[1]; Lina Castro, MPH[1]; Tina Schaff[1]; Monica Jacinto[1]; Joseph P. Clement, MS[1]; Min Z. Levine, PhD[2]; Julia C. Frederick, PhD[2]; Feng Liu, PhD[2]; Crystal Holiday, PhD[2]; Marie K. Kirby, PhD[2]; C. Todd Davis, PhD[2]; Krista Kniss, MPH[2]; Sonja J. Olsen, PhD[2]; Rahil Ryder, MS[3]; Debra A. Wadford, PhD[3]; Godfred Masinde, PhD[1]; George Han, MD[1]; A. Danielle Iuliano, PhD[2]; Seema Jain, MD[1]

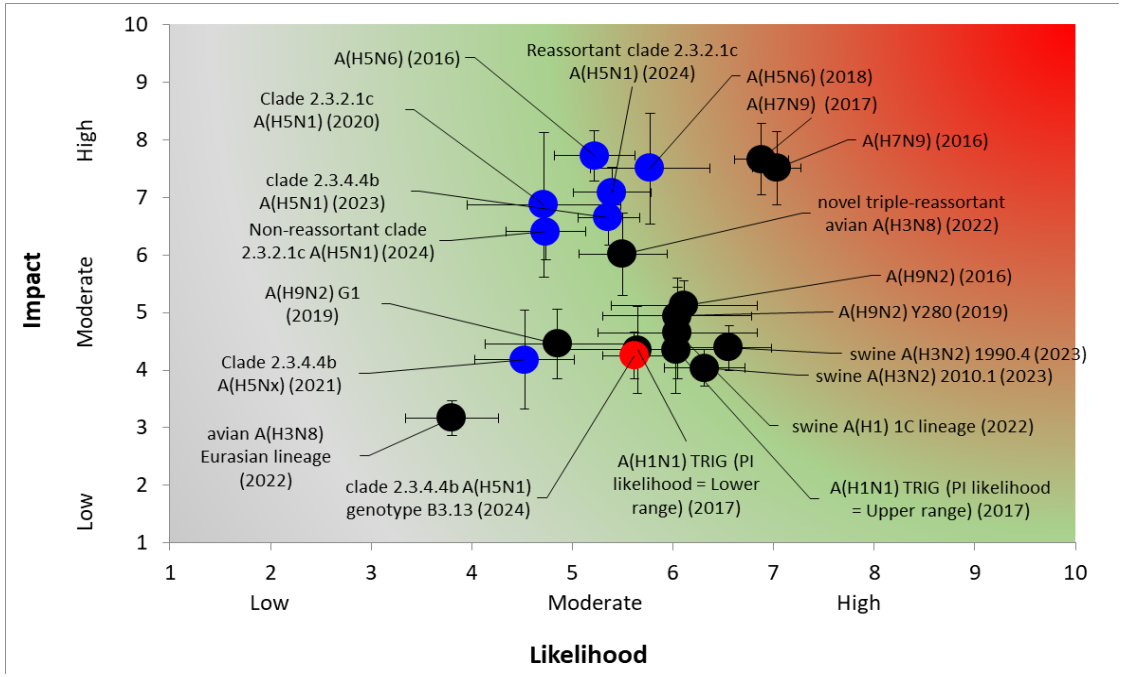
World Health Organization

Rolfes et al. Human infections with highly pathogenic avian influenza A(H5N1) viruses in the United States from March 2024 to May 2025

HEALTH EMERGENCIES programme

WHO Risk Assessment: current public health risk associated with influenza A(H5)

Tool for influenza pandemic risk assessment (TIPRA)

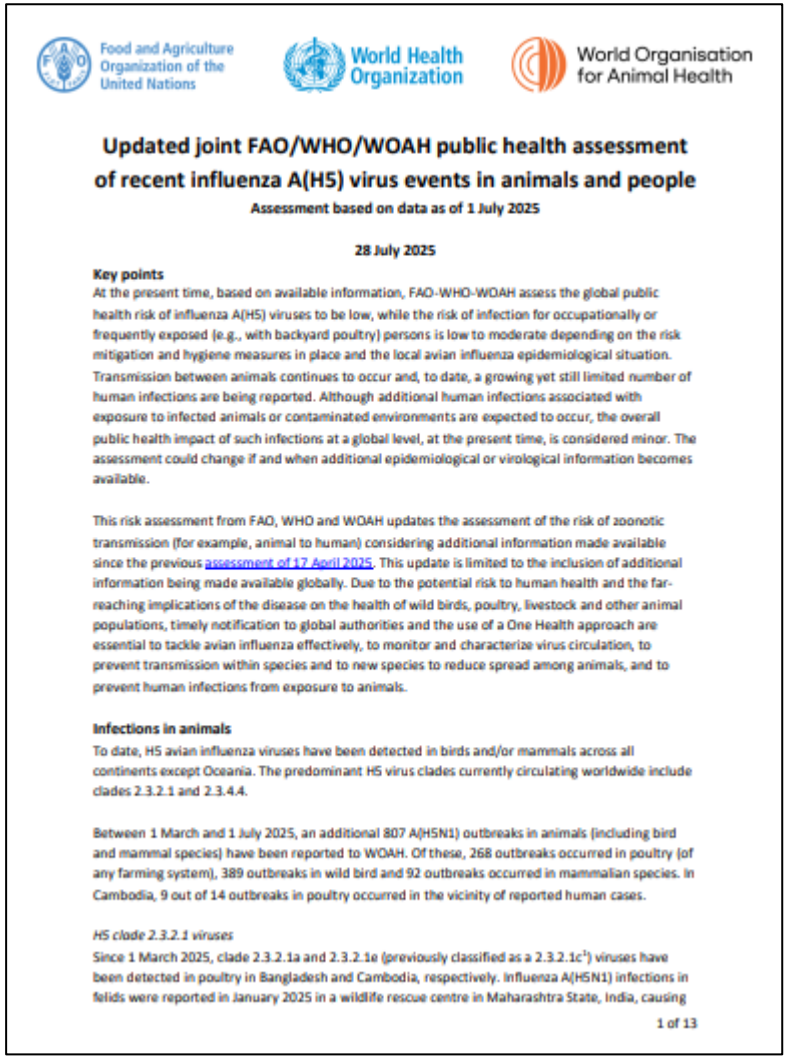


Ongoing FAO-WHO-WOAH avian influenza risk assessments

Last updated 28 July2025

- At the present time, based on available information, FAO-WHO-WOAH assess the global public health risk of influenza A(H5) viruses **to be low,** while the risk of infection for occupationally or **frequently exposed (e.g., with backyard poultry) persons is low to moderate** depending on the risk mitigation and hygiene measures in place and the local avian influenza epidemiological situation. Transmission between animals continues to occur and, to date, a growing yet still limited number of human infections are being reported. Although additional human infections associated with exposure to infected animals or contaminated environments are expected to occur, the overall public health impact of such infections at a global level, at the present time, is considered minor. The assessment could change if and when additional epidemiological or virological information becomes available.

This risk is reliant on strong surveillance, timely detection and sharing of information, sequences and viruses.



Food and Agriculture Organization of the United Nations | World Health Organization | World Organisation for Animal Health

Updated joint FAO/WHO/WOAH public health assessment of recent influenza A(H5) virus events in animals and people

Assessment based on data as of 1 July 2025

28 July 2025

Key points

At the present time, based on available information, FAO-WHO-WOAH assess the global public health risk of influenza A(H5) viruses to be low, while the risk of infection for occupationally or frequently exposed (e.g., with backyard poultry) persons is low to moderate depending on the risk mitigation and hygiene measures in place and the local avian influenza epidemiological situation. Transmission between animals continues to occur and, to date, a growing yet still limited number of human infections are being reported. Although additional human infections associated with exposure to infected animals or contaminated environments are expected to occur, the overall public health impact of such infections at a global level, at the present time, is considered minor. The assessment could change if and when additional epidemiological or virological information becomes available.

This risk assessment from FAO, WHO and WOAH updates the assessment of the risk of zoonotic transmission (for example, animal to human) considering additional information made available since the previous assessment of 17 April 2025. This update is limited to the inclusion of additional information being made available globally. Due to the potential risk to human health and the far-reaching implications of the disease on the health of wild birds, poultry, livestock and other animal populations, timely notification to global authorities and the use of a One Health approach are essential to tackle avian influenza effectively, to monitor and characterize virus circulation, to prevent transmission within species and to new species to reduce spread among animals, and to prevent human infections from exposure to animals.

Infections in animals

To date, H5 avian influenza viruses have been detected in birds and/or mammals across all continents except Oceania. The predominant H5 virus clades currently circulating worldwide include clades 2.3.2.1 and 2.3.4.4.

Between 1 March and 1 July 2025, an additional 807 A(H5N1) outbreaks in animals (including bird and mammal species) have been reported to WOAH. Of these, 268 outbreaks occurred in poultry (of any farming system), 389 outbreaks in wild bird and 92 outbreaks occurred in mammalian species. In Cambodia, 9 out of 14 outbreaks in poultry occurred in the vicinity of reported human cases.

H5 clade 2.3.2.1 viruses

Since 1 March 2025, clade 2.3.2.1a and 2.3.2.1e (previously classified as a 2.3.2.1c[1]) viruses have been detected in poultry in Bangladesh and Cambodia, respectively. Influenza A(H5N1) infections in felids were reported in January 2025 in a wildlife rescue centre in Maharashtra State, India, causing

1 of 13

World Health Organization

Updated joint FAO/WHO/WOAH public health assessment of recent influenza A(H5) virus events in animals and people

HEALTH EMERGENCIES programme

World Health Organization
European Region

Food and Agriculture Organization of the United Nations

World Organisation for Animal Health

Situation Analysis and Considerations for Public Health, Animal Health and Food Safety Authorities in the context of High Pathogenicity Avian Influenza in the European Region

8 September 2025

Table 1: Number of HPAI A(H5N1) outbreaks in wild birds and affected countries/territories in Europe, by seasonal wave since 2020 (as of 9 May 2025).

	Oct 2020 – Sep 2021	Oct 2021 – Sep 2022	Oct 2022 – Sep 2023	Oct 2023 – Sep 2024	Oct 2024 – Sep 2025 (as of 9 May 2025)
Number of outbreaks	133	3066	3209	697	1132
Countries and territories affected	13	35	29	27	31

Figure 1: Location of outbreaks of H5N1 in wild birds in Europe, as of 9 May 2025.

World Health Organization
European Region

Table 2: Number of outbreaks of HPAI A(H5N1) in poultry by seasonal waves since 2020 in Europe, as of 9 May 2025.

	Oct 2020 - Sep 2021	Oct 2021-Sep 2022	Oct 2022-Sep 2023	Oct 2023-Sep 2024	Oct 2024-Sep 2025 (as of 9 May 2025)
Number of outbreaks	15	2474	966	256	568

Recommendations

- Human testing – Risk-based approach to human testing using WHO guidelines on zoonotic Influenza outbreak toolkit https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/zoonotic-influenza-outbreak-toolbox

- Advice to Member States:
  - to look again at pandemic plans and preparations to ensure are fit for purpose
  - reminder on the reporting of outbreaks in animals and cases in humans to relevant bodies
  - to look at animal surveillance strategies as necessary as well as milk or wastewater surveillance

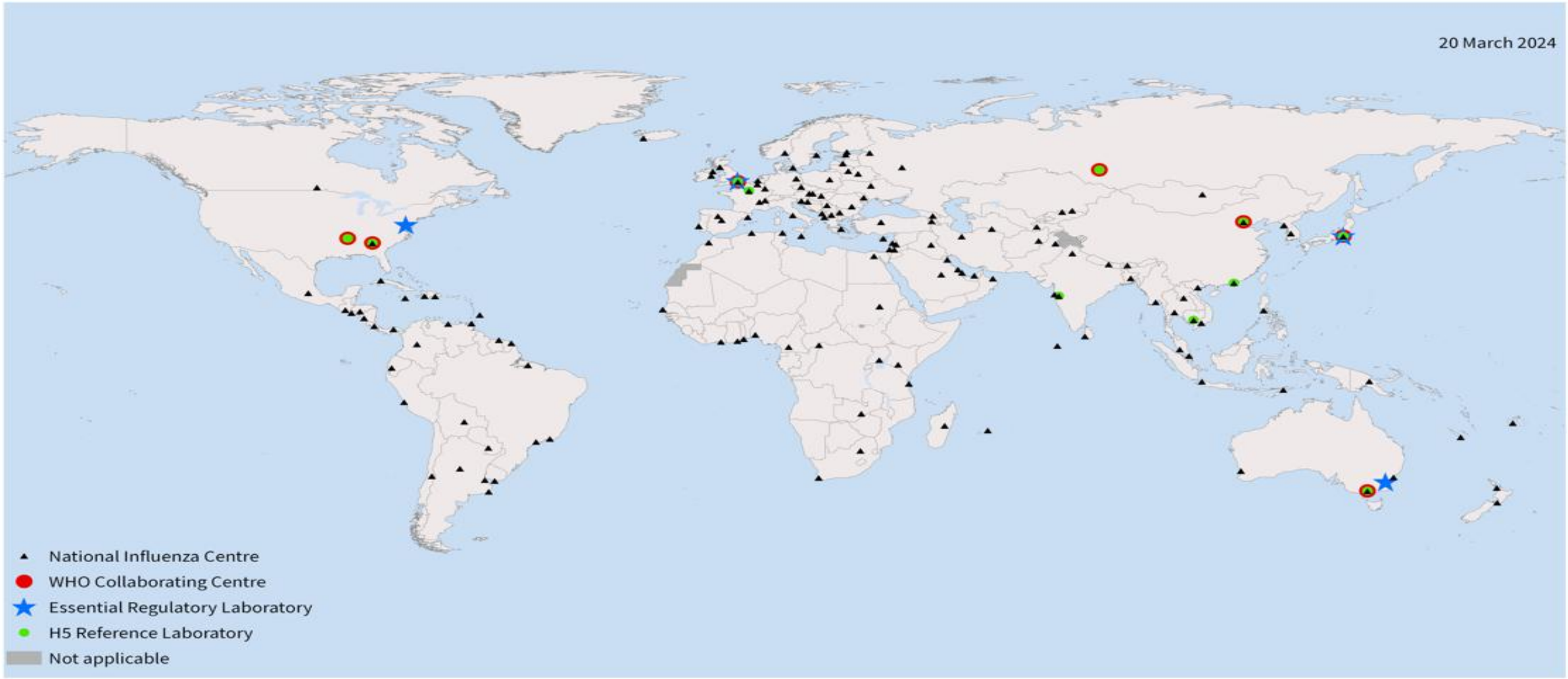
- WHO EURO survey on zoonotic influenza procedures and surveillance to MS to gather baseline data

- PPE recommendations for workers in possible contact with infected animals

- Food safety messages to public are unchanged at present, essentially that pasteurized milk and dairy products as well as thoroughly cooked meat are safe for consumption

World Health Organization
European Region

WHO Global Influenza Surveillance and Response System (GISRS)



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data source: WHO Global Influenza Programme
Map creation date: 27 March 2024
Map production: WHO Global Influenza Programme

World Health Organization

Candidate Vaccine Viruses

World Health Organization

Genetic and antigenic characteristics of clade 2.3.4.4b A(H5N1) viruses identified in dairy cattle in the United States of America

May 2024

During 2020, highly pathogenic avian influenza A(H5N1) viruses of clade 2.3.4.4b emerged and rapidly spread across many parts of Africa, Asia and Europe. In late 2021, the 2.3.4.4b A(H5N1) viruses were detected in Canada and have since spread across North and South America. In addition to infection of wild and domestic birds, these viruses have been detected in a number of mammals, many presumably infected through exposure to infected birds or contaminated environments. The most recent example of mammalian infection with clade 2.3.4.4b viruses is dairy cattle in the United States. A joint FAO/WHO/WOAH preliminary assessment of recent influenza A(H5N1) viruses including those from cattle has been published[1].

Ad hoc meeting

- WHO Collaborating Centres
- WHO Essential Regulatory Laboratories (ERLSs)
- OFFLU

Conclusion

- ***"Based on current genetic, antigenic and epidemiologic data, no new CVVs are proposed. "***

World Health Organization
European Region

genetic-and-antigenic-characteristics-of-clade-2.3.4.4b-a(h5n1)-viruses-identified-in-dairy-cattle-in-the-united-states-of-america.pdf (who.int)

Finland experience of vaccination vs H5N1

Box

Risk groups to whom the Finnish national public health institute recommends vaccination with the MF59-adjuvanted avian influenza vaccine

- Persons in contact with farmed fur animals;
- Persons in contact with poultry;
- Persons handling sick or dead animals or cleaning the related facilities;
- Persons in charge of ringing birds;
- Person taking care of birds in animal care facilities;
- Persons working with birds in bird or livestock farms;
- Veterinarians working in the public sector;
- Laboratory personnel working with testing of avian influenza;
- Close contacts of confirmed or suspected human avian influenza cases.

The rationale is to protect the individual against serious forms of avian influenza, and to avoid further mutations which might lead to increased human-to-human transmission.

World Health Organization
European Region

Nohynek and Halve *Eurosurveillance* June 2024

Thank you for your attention

widdowsonm@who.int

World Health Organization
European Region