OFFLU Annual Report 2024

In 2024, OFFLU conducted the following activities pertaining to avian influenza (AI), swine influenza (SI) and equine influenza (EI).

Avian influenza technical activity

High pathogenicity avian influenza virus (HPAIV) continued to threaten animal and human health worldwide in 2024, albeit with detections in poultry and wild birds at lower levels than the previous two years. The majority of events in birds and wildlife were caused by the H5N1 clade 2.3.4.4b. Since March 2024, the detection of this virus in dairy cattle has caused an unprecedented spread throughout the USA in farmed animals and a major increase in animal-to-human spillover cases through exposure to infected premises. Other subtypes such as H5N5, H5N8, H5N3, and H5N6 have also been detected and caused outbreaks in poultry and/or wild birds. In some regions, multiple H5 clades, including 2.3.2.1a and 2.3.2.1e continue to circulate. We note that there has been a recent update to the H5 nomenclature to reflect the genetic diversification of these viruses, particularly the subdivision of clade 2.3.2.1c into 2.3.2.1d, e, f, and g (Ort *et al.*, 2025). Where applicable, this report adopts the updated clade nomenclature. The 2.3.2.1e clade has been linked to poultry outbreaks in multiple countries across the Mekong Delta region, including Cambodia, Vietnam, and Laos, with recent reports also involving captive big cats in Vietnam. Moreover, in 2024, Cambodia experienced a sudden increase in human spillover cases associated with a reassortant 2.3.2.1e lineage, which has acquired internal genes from clade 2.3.4.4b viruses. Similarly, clade 2.3.2.1a viruses circulating in India are also believed to have acquired internal genes from clade 2.3.4.4b viruses.

There were multiple emergence events of novel H7 subtype HPAIVs causing poultry outbreaks in Australasia, and human infections of low pathogenicity H3, H5, H9 and H10 subtypes of avian influenza viruses, reminding us of the continued threat avian influenza viruses pose to the poultry sector, wildlife and human health.

In response to these persistent threats, OFFLU network experts remained engaged with the scientific and policy making community, proactively held a number of in-person meetings in 2024 and contributed to tripartite risk assessments, consultations and situation updates as well as sharing communication materials and up to date information through the network including setting up a dedicated page on the OFFLU website in response to the H5N1 detections in dairy cattle to collect all resources in one place.

OFFLU experts, the Food and Agriculture Organization of the United Nations (FAO), World Organisation for Animal Health (WOAH), World Health Organisation (WHO) and Convention on the Conservation of Migratory Species of Wild Animals (CMS) were in regular communication to share public and animal health data and to improve communications between the organisations under a One Health framework and took part in a WHO-led quadripartite consultation to discuss readiness and response to epizootic and zoonotic avian influenza events.

OFFLU network experts were engaged and participated in multiple international meetings throughout the year to present updates of the network activities on avian influenza.

OFFLU experts have been supporting the updating of the H5 nomenclature with the working group and led an new initiative to develop an international consensus for a global harmonised genotyping approach for improved communications for global coordination which can be used in harmony with existing regional or national nomenclature tools. OFFLU experts also developed and published the first unified global classification and nomenclature system for H9 subtype influenza viruses, including a freely accessible online tool for researchers and stakeholders to use and incorporate the classification system.

OFFLU statement on high pathogenicity avian influenza in dairy cows

Updated OFFLU Statement on high pathogenicity avian influenza in dairy cows

OFFLU webpage on HPAI detections in Livestock

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

WOAH-IABS meeting on Vaccination and Surveillance for HPAI in Poultry: Current Situation and Perspectives, Conclusions and Recommendations

Diagnostic guidance: HPAI dairy cattle influenzas in animals

Proposal for a Global Classification and Nomenclature System for A/H9 Influenza Viruses

Online tool for A/H9 influenza virus lineage and clade assignment

OFFLU Global Technical Meeting (July 2024)

An OFFLU global technical meeting was organised at FAO Headquarters, Rome in July 2024. The meeting was attended by members of the Steering and Executive Committees, chairs and active members of the technical activities and representatives from parent organisations along with experts from WHO, EFSA and CDC. The meeting reviewed and updated the terms of reference of all OFFLU technical activities, fostered networking among OFFLU experts to identify synergies across various activities and facilitated strategic discussions to identify emerging challenges and priorities in influenza management, contributing to the development of effective strategic plans and activities.

OFFLU global technical meeting, July 2024, FAO Headquarters, Rome

Concept note and agenda of the OFFLU global technical meeting (July 2024)

Report of the OFFLU global technical meeting (July 2024)

WHO Vaccine Composition Meeting (VCM) technical activity

OFFLU experts and the OFFLU scientist attended the week-long VCMs, held in February and September 2024 in Montreaux, Switzerland and Melbourne, Australia where the need to update pre-pandemic candidate seed viruses for human vaccines against zoonotic influenza viruses was considered. In February, new 1A.3.3.2 and 1B.1.1.1-clade A(H1)v CVVs were proposed, and in September, a new clade 2.3.2.1c A(H5) CVV, A(H10) CVV and A(H1)v 1A.1.1.3-clade CVV were proposed. The OFFLU VCM technical activity representatives coordinated and presented data gathered through experts within the network, providing information on animal influenza virus' genetic, antigenic, and epidemiological characteristics for consideration during the consultation.

We are grateful to the OFFLU contributors and experts who made this possible as well as submitters to GenBank and GISAID sharing providing sequence and WAHIS and EMPRES-i+ for epidemiological data. The work of OFFLU is entirely dependent on free and open sharing of data and we are grateful to those who have contributed in this way. We have continued to support and encourage others to do so.

OFFLU summary report from the WHO vaccine composition meeting, February 2024

OFFLU summary report from the WHO vaccine composition meeting, September 2024

WHO Vaccine Composition Meeting
September 2024, Melbourne, Australia

OFFLU proficiency testing

The OFFLU proficiency testing panel for the year 2024 was received by WOAH/FAO Reference Centers and was designed to assess the capability of the laboratories to detect and characterize representative widely circulating lineages of H5, H7 and H9 subtype avian influenza viruses. The round was coordinated by the Australian Centre for Disease Preparedness (ACDP) and conducted under their ISO/IEC 17043:2010 accreditation.

OFFLU presented information gathered on Proficiency Testing and the Next-Generation Sequencing (NGS) from FAO reference centres and WOAH reference laboratories at the World Health Organization PCR and NGS working group meeting which was held in Lyon, France in June 2024. OFFLU recognizes the need to have more information from laboratories on NGS protocols and which assays are used by animal health laboratories, especially for the detection of swine influenza.

OFFLU Avian Influenza Matching (AIM) activities

The OFFLU initiative to provide information on the real time antigenic characteristics of contemporary avian influenza viruses started in 2022 and in 2024 a technical update report was released. The project has expanded to include APHA and RVC (UK), IZSVe (Italy), SEPRL (USA) and ACDP (Australia) as well as other OFFLU experts. OFFLU is striving towards continuous and real time standardized global assessment of antigenic evolution of avian influenza viruses with the application to vaccine matching in poultry. A dedicated page on the OFFLU website has also been set up. A webinar was held in July 2024 in English and Spanish to engage stakeholders in the project and provide a feedback forum. With over 800 attendees from diverse backgrounds we were happy to have representation from 28 countries across Africa, 23 in Asia, 23 in Europe, 14 in North America, 10 in South America, 4 in Oceania, 11 in the Middle East, 6 in the Caribbean, and 6 in Central America.

Dedicated page on AIM project on OFFLU website
OFFLU AIM Technical Report (July 2024)
OFFLU AIM Executive Summary (October 2024)
OFFLU AIM WEBINAR (July 2024, in English)
OFFLU AIM WEBINAR JULY 2024 (in Spanish)
OFFLU AIM Survey – Share your feedback
OFFLU AIM webinar summary and FAQs

OFFLU applied epidemiological technical working group activity

Members of Applied Epidemiology reviewed and contributed to the document on H5N1 Cattle Surveillance published by FAO. The experts of this technical activity participated in the Quadripartite technical and operational modalities for readiness and response to zoonotic influenza events and provide inputs on risk assessment. The experts also commented on updating the joint FAO/WHO/WOAH public health assessment of recent influenza A(H5) virus events in animals and people.

Wildlife influenza technical activity

In response to the extensive and large-scale outbreaks of HPAI in wildlife including wild birds and mammals, the OFFLU wildlife experts analysed and discussed the situation and issued various risk assessment and situational update statements. A second scientific report was published on the continued expansion of high pathogenicity avian influenza H5 in wildlife in South America and incursion into the Antarctic region. The report was widely shared through FAO and WOAH networks, social media, and picked up by media resulting in several interviews with the authors. The main outcomes of the analyses were shared at several international scientific conferences including the Seabird Group Meeting in Coimbra, Portugal in September and the European Wildlife Disease Association Conference, Stralsund in September. The experts also worked on drafting the data of the statement into a publishable format, which resulted in a preprint that soon will be published in the scientific journal Conservation Biology. This will result in the information reaching a wider public, as well as it being sustainably accessible and usable for scientists.

A follow-up virtual meeting was organized in August and the technical activity scientists decided to prioritize the next activity for providing a statement on the global spread and impact of HPAI H5 2.3.4.4b on wildlife, since its first description up to the end of 2024. For this activity the author group has been in regular contact both via e-mail and in smaller groups via several virtual meetings throughout September to December to discuss progress. This third scientific report from this technical activity is planned to be finalized in the first half of 2025.

Continued expansion of high pathogenicity avian influenza H5 in wildlife in South America and incursion into the Antarctic region

'Unprecedented': How bird flu became an animal pandemic

Emergence, spread, and impact of high pathogenicity avian influenza H5 in wild birds and mammals of South America and Antarctica, October 2022 to March 2024

OFFLU swine influenza technical activity

OFFLU experts continued to contribute more data than ever on swine influenza virus genetic surveillance and viral isolates for consideration during the WHO Vaccine Composition Meetings (VCM) in February and September 2024. These were used to support the recommendation of three different swine-origin clade influenza viruses as candidate vaccine viruses in response to human variant detections in 2023-24. The OFFLU experts from the swine influenza group provided valuable context and collaboration with public health partners for risk and response to human variant cases detected in 2024.

OFFLU Swine Influenza Report, February 2024

OFFLU Swine Influenza Report, September 2024

An in person meeting was held in April 2024 with 17 participants from 12 different countries. Dr Chiara Chiapponi (IZSLER, Italy) was elected as the new co-Chair of the Swine Influenza Group and Dr Amy Baker (USDA, USA) continues to be the Chair of the group. Participants presented their updated surveillance and research activities. They were updated on the WOAH *Terrestrial Manual* including key updates such as changing the acronym for influenza A viruses of swine to IAV-S, the inclusion of clade classification for H1 viruses, including information on gene sequencing.

Discussions were held between the group, and action items were made to encourage leveraging expertise from other swine viruses (e.g., ASFV, PRRSV) to test existing samples for influenza if permitted, utilizing FAO/IAEA sequencing services. Activity aims for the group will continue to establish standardized nomenclature for HA and NA clades, create and distribute one-page summaries on regional IAV-S diversity with templates and plans developed by OFFLU scientists in collaboration with the Quadripartite, compile a contact list of influenza reference labs (WHO, FAO, WOAH) for online publication, enhance OFFLU's visibility by sharing webinar links, updating the website, represent OFFLU at professional events and share training opportunities with the OFFLU Secretariat.

Expert panel on Equine influenza

The Expert Surveillance Panel of Equine Influenza comprising OFFLU and WHO influenza experts met in September 2024 and reviewed the Equine Influenza virus activity, characteristics of the viruses isolated and vaccine performance.

Expert surveillance panel on equine influenza September 2024, WOAH Headquarters, Paris

OFFLU socio-economic technical activity

The OFFLU socio-economic technical activity was reactivated with Dr Robyn Alders (Australia) as chair and Dr Mehroosh Tak (UK) as co-Chair to lead the activity. The mandate of this technical activity will include facilitating the understanding of social and economic drivers and impacts of influenza viruses in animals and their differential impacts on the diversity of members within communities, households and commercial enterprises relevant to OFFLU activities. The OFFLU activity will contribute to the development and/or sharing of social and economic assessments to demonstrate the social and economic profitability or cost-effectiveness of any research or intervention program proposed, as well as to the development and/or sharing of research methods to better understand the drivers of influenza spread and structural factors that determine the prevention and control of animal influenza.

OFFLU Steering and Executive Committee Meetings

OFFLU Steering and Executive Committee meetings were held in January, April and November 2024 to review the outputs of various ongoing technical activities, provide recommendations for follow ups and approve new technical activities. Membership changes of the committees were discussed and effected as per the OFFLU modus operandi.

Acknowledgements

OFFLU expresses its sincere gratitude to all the contributing experts for their exceptional efforts and enthusiasm and the Members that support these activities and share data and biological material such as viral isolates and antisera for the global animal and public health benefits. WOAH and FAO would also like to thank the donors to OFFLU that contribute to supporting the OFFLU activities.

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