Avian Influenza

College of Veterinary Medicine

BASICS

Avian influenza (AI) viruses occur naturally among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species. **WILD AQUATIC BIRDS** can be infected with avian influenza A viruses in their intestines and respiratory tract, but usually do not get sick.

AI viruses are classified as either low pathogenic avian influenza **(LPAI)**, or high pathogenic avian influenza **(HPAI)** according to the virus strain's impact on domestic poultry.

CLINICAL SIGNS for viruses are markedly different from LP to HP AI viruses.

LPAI viruses cause **MILD RESPIRATORY SIGNS** such as sneezing, coughing, ocular and nasal discharge and occasionally swollen infraorbital sinuses in poultry.
SINUSITIS is common in domestic ducks, quail and turkeys. In layers and breeders there is commonly decreased egg production and fertility.

HPAI viruses cause severe, systemic disease with **HIGH MORTALITY** in chickens, turkeys, and other gallinaceous poultry; mortality can be as high as 100% in a few days.

AI is **TRANSMITTED** between individual birds by ingestion or inhalation and betweeen farms by breaches in biosecurity practices. Infected birds shed avian influenza virus in their **SALIVA, MUCOUS, AND FECES.**

Both AI viruses can be **ISOLATED** from choanal and cloacal swabs, and HPAI viruses from many internal organs.

There is no effective **TREATMENT** for HPAI but depopulation can control the spread of the virus.

DETAILS

AI viruses are named using the letters H and N and numbers for the types of surface proteins they carry. Most AI viruses (H1-16 subtypes) are of low pathogenicity, but some of the H5 and H7 AI viruses are highly pathogenic for chickens, turkeys, and related domestic poultry and result in **HIGH MORTALITY.**

TRANSMISSION Human infections with bird flu viruses can happen when virus gets into a person's eyes, nose or mouth, or is inhaled. This can happen when the virus is in the air (in droplets or possibly dust) and a person breathes it in, or when a person touches something that has virus on it then touches their mouth, eyes or nose.

RARE HUMAN avian influenza infections have occurred most often after unprotected contact with infected birds or surfaces contaminated with avian influenza viruses. However, some infections have been identified where direct contact was not known to have occurred. Illness in humans has ranged from mild to severe.

EPIDEMIOLOGY Low pathogenicity AI viruses are distributed worldwide and are frequently seen in clinically normal shorebirds and migrating waterfowl. Occasionally, low pathogenicity viruses are recovered from imported pet birds. The viruses may be present in village or backyard poultry and also birds sold through live-poultry markets, but most commercially raised poultry in developed countries are free of AI viruses. The highly pathogenic forms of AI viruses usually arise from **MUTATION** of some H5 and H7 LPAI viruses and cause devastating epidemics.

In 2015 over 40 million poultry were **EUTHANIZED** to control an outbreak in the midwestern US. Some raptors and a few wild ducks were reportedly sick. No human infections were seen.

CLINICAL SIGNS With LPAI in poultry, the morbidity and mortality is usually low unless accompanied by secondary bacterial or viral infections or aggravated by environmental stressors.

With HPAI, in peracute cases, there may be **NO CLINICAL SIGNS** previous to death, however in more acute cases lesions may include blue coloration and edema of the head, comb, wattle, and snood (turkey). Edema and red discoloration of the shanks and feet can occur due to hemorrhages (bruising) in the skin, and petechial hemorrhages (red and purple spotting) can occur on visceral organs and in muscles. Blood-tinged oral and nasal discharges are also common.

In **SEVERELY** affected birds, greenish diarrhea is common. Birds that survive the peracute infection may develop neurologic signs such as torticollis (twisted neck), opisthotonos (backward-arching head), incoordination, paralysis, and drooping wings.

TREATMENT Vaccines can prevent clinical signs and death in poultry. Furthermore, viral replication and shedding from the respiratory and GI tracts may be reduced in vaccinated birds. AI is reportable to state and federal agencies. Flocks with HPAI strains may be depopulated in order to control spread of the virus.

PRECAUTIONS AND PREVENTION Routine hand washing and wearing of gloves are recommended for handling of healthy waterfowl. If birds show suspect signs of AI, then additional precautions may be warranted including the use of face shields, respirators and Tyvek suits.

BIOSECURITY should be practiced when moving between sites with waterfowl, or when entering poultry facilities and game farms. Typical precautions would include wearing dedicated clothing and shoes that are disinfected between sites, spraying down car tires, and disinfecting equipment between sites.