



Avian influenza and Wildlife

Risk management for people working with wild birds

Purpose

The purpose of this article is to provide guidance to people who handle wild birds on measures to reduce disease risks associated with avian influenza virus strains. The guidance takes a One Health approach by considering the health of wildlife, poultry and people.

Impacts of the ongoing avian influenza outbreaks on wildlife

The recent outbreaks of avian influenza virus strains of the subtype H5N1 have raised concern for wildlife conservation due to their unusual impact on wild birds, including several endangered species, and transmission to mammals. The most recent wave of infection spread began in October 2021, and to date thousands of outbreaks (including poultry and wildlife) have been recorded worldwide. Events have been predominantly reported in North America (56%) and Europe (34%). In addition to massive mortalities in seabirds, aquatic birds, and raptors, there are reports of infections in wild mammals such as foxes, otters, and seals, which is relatively unusual for H5 strains. Although the current outbreaks have been linked to a low number of human infections, involving mild symptoms, all H5N1 strains pose zoonotic risks.

This article was initiated by the World Organization for Animal Health's Working Group on Wildlife (Karesh, W; Uhart, M; Hofmeyer, M; Sleeman, J, Ryser-Degiorgis, MP, Murata, K; and Woods, R), and led by Marcela Uhart. ¹This article is supported by the International Union for Conservation of Nature (IUCN) Species Survival Commission's (SSC) Wildlife Health Specialist Group (WHSG).

What is avian influenza?

Avian influenza is a disease caused by *Influenza A virus* (AIV). AIV can infect birds and mammals, including humans, and is transmitted effectively through respiratory aerosols, faeces and bodily fluids, whether directly (host-to-host proximity) or indirectly (contaminated water or objects). Most AIV infections are asymptomatic or only cause mild symptoms to their hosts.

Avian influenza virus (AIV) strains

AIV strains are divided into subtypes based on two surface proteins: hemagglutinin (subtypes H1–H18) and neuraminidase (subtypes N1–N11). A multitude of hemagglutinin-neuraminidase combinations is possible, with some subtypes being more prevalent in specific hosts: H1N1 and H3N2 are frequent in humans, H3N2 in dogs, H3N8 in horses, H17N10 and H18N11 only infect bats, etc. Birds are susceptible to a broad variety of AIV strains from subtypes H1–H16 and N1–N9.

There are also two categories of AIVs defined by their ability to infect and cause disease and death in domestic chickens: low pathogenicity and high pathogenicity. Only some AIVs subtypes (H5 and H7) are classified as high pathogenicity (HPAI) though other subtypes such as H9 may cause significant disease. AIVs can be classified by both the pathogenicity category and subtype (e.g. LPAI H3N2 or HPAI H5N1).

Aquatic birds, especially waterfowl (Anseriformes, e.g., ducks, teals, geese, swans) and Charadriiformes (e.g., shorebirds, gulls, terns, skuas, auks), are considered natural hosts of low pathogenicity strains of AIV (LPAI), mostly with little ill effect.

Some specific LPAI virus strains can spill over from wild bird populations into poultry, and to date, strains of H5 or H7 subtype have demonstrated the potential to evolve into high pathogenicity viruses leading to severe disease and high mortality.

Some AIVs subtypes (both LPAI and HPAI strains, mostly H5 and H7 subtypes but also some H9 and H10 strains) have been associated with disease in humans and other mammals ranging from mild illness to severe disease.

Recommendations

- To protect susceptible species, detected or suspected cases of AIV should be brought to the attention of Veterinary Authorities in accordance with national regulations. Authorities are required to report any HPAI viruses detected in poultry, wild birds or other non-poultry species to the World Organisation for Animal Health (WOAH). In addition, any LPAI viruses shown to infect and cause severe consequences in humans must also be reported to WOAH.² Reporting of other AI viruses in wildlife to WOAH is voluntary and highly encouraged. Notifying AIV disease occurrences helps to better monitor, understand, and control its spread.
- If there is evidence of unusual sickness and/or deaths of wild birds (especially aquatic birds and raptors) or mammals (especially carnivores), local animal health and wildlife conservation authorities should be notified immediately to ensure that appropriate investigation is conducted. If any HPAI or LPAI strains of concern, as outlined above, are detected, national authorities will notify WOAH as appropriate.
- There is no benefit to be gained in attempting to control the virus in wild birds and mammals through culling or habitat destruction. Instead, measures should be taken to improve monitoring, surveillance, and biosecurity (see items below), especially in areas of congregation of aquatic birds and raptors such as breeding colonies, roosts, migratory stopover sites, shared foraging grounds and where these birds may come in contact with poultry.
- In preparation for potential HPAI outbreaks in wildlife, scientists, wildlife managers and animal health agencies should work jointly on increasing surveillance efforts (increasing awareness and enabling a reporting mechanism) and preparing an emergency response plan that enables quick investigation and minimises risk of spread. Coordination with scientists and government authorities in neighbouring countries and particularly those that share migratory bird flyways is highly encouraged.
- Sites where wild birds congregate may be at risk of exposure via migratory birds or accidental introduction by human activities (e.g. ringers, researchers and tourism) and should thus be in an increased state of alertness.
- Wildlife professionals should avoid contact with domestic birds, especially commercial poultry farms, for 48 hours prior to and after handling wild birds or mammals.

² In accordance with Article 10.4.1.3 of the WOAH Terrestrial Animal Health Code

- Where possible, field sites should be monitored prior to undertaking any handling activity to inspect for sickness or deaths of wildlife. If there is strong evidence of unusual sickness or deaths, handling of wildlife should be avoided until local animal health and wildlife conservation authorities have ruled out an HPAI outbreak.
- Handling of wildlife at or near wild bird aggregation/breeding sites should be avoided in countries/regions where HPAI outbreaks have been recorded in 2021–2022 (see situation reports at <https://www.woah.org/en/disease/avian-influenza/#ui-id-2> and real-time updated information at <https://wahis.woah.org/>).
- Any person handling ill or dead wild animals must follow strict health and safety measures, including being properly trained, regular and proper washing of hands and wearing full Personal Protective Equipment (PPE) including facemask, eye cover, and gloves.
- Boots, clothes, field equipment and gear should be disinfected prior to arrival and again after departure from sites where wildlife will be or has been handled, and always before visiting any other site. Surfaces should be cleaned with soap/detergent and water to remove dirt, and then sprayed with or soaked in disinfectant (e.g., Safe4, 1% Virkon, 10% bleach, 60-90% ethanol, 60-90% isopropyl alcohol). Disinfectants should not be applied to the environment, sick animals, or carcasses.
- Before and after working with animals or coming into contact with their secretions, hands and arms should be washed with abundant soap and water. Hand sanitizer (gel with 60 to 90% ethanol concentration) can be applied to reinforce disinfection but should not replace proper handwashing.
- Used/soiled items such as gloves, facemasks, syringes, and other biohazardous waste should be placed in double bags or purpose-made containers (e.g., sharps disposal containers for needles), sprayed with disinfectant prior to leaving the field site, and discarded as medical/contaminated waste at an appropriate facility (or if not available, burned).
- Visiting several different congregation areas of wild birds (e.g. waterfowl, seabirds, raptors) in one continuous outing should be avoided. If this is not possible, hygiene and disinfection procedures as referenced above should be reinforced before moving between areas.
- It is advisable to keep a log of visits to field sites, especially congregation areas of aquatic birds and raptors (e.g., breeding colonies, roosts, migratory stopover sites, foraging grounds, etc.). This information might be useful for later investigation of unusual disease or mortality events by allowing investigators to trace back contacts and potential sources of infection.

Resources

World Organisation for Animal Health (WOAH) updates on avian influenza in animals (types H5 and H7): <https://www.woah.org/en/disease/avian-influenza/#ui-id-6>
<https://www.woah.org/app/uploads/2021/03/low-pathogenic-avian-influenza-viruses-all-subtypesinfection-with.pdf>

Joint WOAHA-FAO Scientific Network on Animal Influenza (OFFLU) situation updates and statements on avian influenza: <https://www.offlu.org/>

Convention on the Conservation of Migratory Species of Wild Animals Northern Winter 2021-2022 statement in response to die-offs of wild birds in UNESCO and Ramsar Sites: https://www.cms.int/sites/default/files/uploads/avian_influenza_0.pdf

Food and Agriculture Organization of the United Nations (FAO) Global Avian Influenza Viruses with Zoonotic Potential situation update <https://www.fao.org/animal-health/situation-updates/global-aiv-with-zoonotic-potential/en>

FAO Recommendations for affected countries and those at risk <https://www.fao.org/animal-health/situation-updates/global-aiv-with-zoonotic-potential/recommendations/en>

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