



Avian Influenza

Alternate Names: Bird flu, chicken flu, AI.

Species Affected: Domestic poultry, several species of wild birds (mostly migratory waterfowl), some species of mammals including humans.

What causes avian influenza? Avian Influenza (AI) Viruses which attack the respiratory, digestive, and nervous systems. AI viruses are named based on the combination of 2 viral proteins hemagglutinin (H) and neuraminidase (N), for example H5N1.

The many strains of AI viruses are grouped into Low Pathogenicity (LPAI) or High Pathogenicity (HPAI) depending on how lethal they are to domestic chickens.

AI viruses survive in organic material such as manure and remain infectious for long periods of time at low temperatures.

How is AI transmitted? AI is spread through contact with feces, nasal and eye secretions of infected birds.

Domestic poultry flocks and wild migratory waterfowl (ducks, geese, etc.) can get infected with AI through direct contact with infected birds or by contact with contaminated environments. Raptors, such as eagles and hawks, as well as meat or carrion eating mammals, like foxes or skunks, can get infected with AI by eating sick waterfowl or birds that have died due to HPAI. Marine mammals like seals and porpoises have died with HPAI in areas where many waterfowl have also died due to the virus.

Contaminated water, feed, and equipment as well as contaminated footwear are important routes of introduction of AI onto and between poultry farms.

What are the clinical signs of AI? Clinical signs and severity of disease vary according to AI strain and species affected.

LPAI strains may cause little or non-visible illness. Wild migratory waterfowl are often carriers of LPAI with no signs of disease. In domestic poultry LPAI may present with mild respiratory signs (coughing, sneezing), inactivity, decreased feed consumption and low egg production.

In contrast, HPAI strains cause sudden and severe disease. Often the first sign of infection with HPAI is sudden death of many birds in the flock. Visible clinical signs include difficult breathing with blood-tinged cough and nasal discharge, swollen and purple head, comb and wattles, swollen and red shanks and feet, and greenish diarrhea. If birds survive long enough, they may display neurologic signs like constant head shaking and inability to walk.

What are the consequences of AI infection? HPAI has severe consequences for wild and domestic birds. Entire poultry flocks may die due to HPAI in a matter of days. The death of large numbers of wild migratory birds and marine mammals is of great concern due to its impact on wildlife, local communities, and the environment.

Death due to LPAI is usually low, but the H5 and H7 strains of AI may mutate into HPAI in domestic poultry flocks.

How is AI detected? Based on history of the flock and clinical signs, followed by laboratory testing. Samples of throat or anal swabs or organs such as trachea, lung, kidney, spleen, and brain are tested using AGID (a gel test to measure the reaction of the bird's immune system by detecting antibodies) and PCR (Polymerase Chain Reaction, a molecular test to confirm the presence of viral RNA).

How can AI be prevented? Good husbandry and strict biosecurity help prevent the introduction of AI into poultry flocks. Examples of biosecurity include keeping poultry in designated areas restricted to visitors, using clean footwear before entering poultry areas, using clean tools and equipment for poultry chores, preventing contact with wild birds and contamination of feed and water sources with droppings from wild waterfowl.

Vaccines against AI are not permitted in Canada.

To prevent the spread of AI in poultry flocks several countries (including Canada) have government programs to respond to AI outbreaks.

How can AI be treated? There is no treatment for HPAI in poultry flocks.

Is AI a Reportable disease? Yes, because of its severity and consequences, all cases of HPAI as well as H5 or H7 LPAI must be reported to the [provincial](#), territorial, and federal governments within 24 hours. The [Canadian Food Inspection Agency](#) (CFIA) leads the investigation and control activities.

Is AI zoonotic (transmitted from animals to humans)? Some strains of AI are zoonotic and pose a risk to human health. Mild respiratory symptoms and conjunctivitis (pink eye) are common symptoms in humans, though severe illness is possible. All strains of AI should be assumed zoonotic until advised otherwise by public health agencies.

References:

- *Avian Influenza*. (2024, February) World Organisation for Animal Health. <https://www.woah.org/en/disease/avian-influenza/>
- *Fact Sheet - Avian Influenza - Canadian Food Inspection Agency*. Government of Canada CFIA. Retrieved February 6, 2024, from <https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/reportable/avian-influenza/fact-sheet/eng/1356193731667/1356193918453>
- Swayne, D. E. (2023, June). *Avian Influenza*. Merck Veterinary Manual. <https://www.merckvetmanual.com/poultry/avian-influenza/avian-influenza>