

Avian Influenza, A Disease Most Fowl

Why AI is a threat to your poultry

By Maurice Pitesky DVM, MPVM, ACPVM

Avian influenza (AI), or bird flu, is one of the most significant and scary diseases facing poultry. Known historically as fowl plague, the virus comes in many different “flavors,” making it very difficult for people—including scientists—to understand the differences between various types. This article is intended to provide basic and practical information about avian influenza and to offer recommendations on how to mitigate risk.

What is it and what does it do?

Avian influenza is a viral disease of poultry characterized by respiratory signs, depression, and reduced feed and water intake. Egg-laying birds will have a decline in egg production. There are many strains of AI viruses, and they can generally be classified into two categories: Low pathogenic (LPAI) and highly pathogenic (HPAI).

Low pathogenic strains typically cause little or no clinical signs in poultry. Highly pathogenic strains, on the other hand, cause severe clinical signs including bleeding, bruising, a significant drop in egg production, and death rates that can approach 100 percent in a flock.



Are you ready for some science?

Understanding how the AI virus is named is key to understanding the significance of what is occurring. When people talk about avian influenza they usually identify the type of virus. For example, they may be talking about the H5N8 strain of Avian influenza, which is currently present among waterfowl in the Pacific Flyway.

The “H” and “N” represent hemagglutinin and neuraminidase, two of the surface proteins on the outside of the virus. There are 18 different H proteins and 11 Ns, meaning the virus can be classified in 198 (the sum of 18×11) different viral subtypes—with all of these subtypes found in avian species.

Some of them can also be found in mammals, including swine, horses, dogs, and humans. For example, the H1N1 type is commonly called “swine flu” because swine are the primary species affected. Another variant, H3N2, has been spreading in swine populations recently. Transmission of AI from swine to poultry has been

documented and shown to be a mechanism for the development of new strains. For this reason it is recommended not to raise poultry and swine in the same environment.

Where things get a little more confusing is that the H5 and H7 types can either be low pathogenic or highly pathogenic. Furthermore, the low pathogenic H5s and H7s can mutate and become highly pathogenic. For this reason, when a H5 or H7 is diagnosed, the decision is often made to cull affected birds in order to prevent a significant outbreak of HPAI.

Is the virus all around us?

Waterfowl and shorebirds are the major natural reservoirs of AI viruses. Most species of waterfowl and shorebirds are asymptomatic, meaning they carry the virus but show no apparent illness. Further, they may excrete infectious virus in their feces into the environment. In fact, viable AI virus has been recovered directly from lake and

pond water used by infected wild ducks. Consequently, it is very important to protect your domestic poultry from exposure to any habitat frequented by potential carriers.

In North America, there are approximately four different flyways where migratory birds travel from north to south in the winter and then back again during the breeding season. Based on where you live, you may have significant swings in wild avian populations across the different seasons.

In the central valley of California, for example, there are approximately eight times as many waterfowl present in the winter versus the spring. Consequently, while in the central valley of California there is a greater risk related to the increased number of birds present in the winter, it is important to recognize that the risk is constant as long as the virus is circulating in waterfowl and shorebirds that are close to your property.

Five steps to reducing AI

- 1** Avoid using water that comes from sources where waterfowl migrate. If feasible, discourage waterfowl from using ponds on your property and consider draining these ponds if practical.
- 2** Keep your birds confined in houses or enclosures with netting to prevent them from interacting with wild birds.
- 3** If you hunt waterfowl, be sure your clothing, footwear, and hunting vehicles are washed and disinfected to prevent tracking the virus to your birds.
- 4** Do not share birds, equipment, or feed with other bird owners and restrict access to your birds.
- 5** Isolate new birds from other birds for 30 days and observe them for signs of illness.

Many of the above practices are similar to other biosecurity practices with respect to prevention of disease. Further biosecurity tips can be found at: www.cdfa.ca.gov



How to prevent AI from infecting your flock

Your domestic poultry can get AI. The virus can infect a variety of birds including chickens, turkeys, pheasants, quail, ducks, and geese. (AI infections are rare in domestic pet birds, though.) Exposure to infected feces, respiratory secretions, and fomites (things like shoes, clothing, crates, and other equipment that can transmit infectious viruses) are the primary routes of exposure.

Since poultry can become infected by AI—and there is no cure—the best course is prevention through biosecurity. Biosecurity is defined as any practice that reduces the risk of introducing a disease to a premise. Based on the biology of avian influenza and its carriers like waterfowl and shorebirds, consider biosecurity practices that will prevent your birds from sharing habitat with wild animals. Sharing feeding, watering or nesting locations is highly discouraged.



Reporting is the only treatment

There is no cure for birds infected with Avian influenza short of culling, so observing and reporting to protect others is of the utmost importance. Most states have a robust surveillance program through their state diagnostic laboratory system.

Additional surveillance of poultry associated with auctions, live bird markets (LBMs), backyards, feed stores, and swap meets is conducted by states in coordination with the USDA. If you suspect AI in your flock, feel free to call your veterinarian or your friendly extension specialist.

Can humans get AI?

Yes, there are H and N combinations that can infect humans. Combinations include H5N1, H3N2, and H1N1, although it is important to recognize that not every H5N1, H3N2, or H1N1 infects humans. Remember the 'H' and the 'N' merely reflect the surface proteins present, and not the entirety of the virus' genetics.

The World Health Organization reports that more than 600 people from 15 countries have been sickened by the HPAI form of H5N1. Approximately 60 percent

of those infected have died. Most cases of HPAI H5N1 have been linked to contact with infected poultry.

Surveillance studies have shown that HPAI H5N1 does not appear to be endemic in waterfowl and shorebirds in North America, but the genetics of these strains link them to an avian origin. As these viruses mutate and evolve over time, however, the potential for them to affect others species increases.

About the author

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Look, up in the sky!

A recent outbreak of HPAI (H5N8) has been found in waterfowl and domestic poultry along the Pacific Flyway between British Columbia and Northern California. The H5N8 strain that has been detected is genetically similar to strains of HPAI in South Korea. Isolates from these strains are not transmissible to humans. The primary mechanism of HPAI introduction into domestic poultry is via the interface between waterfowl and domestic poultry.

Consequently, it is important for poultry enthusiasts to know where they live relative to waterfowl- and shorebird-habitat and species. For example, if you commonly see wild ducks and geese flying over your property, your birds are at risk for exposure.

If you have feed and or habitat available, those waterfowl are more likely to make a "pit-stop" in your backyard. If those birds have AI, then the risk of exposure is significant. Consequently, maximizing biosecurity in your backyard is essential for protecting your birds.



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