Highly Pathogenic Avian Influenza (HPAI; "High Path AI")

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There are two forms of Avian Influenza (AI): Low Pathogenic AI (LPAI) and Highly Pathogenic AI (HPAI). Most AI encountered in the United States (US) are LPAI, generally causing a mild respiratory disease. There is a LPAI vaccine available, commonly used in commercial poultry settings. Conversely, HPAI causes severe disease, is associated with a high mortality, and is a foreign animal disease in the U.S. with no available vaccine. The combined value of the U.S. production from broilers, eggs, turkeys, and the value of sales from chickens in 2020 was $35.5 billion. During the 2014/2015 HPAI outbreak, the US Department of Agriculture – Animal and Plant Health Inspection Service (USDA-APHIS) spent $1 Billion to eradicate HPAI and provide indemnity (payment) to those that lost birds and were National Poultry Improvement Plan (NPIP) certified. In that outbreak, about 49 million birds died or were depopulated and the US lost 10% of its egg laying birds. HPAI is a threat to the US economy, a threat to our birds (backyard and commercial poultry, zoo birds, wild birds), and a possible threat to humans. Although a few cases have been shown to pass from birds to humans, the virus easily mutates, and could mutate into a strain that passes easily from person to person, creating a potential pandemic situation.

Recently (January, 2022) HPAI (H5/H7) was identified again in the US, initially in wild ducks in South Carolina and North Carolina. By March 14, 2022, (the time of this writing), HPAI had spread along the eastern seaboard in wild birds (AL, CT, DE, FL, GA, IA, IN, KS, KY, MA, MD, ME, MO, NE, NH, NJ, NY, NC, SC, TN, VA), and along the Atlantic and Mississippi migration flyways in commercial and backyard poultry (CT, DE, IA, IL, IN, KS, KY, MD, ME, MI, MO, NY, SD, VA, WI). Waterfowl act as a reservoir host and usually do not show any signs of infection. The current outbreak is associated with migrating birds from Europe where there is an outbreak of the Eurasian strain of HPAI. Updated information can be found on the USDA-APHIS website regarding wild bird confirmations, and commercial and backyard flock confirmations, at the following websites, respectively:

- https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/hpai-2022/2022-hpai-commercial-backyard-flocks
- https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/hpai-2022/2022-hpai-wild-birds

Description of the Virus

Avian influenza (AI) is caused by a virus in the Orthomyxoviridae family of which there are three types (A, B, and C), but only type A is found in birds. There are two subtypes called H and N, named for the surface proteins, hemagglutinin and neuraminidase, respectively. There are 15 known H subtypes, and 9 known N subtypes. All subtypes are found in birds. All highly pathogenic AI (HPAI) strains to date have been either H5 or H7, subtypes, however not all H5 and H7 isolates are HPAI. All AI strains are very contagious.

Transmission

Transmission is easy with this highly contagious virus and is horizontal thru ingestion or inhalation of the virus, or exposure to contaminated equipment or clothing, or exposure to airborne virus and spread between farms may occur over limited distances.

Clinical Signs

Low path AI (LPAI) signs are typically a mild respiratory disease associated with a high morbidity, but low mortality. On the other hand, HPAI, also known as "Fowl Plague", is associated with severe clinical signs and high mortality. HPAI has variable clinical signs and no one sign is suggestive of HPAI.

Clinical signs of HPAI can include:

- Variable morbidity and mortality
- Oculonasal discharge
- Infraorbital sinusitis
- Dyspnea, tachypnea
- Cyanosis
- Edema of the head, comb, and wattle
- Subcutaneous ecchymotic hemorrhages of the legs and feet
- Blood-tinged oral and nasal discharges
- Green diarrhea
- Torticollis, opisthotonos, ataxia

Call Your State Veterinarian!

HPAI is a reportable, foreign animal disease. It is important that you call your state veterinarian if you observe increased mortality or unexplained deaths in a flock. You do not need to know whether it is AI or not, your state veterinarian wants you to call them immediately to report any increased mortality events in birds. You can also call the USDA toll free at 1-866-536-7593.

Diagnosis

Only state laboratories and certain certified laboratories conduct AI testing in birds. Contact your state veterinarian for testing. Do not try to collect samples or test yourself – you will waste valuable time that the virus uses to spread quickly to other birds. The state will most likely run an AGID test first, sometimes an ELISA (not all birds show Ab's), and then confirm with an RT-PCR, HA, and/or HI test.

Treatment

There is no treatment as HPAI is a foreign animal disease. Birds with H5 or H7 are required to be depopulated by federal authorities, whether determined to be a pathogenic strain or not.

Prevention

For LPAI there is an inactivated vaccine, but there is no vaccine allowed for use in the US for HPAI. The U.S. uses the test and cull method to control HPAI. Always discourage wild bird visits to your property, especially waterfowl. Do not have open ponds where waterfowl can visit your property. Currently, the recommendation is to bring your birds inside until this outbreak is over to prevent transmission from potentially infected wild birds. The USDA-APHIS recommends practicing good hygiene and excellent biosecurity (see "Biosecurity" below) to prevent spread of HPAI.

The USDA-APHIS identified high risk behaviors that promoted spread of HPAI after the initial outbreak in 2014:

- Workers and visitors who enter poultry buildings or had contact with poultry.
- Shared equipment and shared crews.
- Entry of wild birds into barns.
- Weak or no procedures for disposal of dead birds.
- Other biosecurity breaches.

As a result, avian industries came together to incorporate minimum biosecurity management principles into the National Poultry Improvement Plan (NPIP) for commercial operations including adhering to a written biosecurity plan that is audited every-other-year in order to be eligible for indemnity should the U.S. have another HPAI event. Small flock producers may be eligible for indemnity under NPIP. To learn more about the NPIP go to their website at http://www.poultryimprovement.org/default.cfm

Simple Biosecurity Rules

See https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/defend-the-flock-program for more details.

- Keep your distance. Restrict access to your property and your birds. Visitors should wear shoe covers. Prevent wild bird access to your birds' area.
- Keep it clean. Practice good sanitation. Clean water and food bowls. Keep fecal contaminated tools separate from food areas. Properly dispose of dead birds by deep burial or incineration.
- Don't haul disease home. Quarantine new birds for at least 4 weeks. Your veterinarian may recommend longer. Quarantine your birds for at least 2 weeks after going to a show or other place where they have been exposed to other birds. Don't mix young and old birds. Clean and disinfect.
- Don't borrow disease from your neighbor. Don't share tools or egg cartons.
- Know the warning signs of infectious bird diseases, such as nasal discharge, swelling of the head, neurological signs, high mortality, decreased egg production, diarrhea, or poor appetite. Specifically look for purple discoloration of the wattles, comb, and legs (AI), or tremors, drooping wings, circling, twisting of the head and neck, or lack of movement (Exotic Newcastle Disease).
- Report sick birds to your state veterinarian or the USDA Veterinary Services Office.