MONTHLY SCIENTIFIC REVIEW
ON AVIAN INFLUENZA A (H5N1, H1N1, H3N2)

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All informations comes from a valid and credible source.

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Situation at a glance

- In 2026, Cambodia reported six human cases of influenza A(H5N1) infection, including one death.
- In 2025, Cambodia recorded 18 human A(H5N1) cases, including nine deaths, while a total of 30 human cases were reported worldwide. No human-to-human transmission was identified.
- On 25 March 2026, the first human case of influenza A(H9N2) infection in Europe was reported in Italy, in a traveler returning from a non-European country.
- In late June 2026, an H5N1 avian influenza virus was detected in a bird in Western Australia. This was the first time this H5 subtype (H5N1, clade 2.3.4.4b) had been identified in an animal in Australia.
- As of 25 September 2026, China reported two additional laboratory-confirmed human cases of avian influenza A(H9N2) infection. The two epidemiologically unrelated cases involved one-year-old children. Since 2015, a total of 183 laboratory-confirmed human A(H9N2) infections, including two deaths (case-fatality rate: 1.0%), have been reported to WHO. Of these, 180 cases were reported in China.

Scientific articles

This section presents relevant articles published on peer-reviewed scientific journals or pre-print platforms.

2026-09-26

Memory B Cell Repertoire of a Repeatedly Vaccinated Individual Includes Influenza Hemagglutinin-Specific Cross-Group Binders with Affinity Beyond A(H1N1)pdm09 and A(H3N2) Seasonal Strains.

Journal: Vaccines (Basel)

Authors: Margarita Mishina, Christopher M Horn, Zachary Ende, Vasiliy Mishin, Crystal Holiday, Sujatha Seenu, Jason R Wilson, Weiping Cao, Mili Sheth, Dhwani Batra, Jessie Chang, Paul Carney, Min Z Levine, James Stevens, Michael R Weigand, Ian A York, Shivaprakash Gangappa

Repeated seasonal influenza vaccination generated memory B cells with cross-group reactivity to A(H1) and A(H3) hemagglutinins, including pre- and post-vaccination strains. Two clonotypes produced monoclonal antibodies neutralizing A(H3N2) and one also A(H1N1)pdm09. These

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2026-09-16

Bovine mammary tissues are susceptible to infection by viruses bearing panzootic H5N1 influenza A virus glycoproteins.

Journal: J Gen Virol

Authors: Rebecca A Ross, Sarah K Walsh, Hannah Montgomery, Hanting Chen, Edward Hutchinson, Pablo R Murcia

Bovine mammary tissues from Aberdeen Angus, Holstein Friesian, and Limousin cattle are susceptible to infection by reassortant influenza A viruses bearing H5N1 clade 2.3.4.4b glycoproteins, as shown by viral NP antigen detection in explants. All breeds expressed both α2,3

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2026-09-22

Genomic characterization of selected influenza A-positive specimens and an A(H1N1)pdm09/SARS-CoV-2 co-infection in the Republic of Moldova.

Journal: Front Public Health

Authors: Svetlana Colac, Valeria Ceban, Livia Ţapu, Veronica Burlac, Nicolae Jelamschi, Olga Burduniuc

Genomic sequencing of 38 selected influenza A-positive specimens from Moldova (Oct 2025–Feb 2026) identified 32 A(H3N2) (clade K, subclade 2a.3a.1), 5 A(H1N1)pdm09 (clades D.3.1 and D.3.1.1), and 1 mixed A(H1N1)pdm09/SARS-CoV-2 specimen (SARS-CoV-2 clade 25I). High sequen

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2026-09-06

Site-specific microRNA responses in lungs of pigs depend on the host-adaptation of H1N1 influenza A virus.

Journal: Virology

Authors: Louise Brogaard, Helena Aagaard Laybourn, Charlotte Kristensen, Simon Welner, Lars E Larsen, Kerstin Skovgaard

Pulmonary miRNA responses in pigs differ by IAV strain and lung site: human-adapted H1N1 causes widespread miRNA downregulation in lower lungs with inverse correlation to antiviral genes, while swine-adapted H1N1 induces stronger PRR/cGAS transcription with minimal miRNA

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2026-09-26

Elicitation of Potent H5N1- and H7N9-Neutralizing Antibody Responses in Rhesus Macaques by Sequential Heterologous Vaccination with mRNA and Adenoviral Vectors Encoding Full-Length Hemagglutinins.

Journal: Viruses

Authors: Brandon C Rosen, Jack T Mauter, Thomas B Voigt, Giovana de Figueiredo Godoy, Emma L Walker, Johan J Louw, Noor Ghosh, Christakis Panayiotou, Aaron Yrizarry-Medina, Joshua Terao, Eva G Rakasz, Matthew R Reynolds, Dawn M Dudley, Douglas S Reed, David I Watkins, Michael J Ricciardi

Sequential mRNA and adenoviral vaccination with full-length H5 and H7 HAs induced potent neutralizing antibodies in rhesus macaques, with ID50 titers up to 1:100,000 (H5N1) and 1:50,000 (H7N9). HA head vaccination elicited neutralizing responses; HA stem induced binding b

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2026-09-23

Antigenic and structural analysis of the influenza hemagglutinin lateral patch.

Journal: J Virol

Authors: Jordan I Lemus-Reyes, Monica L Fernández-Quintero, Edgardo Ayala, Olivia M Swanson, Marina R Good, Wei Ji, Devika Suja, Julianna Han, Andrew B Ward, Jenna J Guthmiller

The H1 hemagglutinin lateral patch is a conserved, broadly neutralizing antibody target across human, avian, and swine H1Nx viruses (1918–2022). Pre-2009 and 2009 pandemic strains are broadly recognized by lateral patch-specific mAbs, but post-2009 strains evade via discr

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2026-08-20

A One-Shot Multivalent Live-Attenuated Candidate Influenza Vaccine against Divergent Zoonotic H5N1 Clades.

Journal: bioRxiv

Authors: Ahmed M Elsayed, Ramya S Barre, Arash Rahmani, Ruby A Escobedo, Trushar Jeevan, Himadri Nath, Esteban M Castro, Vinay Shivanna, Aitor Nogales, James Kobie, Richard J Webby, Elsayed M Abdelwhab, Adolfo García-Sastre, Luis Martinez-Sobrido

A single intranasal multivalent live-attenuated influenza vaccine (LAIV) based on A/Ann Arbor/6/1960 backbone expressing HA/NA from three divergent H5N1 clades (2.3.4.4b, 2.3.2.1a, 2.3.2.1e) induced broad cross-reactive neutralizing antibodies and complete protection agai

See details

2026-08-27

FluEvoFormer: A Structure-Guided Generative Foundation Model for Prospective Influenza Antigenic Evolution and Vaccine Strain Selection.

Journal: Viruses

Authors: Pankaj Agarwal, Sumendra Yogarayan, Md Shohel Sayeed

FluEvoFormer is a structure-guided generative model that forecasts influenza antigenic evolution and ranks vaccine candidates by integrating HA/NA sequences with residue-contact graphs. It predicts viral dominance and antigenic match, using stress testing, uncertainty adj

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2026-09-18

H5N1 clade 2.3.2.1e lineage transition in Lao PDR during 2023-2024 associated with regional spread and human infection risk-associated receptor-binding features.

Journal: Front Public Health

Authors: Duc Duong Than, Boyoon Chang, Eun Lee, Watthana Theppangna, Seon-Ju Yeo, Hyun Park

H5N1 clade 2.3.2.1e replaced 2.3.2.1c in Lao PDR poultry markets (2023–2024), indicating cross-border introductions and genetic connectivity. Whole-genome analysis revealed mosaic genotypes with high nucleotide identity. All isolates retained avian-adaptive PB2-627E and P

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2026-09-26

Clinical Course, Laboratory Findings, and Tissue Distribution of Highly Pathogenic Avian Influenza A(H5N1) Virus in a Naturally Infected Domestic Cat.

Journal: Viruses

Authors: Agata Augustyniak, Ewelina Czyżewska-Dors, Dominik Łagowski, Katarzyna Domańska-Blicharz, Anna Lisowska, Justyna Opolska, Maciej Gogulski, Małgorzata Pomorska-Mól

A naturally infected domestic cat in Poland with HPAI H5N1 exhibited rapid systemic and neurological progression, unresponsive to treatment, leading to euthanasia 5 days post-examination. Hematological findings were normal, but serial biochemistry showed progressive abnor

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Relevant news

This section presents official reports from health agencies, manufacturers and press releases with reliable sources.

2026-10-16

Avian Influenza Weekly Update # 1066: 16 October 2026

Source: WHO

WHO reported no new human avian influenza cases in the Western Pacific Region during 9–15 October 2026. No sustained human-to-human transmission of A(H5) viruses was identified, although zoonotic risk persists with poultry exposure. Following H5N1 detections in Australia and New Zealand, a regional assessment rated wild-bird-mediated introduction into Pacific Island countries and areas as very high risk for August 2026–January 2027.

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2026-09-06

Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2026, 6 September 2026

Source: WHO

As of 6 September 2026, WHO recorded 1,003 laboratory-confirmed human A(H5N1) cases and 479 deaths across 25 countries since 2003, corresponding to a 47.8% case-fatality proportion among reported cases. These surveillance totals describe confirmed infections, not all infections in the population. Sporadic human H5N1 infections remain subject to mandatory notification under the International Health Regulations.

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2026-09-29

2026-2027 Flu Season

Source: CDC

For the 2026–2027 U.S. influenza season, all three vaccine components were updated: A(H1N1)pdm09, A(H3N2), and B/Victoria, including an H3N2 update targeting subclade K. Vaccines are available for people aged ≥6 months. The projected supply is entirely trivalent, with 27% non-egg-based products; CDC provides interim clinical considerations to guide seasonal vaccine use.

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2026-09-25

Recommendations announced for influenza vaccine composition for the 2027 southern hemisphere influenza season

Source: WHO

WHO recommends trivalent vaccines for the 2027 southern hemisphere season. Egg-based formulations contain A/Missouri/11/2025 (H1N1)pdm09-like, A/Darwin/1454/2025 (H3N2)-like, and B/Tokyo/EIS13-175/2025 (B/Victoria)-like viruses. Cell culture-, recombinant protein-, and nucleic acid-based formulations retain the same H1N1 component but use A/Darwin/1415/2025-like and B/Pennsylvania/14/2025-like viruses. Selection draws on global surveillance to match anticipated circulating strains.

See details

2026-09-24

Global Avian Influenza Viruses with Zoonotic Potential situation update

Source: FAO

FAO’s 24 September 2026 update records 624 newly reported highly pathogenic avian influenza outbreaks/events in animals across 25 countries/territories since 27 August, predominantly H5Nx and H5N1. Three human infections were reported: one H5N1 and two H9N2. The update integrates animal and human surveillance, outbreak mapping, and One Health guidance to support zoonotic risk monitoring and control.

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Clinical Studies

This section presents relevant clinical trials.

2025-11-16

Immunogenicity and Safety of 2 Doses of Avian Influenza A (H5N1) Vaccine Administered 3 vs. 8 Weeks Apart

Status: Active not recruiting

Sponsor(s): Canadian Immunization Research Network, Dalhousie University, IWK Health Centre, Public Health Agency of Canada (PHAC), Canadian Center for Vaccinology, CHU de Quebec-Universite Laval, Vaccine Evaluation Center, Canada, McGill University Health Centre/ Research Institute of the McGill University Health Centre

This study evaluates the immunogenicity and safety of two doses of Arepanrix™ H5N1 vaccine administered 3 versus 8 weeks apart in high-risk individuals, addressing the lack of data on optimal dosing intervals for this vaccine, particularly in light of recent H5N1 clade 2.3.4.4b circulation in North America.

See details

2025-10-10

BPL-1357 Against H1N1 Influenza Virus Challenge

Status: Recruiting

Sponsor(s): National Institute of Allergy and Infectious Diseases (NIAID)

This study evaluates BPL-1357, an experimental influenza vaccine, in healthy adults aged 18–55 via two phases. Phase A assesses safety and immunogenicity with intramuscular or intranasal administration and placebo controls, including clinical monitoring and symptom tracki

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2025-11-27

Establishing a Controlled Human Infection Model for Influenza H3N2 as a Foundation for Pandemic Preparedness

Status: Recruiting

Sponsor(s): Dalhousie University, Canadian Center for Vaccinology, McGill University Health Centre/Research Institute of the McGill University Health Centre

The overall objective is to establish an influenza Controlled Human Infection Model (CHIM) in Canada that can be used to assess the safety and efficacy of candidate vaccines, biologics, and therapeutics targeting influenza viruses.

See details

2026-03-31

Study of Different Formulations of Vaccines Encoding the RSV Monovalent Antigen or the Flu H5 Antigen in Participants 18 to 49 Years of Age

Status: Recruiting

Sponsor(s): Sanofi (Belgium)

This study evaluates the safety and immunogenicity of various vaccine formulations encoding RSV monovalent or Flu H5 antigens in healthy adults aged 18–49. Participants are enrolled in two stages with varying durations: Stage 1 spans 6–7 months depending on arm, and Stage 2 lasts approximately 7 months for all arms.

See details

2026-03-25

Phase 2a Study of the Efficacy and Safety of TRX-100 in a Human Influenza A Challenge Model

Status: Not yet recruiting

Sponsor(s): Traws Pharma, Inc.

This will be a randomized, double-blind, placebo-controlled proof of concept study to evaluate the prophylactic efficacy and safety of orally administered TRX-100 in healthy adults challenged with influenza A/France/759/2021 (H1N1) virus.

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2024-04-16

A Study to Find and Confirm the Dose and Assess Safety, Reactogenicity and Immune Response of a Vaccine Against Pandemic H5N1 Influenza Virus in Healthy Younger and Older Adults

Status: Completed

Sponsor(s): GlaxoSmithKline (Spain)

The aim of this study is to evaluate the safety, reactogenicity and immunogenicity of the Flu Pandemic messenger RNA (mRNA) vaccine (including dose-finding and dose-confirmation) administered in healthy adults 18 to 85 years of age.

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Guidelines and practical information

This section lists official manuals of recommendations for clinical practice or public health policy published by leading health organizations.

January 2024	**Interim Guidance for Employers to Reduce Exposure to Avian Influenza A Viruses for People Working with Animals**
August 2024	**Practical interim guidance to reduce the risk of infection in people exposed to avian influenza viruses**
June 2024	**Highly Pathogenic Avian Influenza A(H5N1) Virus in Animals: Interim Recommendations for Prevention, Monitoring, and Public Health Investigations (CDC)**
June 2024	**Prevention and Antiviral Treatment of Avian Influenza A Viruses in People (CDC)**
May 2024	**Avis du COVARS du 24 mai 2024 - Point sur la situation liée au virus influenza H5N1 (MESRI)**
December 2023	**Considerations for emergency vaccination of wild birds against high pathogenicity avian influenza in specific situations (WOAH)**
June 2023	**Enhanced surveillance of severe avian influenza virus infections in hospital settings in the EU/EEA (ECDC)**
January 2022	**Guidelines for the clinical management of severe illness from influenza virus infections (WHO)**
December 2021	**Avis relatif à la prévention de la transmission à l'homme des virus influenza porcins et aviaires (HCSP)**

Fact sheets

Transmission

Influenza A viruses are segmented, negative-sense single-stranded RNA viruses, members of the Orthomyxoviridae family. The antigenic diversity of these viruses arises from two surface glycoproteins: hemagglutinin (HA) and neuraminidase (NA). Combinations of these proteins create numerous influenza subtypes, with currently 18 HA and 11 NA subtypes recognized in the environment. Although avian influenza viruses spread mainly among waterfowl, particularly Anseriformes and Charadriiformes, as well as in other susceptible bird species such as Galliformes. Unlike most other avian influenza viruses, A(H5N1) 2.3.4.4b has infected more than 200 mammal species and they can occasionally infect humans but no sustained human-to-human transmission has been identified.

Diagnosis

Appropriate samples for influenza tests should be rapidly taken and processed from patients with a relevant exposure history within ten days preceding symptom onset. A(H5N1) viruses have been detected in raw milk from infected dairy cows in some locations.

Symptoms

The incubation period for A(H5N1) infection is typically two to five days after the last known exposure. A(H5N1) influenza virus infection can cause a range of diseases in humans, from mild to severe, and in some cases, it can even be fatal. Symptoms are primarily respiratory, including fever, malaise, cough, sore throat, and muscle aches. Other early symptoms may include conjunctivitis and other non-respiratory symptoms. The infection can quickly progress to severe respiratory illness and neurological changes. A(H5N1) virus has also been detected in asymptomatic individuals.

Treatment

Influenza patients should be managed properly to prevent severe illness and death. Patients with laboratory-confirmed should be treated with antiviral medicines like oseltamivir as soon as possible.

Vaccination

Vaccine development leading to the licensure of three H5N1 vaccines - clade 1 and 2.1 - by the FDA and EMA under the trade name Audenz® / Afllunox ®, Preprandix® / Pumarix®, and Foclivia® / Adjupanrix®.